

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY

12 PLANNING

12.1 DEMAND & RESOURCES PLANNING

1. Introduction4
1.1 Change History4
1.2 Approval Details4
1.3 Other Related Documents.....	.4
2. Business Process (Level 2)5
2.1 To-Be Process Overview and Context5
2.2 Key Value Drivers for the Business Process.....	.6
2.3 Key Design Decisions7
2.4 Standard KPI and Reports.....	.7
3. Process Design.....	.9
3.1 Demand Planning	10
3.1.1 Independent Demands	10
3.1.2 Sales Order Demands.....	12
3.1.3 Project based Demands	16
3.2 Resource planning	19
3.2.1 Machine & Labor capacity	19
3.3 Execute MRP Run & Monitor Material Replenishment.....	22
3.3.1 Process Description.....	22
3.4 Execute Subcontracting MRP	28
3.4.1 Business Process Description.....	28
3.4.2 Process Diagram.....	28
3.4.3 Activity List	28
4. Detailed Solution Design	30
4.1 Demand Planning	30
4.1.1 Planning strategy	30
4.1.2 Planned Independent Requirement (PIR).....	32
4.1.3 Sales Order.....	36
4.1.4 Project Based Demand.....	37
4.2 Resource Planning	38
4.2.1 Manage Work Center Capacity.....	42
4.2.2 Capacity Scheduling Table	42
4.2.3 Capacity Scheduling Board.....	42
4.3 Execute MRP Run & Monitor Material Replenishment.....	42
4.4 Fiori Apps for MRP.....	52
4.5 Solution prerequisites	59
4.5.1 Process predecessor and successor.....	59
4.5.2 Master data prerequisites.....	59
4.5.3 Organizational structure requirements	60
4.6 Detailed solution design.....	60
4.6.1 Demand Planning.....	60
4.6.2 Resource Planning.....	60
4.6.3 Execute MRP Run & monitor material replenishment: Solution steps and elements (Level 5-6)...	62
4.6.4 Execute Subcontracting MRP; Solution steps and elements (Level 5-6)	63
4.6.5 Associated Fiori Apps	65
4.6.6 Reporting Overview	66
5. Role Definition.....	68

5.1 Role/Skill Class Inventory	68
5.2 Security roles as per process design.....	68
6. Process Fitness & Gap Analysis	69
6.1 Process Variation (legal, geographical or business-led).....	69
6.1.1 Sub-Process Variation	69
6.2 GAP Register.....	69
6.3 Process Fitness	69
6.4 WRICEF Register	70
7. Integration Points.....	71
7.1 Integration points.....	71
7.2 Inbound Communication.....	72
7.3 Outbound Communication.....	72
7.4 Other Issues.....	72

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
v0.0	3.08.2021	Template Creation	Dr. Christian König
P2_v0.1	5.08.2022	Update into new PDD format	Moritz Waubke
Change of versioning numbering policy			
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V0.8	04.07.2023	Incorporate business feedback during walkthrough session	Faraz Quddussi
V0.8	10.07.2023	Incorporate DT feedback (Deep, Ahmad, Aslam)	Faraz Quddussi
V0.8	24.07.2023	Incorporate GPO feedback	Faraz Quddussi
V0.9	27.07.2023	GPO approval (V0.8 → V0.9)	
V0.10	29.01.2024	BPH ID in Activity Tables Update of Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See cover sheet			

1.3 Other Related Documents

Please insert links/References to related Documents (issues, data entities, extreme automation, etc.)

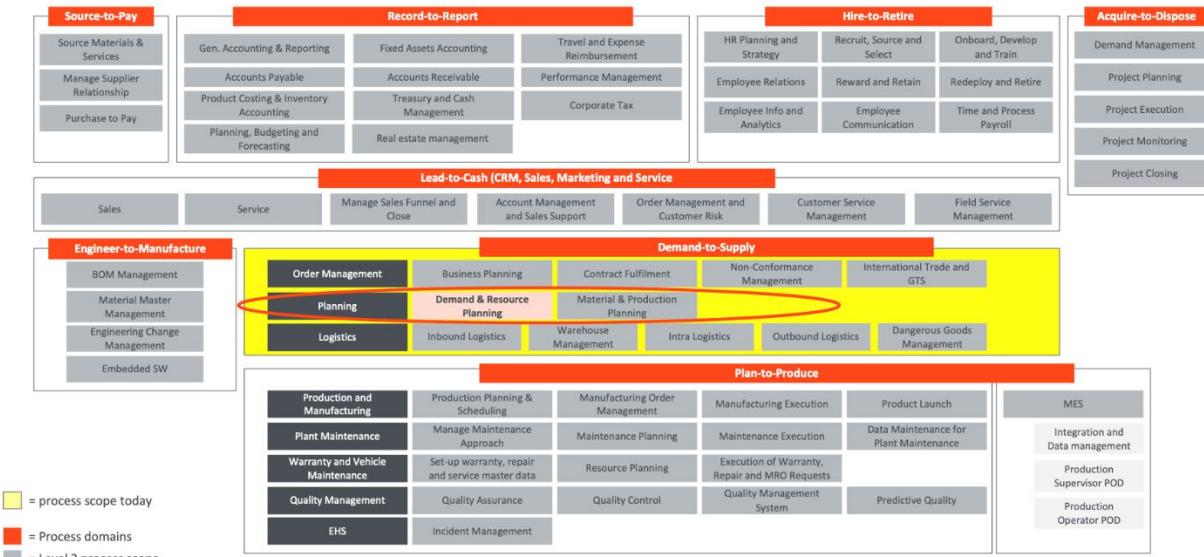
Related Document	Comment
KDS (KDS_D2S-Plan Align Supply Resources_V01)	D2S KDS Document
KDS (KDS_P2P-PP_11.01.2022_V1.0)	P2P KDS Document

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

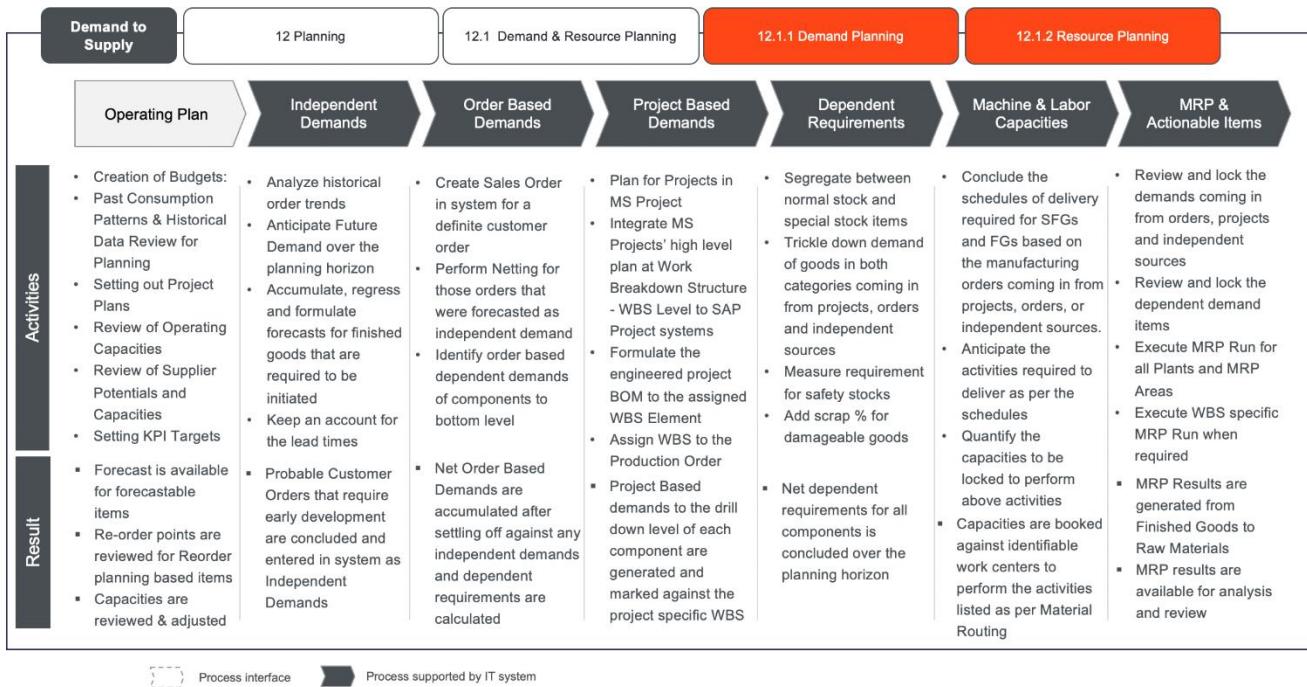
BUSINESS PROCESS HIERARCHY

ADVANTEDGE



24

For the most efficient usage of the planning systems, **multiple L2 high-level processes** have been identified covering various time horizons from long-term to short-term.



Demand & Resource Planning constitute below-mentioned sub-processes at L4;

12.1.1.1 Independent Demands
12.1.1.2 Sales Order Demands
12.1.1.3 Project based Demands
12.1.2.1 Machine & Labour capacity

2.2 Key Value Drivers for the Business Process

The new S/4HANA material planning & replenishment system streamlines material requirements planning. The purpose for implementing it includes effective monitoring of stock-outs, capacity planning/levelling, automated creation of procurement proposals for purchasing & production and enabling EDGE production planners to guarantee availability of procured or produced materials at the right time.

The key value driver for EDGE is to develop an ability to make material planning process efficient, cost-effective, and automated using standard and streamlined SAP processes. The planning process at EDGE must have credible processes in place so that it imparts the confidence in the EDGE customer's mind that their investments are secure.

Below are some tangible and intangible benefits of using SAP HANA powered material planning system.

Reduce the cost of customer service and support by making proactive decisions in response to changing demand.

Increase annual procurement savings and reduce revenue loss with clear visibility across the supply chain.

Improve on-time delivery performance by tailoring available capacity and receipts to meet required product quantities.

Improve inventory accuracy by considering inventory data, lead times, and procurement timing in planning.

2.3 Key Design Decisions

Process ID	KDD ID	Type	Description
12.1.1.3	KDD_A2D_66	Foundation	<p>Perform Material Planning in MSP or apply a mixed approach with planning in MSP and SAP PS both.</p> <p>The final decided approach is that users will be allowed to make material planning in either MSP Tasks or SAP PS Network Activities or both.</p>

2.4 Standard KPI and Reports

1. Monitor Material Coverage
2. Monitor Capacity Utilization
3. Manage KPIs and Reports

KPI – Key Performance indicators are the measuring tools for application performance. Below are the KPIs that can be used for measurement.

1. Monitor Material Coverage

Material Planners at EDGE require to monitor all the materials in their selected area of responsibility. This includes collective requirements of materials from make-to-stock, and make-to-order requirements, and also includes materials for direct procurement.

The Material Coverage KPI is a standard measure of gauging EDGE's ability to ensure material's availability factor when they are needed. This KPI is of particular importance for EDGE. In the case of EDGE, material requirements for the complete list of materials are getting generated from various sources:

- Projects
- Contracts
- Independent Demands
- Dependent Demands
- Safety Stocks &
- Forecasts.

Ensuring EDGE's material availability criteria for requirements coming in from various sources, the material coverage KPI will provide a quick reference of materials where the availability is being compromised in the planning horizon.

The system calculates the requirements for each segment separately.

Calculation = (Stock on Hand + Receipt per day in the planning horizon – Requirement per day in the planning horizon)

2. Monitor Capacity Utilization

Monitoring of Capacity Utilization is a must KPI for the manufacturing units under EDGE.

Business can monitor the utilization of resources in their selected area of responsibility. The list provides a quick overview of which resources are already being fully utilized or have a capacity overload so the planners can react quickly to critical situations. Furthermore, business can easily discern which resources have a capacity underload and whose utilization is in the normal range.

An important consideration in the calculation of capacity utilization is that it does not consider the contractual or permanent employees hired or to be hired by the company. Instead, it accounts for the maximum activity hours that are possibly available in all scenarios and matches them against the activity hours in demand against the production requirements.

This KPI indeed will help plan for expansion or reduction of contractual resources based on the utilization %.

Month on month analysis can be done to understand the bottleneck in the Supply chain.

Capacity Utilization % = Capacity Demand of Production Resource per bucket / Available capacity per Bucket *100

3. Manage KPI and Reports

Manage KPIs and Reports app is required as a single platform for creating all analytical applications using KPIs, reports, and stories. App is required with configurable metrics in the KPI, visualizing the data either in chart or table format, and analyzing the data to improve the quantity and quality of the different business units belonging to the organization unit.

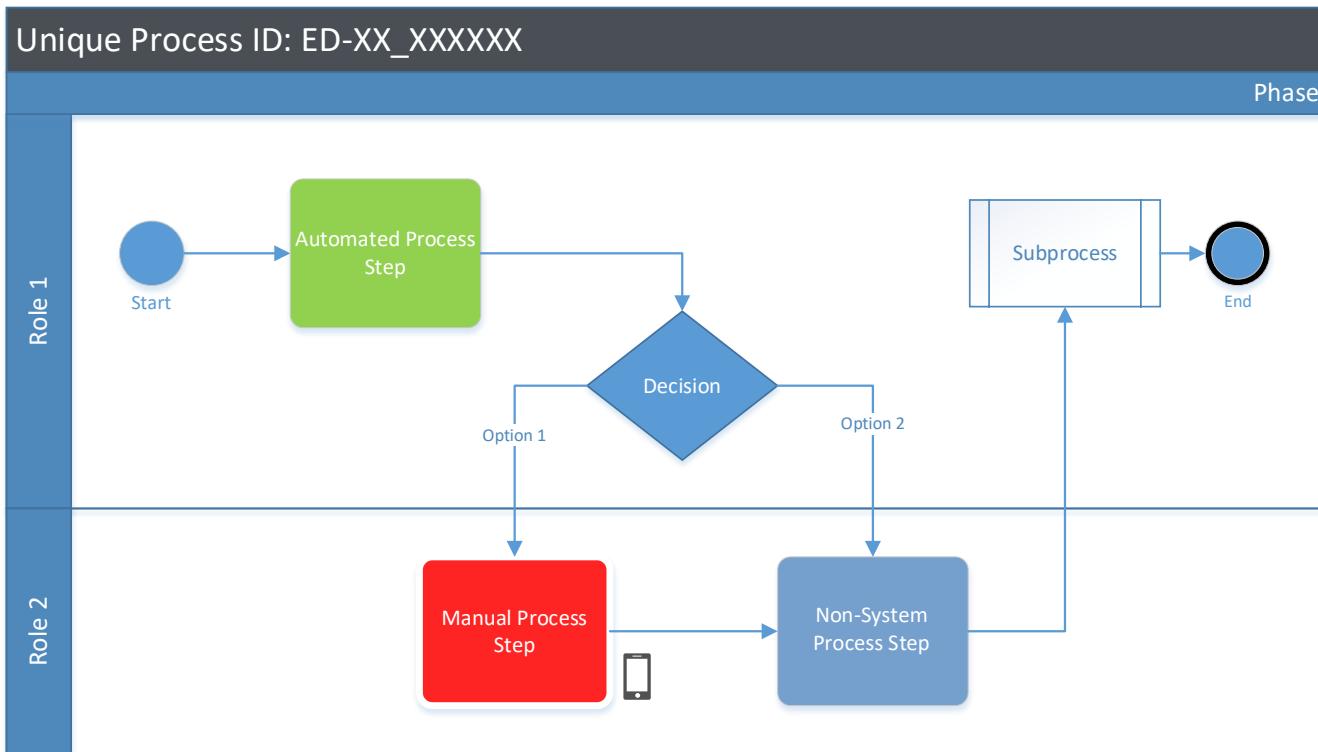
Reports – Reports are used to visualization of Planning situation and take necessary actions if necessary. Below are the reports that can be used.

1. Display MRP Key Figures
2. Display MRP Master Data Issues
3. Monitor Material Coverage Net/Individual segments.

3. PROCESS DESIGN

In the following chapters processes are described in swimlane flow diagrams, in which the swimlanes represent responsible roles and the flow is shown in process steps of different kinds (see legend).

Example for swimlane flow chart:

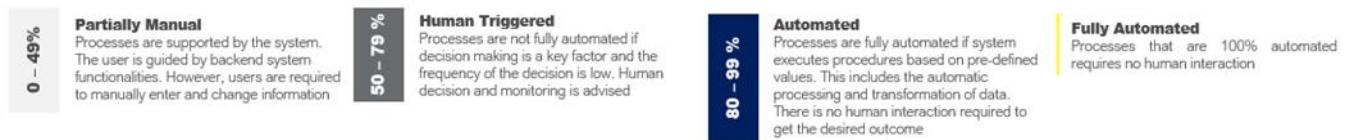


Legend:



For each swimlane flow diagram, a corresponding activity list exists, with additional details:

- Process Step - Number of process step (Pxxx)
- BPH ID - BPH ID of L4 process
- Description - Short description of the step
- Role - Responsible role for executing the step
- SAP-Automation - Options: Partially Manual, Human Triggered, Automated, Fully Automated, Sub-Process/Non-System (blank); details on definition see below
- Tcode - SAP Transaction Code (SAP EWM in Italic letters)
- Fiori - Y, if Fiori App is available



3.1 Demand Planning

Demand planning is the process of forecasting future demand for a product or service. Accurate demand planning is critical for organizations to optimize their inventory levels, production schedules, and supply chain operations.

In order to effectively plan for independent demand, demand planners must use a combination of historical data, market trends, and statistical forecasting techniques while allowing for flexibility with simulations to update plans based on any situational changes. This information can then be used to create a demand plan that outlines how much of each product or service should be produced or stocked in inventory to meet immediate customer demand in the short and long run.

A military supply chain requires flexibility in planning and executing the replenishment of consumable goods and defence equipment. An effective demand plan is the back-bone for fulfilment of logistics requirements across warehousing, transportation, and distribution processes. The Demand Plan will require to collect and analyse the internal demand signals (sources of internal demand signals discussed in the section 3.1.1 – 3.1.3) to create and update optimized demand plans for on-time and in-full delivery to the customer.

An effective demand plan helps in building up specific, flexible, and prioritized supply planning and execution. The demand plan outputs are also the basis for storage management, warehousing requirements, and global inbound and outbound transportation in supply replenishment with increased accuracy, visibility, and performance.

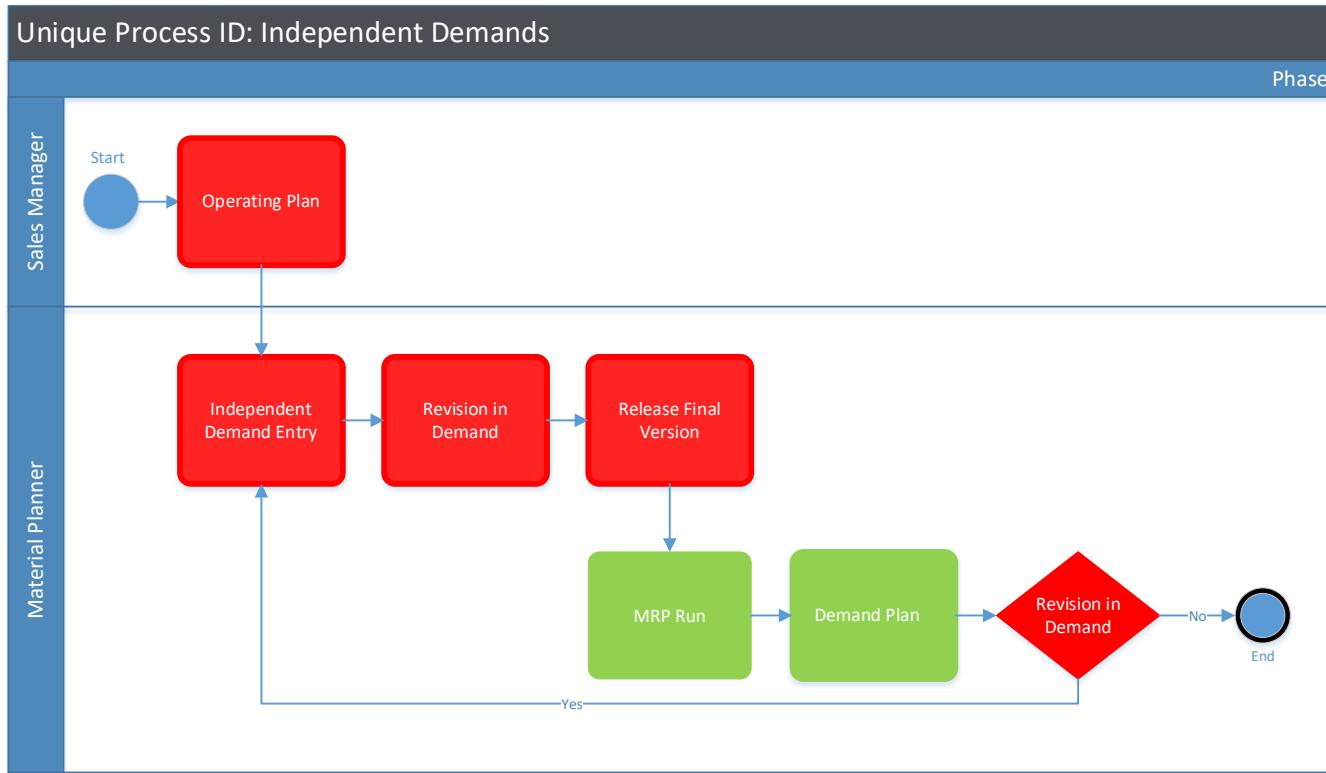
Following sections cover up the different input sources for Demand Planning:

3.1.1 Independent Demands (ED-12_010101)

3.1.1.1 Business Process Description

Independent demand is the demand for a finished product or service that is not influenced by the demand for any other product or service. In demand planning, independent demand is the demand for goods that largely drives the delivery requirements of the entire business in terms of finished goods, therefore a prime example of independent demand is forecast for future customer orders. The demand planner must be able to effectively map independent demands in the form of forecasts and market trends, effectively mapping the demand possible and probable for customer orders in the planning horizon. In general, unless the contract extends to a longer period, the planning horizon for EDGE at the maximum will be 5 years.

3.1.1.2 Process Diagram



3.1.1.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation	Tcode	FIORI APP
P000	ED-12_010201	Start	P100	Start				
P100	ED-12_010201	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Partially Manual		
P200	ED-12_010201	Manual Independent Demand Entry in SAP System	P300	Process	Material Planner	Partially Manual		
P300	ED-12_010201	Revise Independent Demand Iterations through Version Control	P400	Process	Material Planner	Partially Manual		
P400	ED-12_010201	Review and release the final Version of	P500	Process	Material Planner	Partially Manual		

		Planned Independent Requirements						
P500	ED-12_010201	Execute MRP Run	P600	Process	Material Planner	Automated		
P600	ED-12_010201	System Generated Demand Plan on selected independent requirement planning strategy	P700	Process	Material Planner	Automated		
P700	ED-12_010201	Check for any changes in Demand Input	P200 P800	Decision	Material Planner	Partially Manual		
P800	ED-12_010201	End		End				

3.1.2 Sales Order Demands (ED-12_010201)

3.1.2.1 Business Process Description

Sales order demands are an important consideration in planning because they represent commitments made to customers for the delivery of specific products at specific schedules. Meeting these commitments is critical to maintaining customer satisfaction and loyalty, and failing to do so can have significant negative consequences for the business.

In planning, sales order demands are typically used to determine the required production or procurement of materials to fulfil these orders. These committed schedules can then be used to plan production schedules, inventory levels, and procurement activities to ensure that sufficient materials are available to fulfil customer orders on time. In addition, planners may use sales order demands to identify potential bottlenecks in the supply chain and take steps to address these issues before they become critical.

Overall, incorporating sales order demands into planning activities will make sure a true Make to Order strategic alignment. The business process on an MTO will help meet customer expectations, reduce stockouts and backorders, and maintain a competitive edge in the marketplace.

In a make-to-order scenario, sales order demands are particularly important because they represent a direct customer request for a specific product and with a specified quantity to be produced. Unlike in make-to-stock scenarios, where products are produced in advance and held in inventory, make-to-order production is initiated only when a customer order is received.

An important element of Sales order based planning is the dependant requirements planning it triggers for the list of component materials on the finished goods' BOM. While the independent requirements can be incorporated via planned independent requirements through mapping of forecasts and trends of historical data,

the impact of dependent requirements remains largely based on the sales orders once they are incorporated in the system.

This means that accurate mapping of dependent requirements of sales order demands is crucial to ensure that the necessary materials and resources are available to fulfil customer orders in a timely manner. In a make-to-order scenario, planners must consider factors such as lead times for procuring materials, production capacity constraints, and production scheduling to ensure that orders can be fulfilled within the desired timeframe.

To manage sales order demands effectively in a make-to-order scenario, planners need to have a clear understanding of the production process and lead times for each component. They must also be able to accurately forecast demand, considering factors such as seasonal variations, changes in customer preferences, and market trends.

In SAP, sales order demands in a make-to-order scenario are managed through the **Order to Cash - O2C** module and **Forecast to Produce – F2P** module.

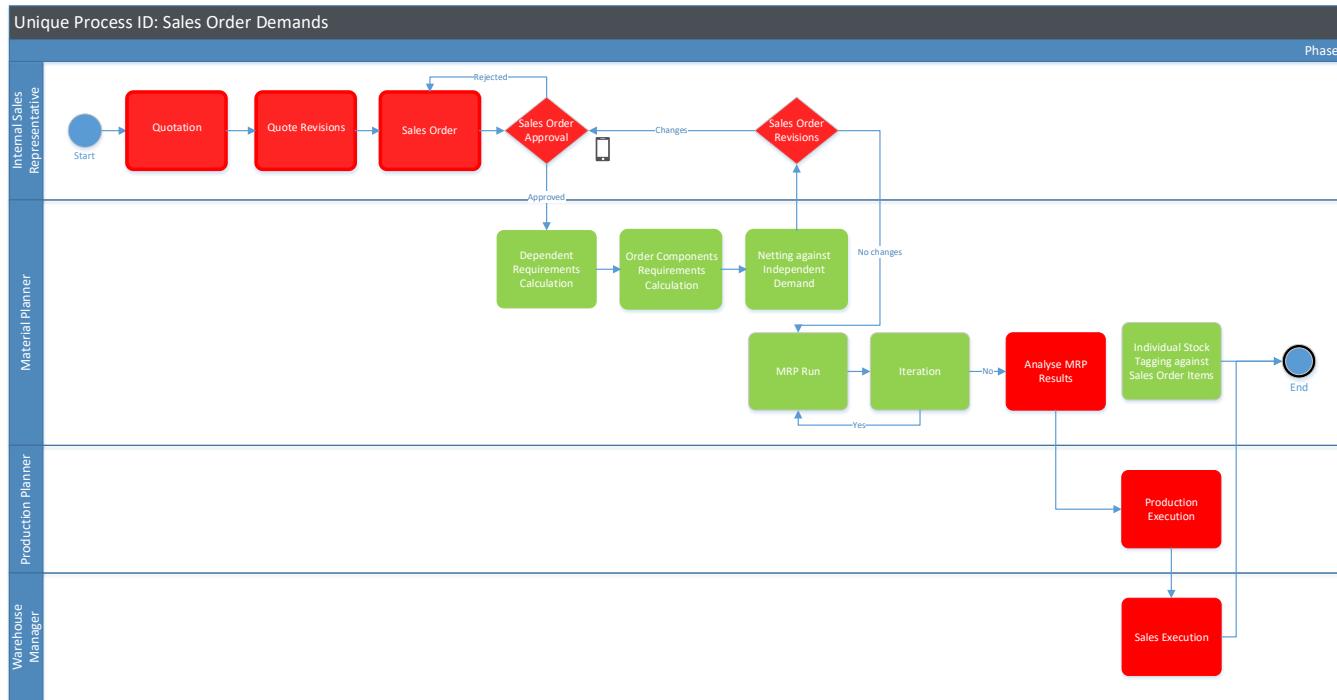
When a sales order is received, the Order Management module creates a sales order document that contains all the relevant information about the customer, the product, and the delivery date. This sales order document is used as the basis for production planning and scheduling.

The system must incorporate the right reduction / netting strategy to offset a sales order against the planned independent requirements previously incorporated in the demand plan against the same Project code. It is important to keep the system flexible for adjusting sales orders against independent requirements at the sales order stage. This netting strategy needs to take into account backward and forward duration of up to one year time.

The F2P module will use the sales order document to create a production order, which specifies the materials, resources, and routing required to produce the product. The production order is then used to schedule production activities and to track progress throughout the production process.

In addition to managing production processes, SAP also provides tools for managing inventory levels and procurement activities. The Procure to Pay (P2P) module can be used to manage inventory levels, track material movements, and automate procurement processes.

3.1.2.2 Process Diagram



3.1.2.3 Activity List

The following activities are performed:

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation	Tcode	FIORI APP
P000	ED-12_010201	Start	P100	Start				
P100	ED-12_010201	Creation of the Quotation – Refer to PDDs for L2C for detailed steps	P200	Process	Internal Sales Representatives	Partially Manual		
P200	ED-12_010201	Follow On Activities on Quotation including Revisions / Additions / Deletions – Refer to PDDs for L2C for detailed steps	P300	Process	Internal Sales Representatives	Partially Manual		
P300	ED-12_010201	Creations of Sales Order as per Definite Customer Contract and Confirmation	P400	Process	Internal Sales Representatives	Partially Manual		
P400	ED-12_010201	Approval of Sales Order and Delivery Schedule	P500	Approval	Internal Sales	Partially Manual		

					Representatives		
P500	ED-12_010201	Dependent Requirement Calculation on Sales Order Items	P600	Process	Material Planner	Automated	
P600	ED-12_010201	Dependent Requirement Calculation on Component items of Sales order items	P700	Process	Material Planner	Automated	
P700	ED-12_010201	Sales Order item quantity netting against the applied strategy	P800	Process	Material Planner	Automated	
P800	ED-12_010201	Revisions / Additions / Deletions to Sales Order	P400 P130 0	Process	Internal Sales Representatives	Partially Manual	
P400 P900	ED-12_010201	Re-approval of Sales Order Changed Line Items	P100 0	Approval	Internal Sales Representatives	Partially Manual	
P500 P1000	ED-12_010201	Dependent Requirement Re-Calculation on Component items of Sales order items	P110 0	Process	Material Planner	Automated	
P600 P1100	ED-12_010201	Dependent Requirement Calculation on Component items of Sales order items	P120 0	Process	Material Planner	Automated	
P700 P1200	ED-12_010201	Sales Order item quantity netting re-adjustment against the applied strategy	P130 0	Process	Material Planner	Automated	
P1300	ED-12_010201	MRP Run	P140 0	Process	Material Planner	Automated	
P1400	ED-12_010201	MRP Re-Run for any iteration	P150 0	Decision	Material Planner	Automated	
P1500	ED-12_010201	Analyse MRP Results	P160 0	Process	Material Planner	Partially Manual	
P1600	ED-12_010201	Onward Execution of Production Planning Process based on MRP results	P170 0	Process	Production Planner	Partially Manual	
P1700	ED-12_010201	Onward execution of Sales Execution process based on sales order	P190 0	Process	Warehouse Manager	Partially Manual	
P1800	ED-12_010201	System enablement to tag Stock produced against	P190 0	Process	Material Planner	Automated	

		sales order item (against individual sales order and its line item)						
P1900	ED-12_010201	End		End				

3.1.3 Project based Demands (ED-12_010202)

3.1.3.1 Business Process Description

Specializing in the defence equipment manufacturing, EDGE has a large scope for engineer to order against customer requirements. Engineer-to-order is a specialized scope that requires each customer order to be handled as an independent project with customized items and customized components. In certain cases, it may require specialized processes and compliances, thus impacting the BOM as well as the routing structure of the core product.

The projects in SAP PS are assigned a project code in the PS module and are structured on Work Breakdown Structures (WBS Elements) and Networks. WBS elements are organizational structures that are specific to the project and provide a structured direction and sequencing of the project activities that are to be carried out. The work breakdown structure (WBS) is a model of the project that organizes project tasks into a hierarchy. The WBS coding structure is followed from the A2D PDD.

In SAP PS system, a network is used to contain the information for activities that are required in controlling and managing tasks for delivery of a structured project. Network is defined as work order that has a structure in common with production, maintenance, and inspection orders. These tasks form the basis for further logistics planning and execution processes within a project. Materials are assigned to the Network Activity under the WBS.

In connection with EDGE, A2D team will create a Project and WBS element for the finished Product. All the activities related to Project can be tracked with reference to the WBS element in S/4 system. The requirement of materials set out against the networks in WBS Elements will be read by the systematic MRP run. EDGE requires MRP to be run for WBS element as per the project structure built by the user. This will explode the network and create the requirement and receipt elements for the entire Bill of material at the right WBS Elements.

Material for a project can be managed in general plant stock or in individual project special stock, both will be acceptable for EDGE requirements of handling stock against customer projects.

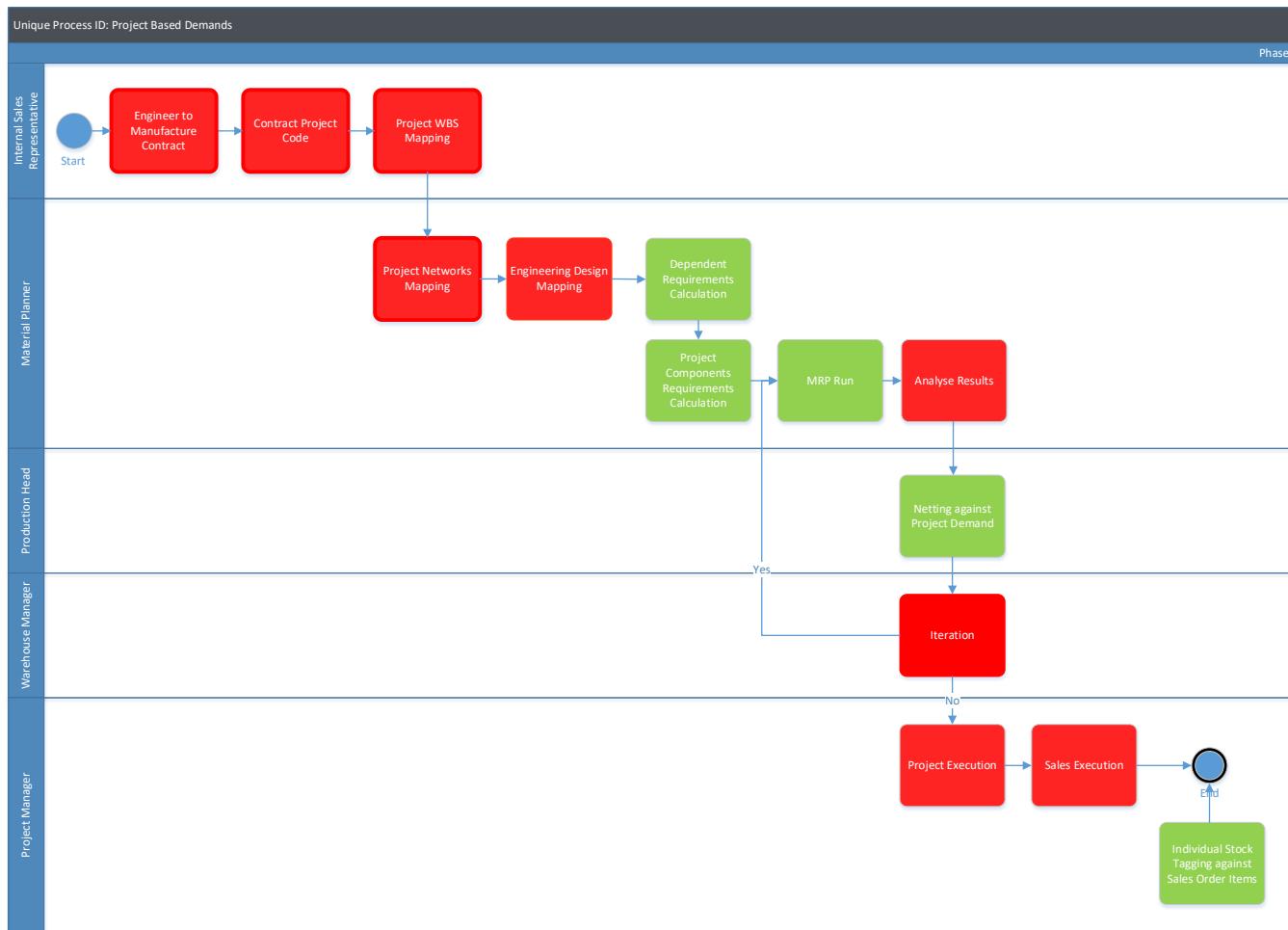
With individual stock EDGE can follow materials that are required for a project with regards to stock levels and MRP separately.

All projects require iterations and therefore simulations in projects will be required. Simulations should be carried out with proper versioning of each iteration. Simulation versions allow to simulate changes with regard to the project objects, planned costs and dates without affecting the operative project. Up to 5 planning versions should be possible to allow for iterations and approvals.

EDGE Material Planner can:

- Create a simulation version for a project by either transferring data from operative project or completely independently
- Open a simulation version and monitor different sets of dates and attributes of the project objects

3.1.3.2 Process Diagram



3.1.3.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation	Tcode	Fiori
P000	ED-12_010202	Start	P100	Start				
P100	ED-12_010202	Book a Customer Contract	P/200	Process	Internal Sales Representatives	Partially Manual		
P200	ED-12_010202	Create a Project Code against the Customer Contract – Refer to A2D PDD for detailed steps	P300	Process	Internal Sales Representatives	Partially Manual		
P300	ED-12_010202	Build the WBS Elements for the Project structures -- Refer to A2D PDD for detailed steps	P400	Process	Internal Sales Representatives	Partially Manual		
P400	ED-12_010202	Assign Networks of Tasks to be performed and materials to be purchased -- Refer to A2D PDD for detailed steps	P500	Process	Material Planner	Partially Manual		
P500	ED-12_010202	Build List of Materials and Components as per the Engineering Design in WBS specific BOM	P600	Process	Material Planner	Partially Manual		
P600	ED-12_010202	Dependent Requirement Calculation on Project Items	P700	Process	Material Planner	Automated		
P700	ED-12_010202	Dependent Requirement Calculation on Component items of Project items	P800	Process	Material Planner	Automated		
P800	ED-12_010202	MRP Run	P900	Process	Material Planner	Automated		
P900	ED-12_010202	Analyse MRP Results	P1000	Process	Material Planner	Partially Manual		
P1000	ED-12_010202	Project item quantity netting against project stock	P1100	Process	Production Head	Automated		
P1100	ED-12_010202	MRP Re Run for any iteration	P1200	Process	Warehouse Manager	Automated		
P1200	ED-12_010202	Analyse MRP Results	P1300	Process	Material Planner	Partially Manual		
P1300	ED-12_010202	Onward Execution of Project Process based on MRP results	P1400	Process	Project Manager	Partially Manual		
P1400	ED-12_010202	Onward execution of Sales Execution process based on the project deliverables	P1600	Process	Project Manager	Partially Manual		

P1500	ED-12_010202	System enablement to tag Stock produced against sales order item (against individual sales order and its line item)	P1600	Process	Project Manager	Automated	
P1600	ED-12_010202	END		END			

3.2 Resource planning

EDGE requires resource planning to a level where suitable resources are assigned against demands irrespective that the demands are coming from the Projects, Customer Orders, Forecasts or even Maintenance scenarios.

While Material Requirements Planning (MRP) will address the coverage of demand by supply elements (for example, inhouse production orders and purchase requisitions for procurement) without considering the available capacity in EDGE; Resource planning will support the MRP planner in changing the production plan manually in such a way that the capacity constraints are considered while keeping the demands in time and quantity in mind.

3.2.1 Machine & Labor capacity (ED-12_010203)

3.2.1.1 Business Process Description

Production capacity needs to be mapped in terms of the maximum production capacity that can be produced using available resources in a production line. The Resources are referred as the machines or the labour that is used for production, it can also refer to the production lines or production floors where the line / floor provides a collective output. For our reference in EDGE, we will use the term Work Centre or Resource to denote machine and personnel.

The sequential steps of operations to be performed to fully complete the production of each unit of a particular material, described and referred in the process as Routing is required in the system to map the resources that will be used and the activities that will be performed.

Work Centre capacity is mapped using time intervals that a resource is available during a normal day of production. This time interval will be required to be mapped against the units of production of each individual material producible in the available time units. The time interval it takes to produce each unit of the material is mapped using the activities required to be performed on each work center in order to fully complete the production of each unit of a particular material.

The following flow of mapping is required in the SAP S4 Systems for resource capacity planning:

- Material

- Routing
 - Work Centre
 - Activities
 - Time Intervals

For EDGE, the capacity definition is how much capacity is available for a work centre. The Planners will be required to manage this definition for instance, by reducing the work time or by including additional work time in shifts. The capacity loads are required to be visible on each work center.

For the case of NIMR, an exception is added in section 6.1.

The purpose of resource planning using work centre planning is to enable the planners at EDGE to compare the available and required capacities, thereby identifying the issues that need to be resolved.

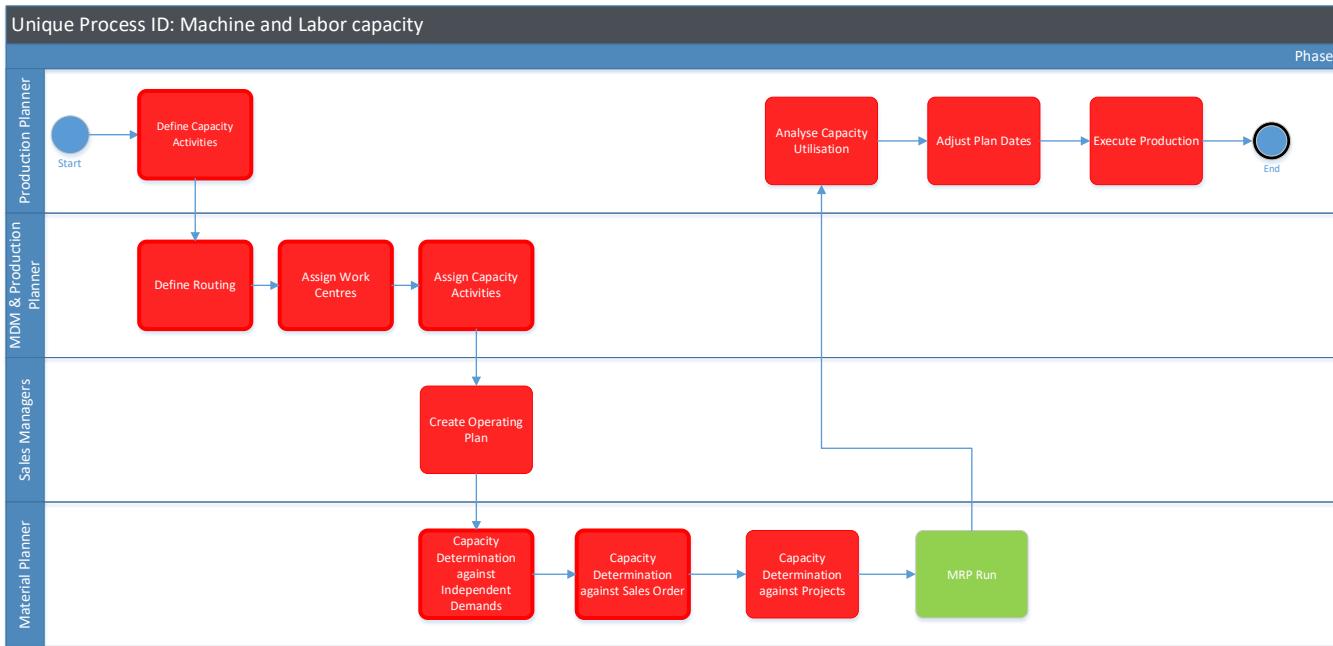
The planners at EDGE will require the work centre resource planning tools that enable them to:

- Filter and select the orders to be planned by using different search criteria.
- Decide where (the source) and when (the dates) the orders need to be planned.
- To distribute work in internally processed activities of a project to personnel resources according to periods. Workforce planning requires a project view or a work center view, depending on the responsibilities of the user. In reporting, workforce planning needs to be analyzable from project, work center, and personnel resource views.

Possibility to group work centres based on the same line or on the alternate work centres, to carry out the same work. This gives the capability to assess aggregated capacities across work centres and enables easy decision making.

A combined approach to material and resource planning is to enable production planners to identify capacity issues related to demand-driven materials and to solve them early in the planning process.

3.2.1.2 Process Diagram



3.2.1.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation	Tco de	Fi or i
P000	ED-12_010203	Start	P100	Start				
P100	ED-12_010203	Define Work Centre Capacities using Capacity Activities – Refer PDD 8.4 for detailed steps	P200	Process	Production Planner	Partially Manual		
P200	ED-12_010203	Define Material Routings – Refer PDD 8.4 for detailed steps	P300	Process	MDM & Production Planner	Partially Manual		
P300	ED-12_010203	Allocate Work Centres on Material Routings – Refer PDD 8.4 for detailed steps	P400	Process	MDM & Production Planner	Partially Manual		
P400	ED-12_010203	Assign Capacity consuming Activities in Routing for each material – Refer PDD 8.4 for detailed steps	P500	Process	MDM Production Planner	Partially Manual		
P500	ED-12_010203	Creation of Annual Operating Plan through Forecasts	P600	Process	Sales Managers	Human Triggered		
P600	ED-12_010203	Forecasting anticipated demand of capacity coming through independent requirements	P700	Process	Material Planner	Human Triggered		

P700	ED-12_010203	Forecasting anticipated demand of capacity coming in through sales orders	P800	Process	Material Planner	Partially Manual		
P800	ED-12_010203	Forecasting anticipated demand of capacity coming in through projects	P900	Process	Material Planner	Partially Manual		
P900	ED-12_010203	Run MRP	P1000	Process	Material Planner	Automated		
P1000	ED-12_010203	Determine and analyse capacities planned to be consumed against the production schedules in the MRP generated plan orders	P1100	Process	Production Planner	Partially Manual		
P1100	ED-12_010203	Adjustment of planning dates	P1200	Process	Production Planner	Partially Manual		
P1200	ED-12_010203	Onward execution of production process based on adjusted or system proposed schedules	P1300	Process	Production Planner	Partially Manual		
P1300	ED-12_010203	END		END				

3.3 Execute MRP Run & Monitor Material Replenishment

3.3.1 Process Description

For EDGE, all the Manufactured products, long lead time raw materials and spare parts material are planned in response to the MRP run, output of the MRP simulations and executions will be planned order and purchase requisitions based on MRP settings in the Material Master. Based on these settings, MRP will raise automatic purchase requisitions for such engagements that require subcontracting.

The main function of material requirements planning is to guarantee material availability, that is, it is used to procure or produce the requirement quantities on time both for internal purposes and for sales and distribution. This process involves the monitoring of stocks and particularly the automatic creation of procurement proposals for purchasing and production through MRP.

To achieve this Material Requirement planning considers:

- Demand (Internal, external demand and Planned Independent Requirement created)
 - Available Stocks (stock reservations, stocks on order & in quality inspection) and in-transit orders
- It then creates the replenishment proposal based on the net demand.

At EDGE MRP will run at the plant level and MRP Area level as it suits the business requirements of all four entities.

Special sub-processes within MRP planning

MRP Area – The MRP Area represents organizational unit for which material requirement planning is carried out independently. There are two types of MRP Areas

- 1) plant MRP Area – The plant MRP Area initially contains plant together with all its storage locations and subcontracting stock.
- 2) MRP Area storage location – MRP Area that consists of a particular storage location. Material requirement for this storage location is planned separately by creating an MRP Area and assigning a storage location to it. The MRP Areas for EDGE are covered listed in the KDS_D2S Planning V02 26102022, under the sheet MRP Areas.

Subcontracting with MRP – Is covered later as a separate L4 process

Subcontracting is a form of procurement in which the product to be procured is manufactured by a vendor (the subcontractor) to whom the procuring entity supplies components for the purpose. The procuring entity may provide these components to the subcontractor either directly (using one of its plants), or indirectly (using another of its business partners). When the manufacturing process has been completed, the subcontractor delivers the ordered product (incorporating the components provided) to the ordering party.

Consumption Based Planning

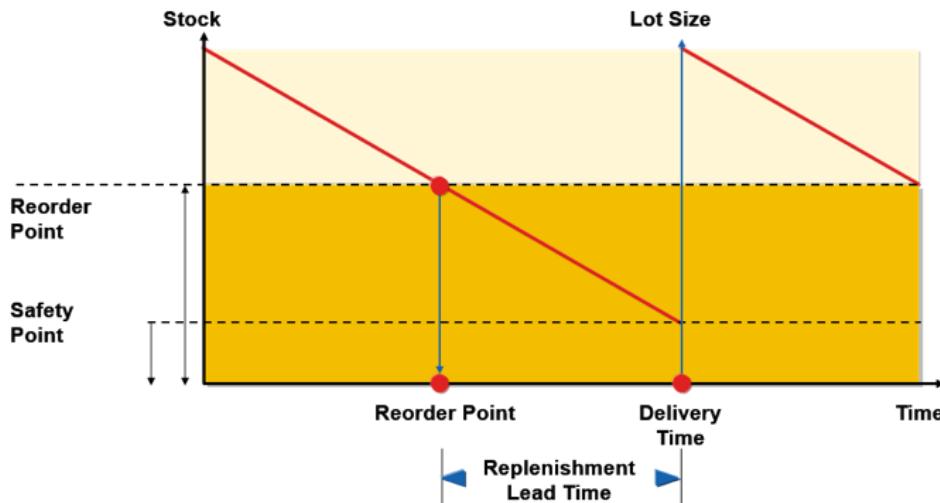
As the name suggest consumption-based planning procedure have no reference to the master plan, that means net requirement not triggered by independent requirement or dependent demand. Instead, the net requirement calculation is triggered when stock levels fall below a reorder point or by forecast requirement calculated based on past consumption. However, these calculations on past consumption patterns or future requirements are done outside the system and the forecasts are fed in the system.

The MRP procedures supported in consumption-based planning are:

- Reorder Point Planning
- Forecast-Based Planning
- Safety Stock Planning

Reorder Point Planning

In reorder point planning, procurement is triggered when the sum of plant stock and firmed receipts falls below the reorder point.



Forecast Based Planning

Forecast-based planning is also based on material consumption. Like reorder point planning, forecast-based planning operates using historical values and forecast values and future requirements are determined via the integrated forecasting program. However, in contrast to reorder point planning, these values then form the basis of the planning run. The forecast values therefore have a direct effect in MRP as forecast requirements.

Safety Stock

Safety Stock is defined as minimum stock level that is maintained in inventory to avoid the item from going out of stock. It is important to maintain minimum stock levels at any time for certain items that are frequently used and have a running demand in the coming periods.

For EDGE it is reorder point planning, in material master MRP1 view, MRP type set as VB, lot size to be defined as either of max stock level or fixed lot size defined. Safety stock to be updated in MRP2 view, during MRP run system will check available stock, whether it fall below reorder point, if it falls below replenish to Max stock defined in the material by generating supply element such as purchase requisition or planner order. In cases of Fixed Lot sizes, the supply element will be split as per the fixed lot sizes as defined in the material master.

One exception to the safety stock consideration is that in NIMR, where safety stock is used but on a statistical comparison basis only. This does not trigger an MRP action. A solution is required to provide for this statistical safety stock figure in any material master field so that it can be captured in data migration stage and is kept up to date in routine maintenance of material master. Further, this safety stock figure will be required in reporting against stock with any over or short status identified at reporting level only. This will not hamper the material planning profile that can be based on Independent / dependent demands, or reorder point based planning.

Monitoring Material Replenishment

During the planning run, the system analyses the requirements that exist for the planned materials and creates procurement elements to cover these requirements. The evaluations in the component PP-MRP-PE show all receipt and issue elements for a material in tabular form and enable the user to gain a quick overview of the stock/requirements situation for the material as well as to branch into the processing function for the MRP elements for this material.

Stock/Requirement List

In the stock/requirements list, the most up-to-date stock and requirements situation is displayed. Stock/requirements lists are not saved in a fixed state in the system but are subject to change and only exist in the working memory.

Pegged Requirements

Pegged requirement's function is required to retrace from any BOM level:

- which requirements are the source of which procurement proposals
- which independent requirements (especially sales orders) are affected if a procurement proposal is cancelled, or a date or quantity is changed on a lower level.

Order Report

The order report shows the associated component requirements and their receipt elements for the selected order or requirement on a multilevel basis.

WBS Element

MRP run at EDGE for WBS Elements is critical for all customer projects. WBS Elements in Projects are mapped at Finished Goods Levels, and therefore any dependant demand planned through MRP will be catered via the master data settings applied for MRP in Material Master. The indicator for individual/collective in the material master MRP4 view drives whether the requirements are to be grouped or to be created as individual supply against each WBS element. If individual/collective indicator is set as 1, then the supply created against the demand and WBS will be copied further down to purchase requisitions, else if it is set as 2, the MRP will aggregate the requirement and create supply element which will not be linked to individual WBS, any component below that specific assembly will also be planned without WBS.

The determination of Individual or Collective indicator by material types is provided in KDS_D2S Planning V02 26102022.

MRP can also be run for specific WBS element. This will explode the network and create the requirement and receipt elements for the entire Bill of material for the item mapped against the WBS. In EDGE planning, the WBS element number can also be entered as input in MRP Planning run to achieve specific WBS element planning results. Planning can be performed for the entire network of the WBS with this planning run. This scenario is to be considered as an exception to the normal process of MRP run, to facilitate such scenarios where MRP run is required to be executed for an individual WBS element specifically.

Report for WBS – Multilevel Order Report are required for review of complete WBS element requirements through a single reporting interface. This is to provide a complete view of requirements component, Requirement date, Requirement quantity at each level of BOM. The receipt elements also to be displayed throughout the WBS showing the requirement fulfilment. In case of any issues in the requirement fulfilment, exception messages are to be displayed.

The detailed activities performed during this business process execution are as below:

Process Prerequisites for MRP Run

- For the material which is being planned should have a valid MRP type (e.g., PD) in the material master MRP settings, the list of MRP type applied on different Material types is referred in Sheet 1, KDS_D2S-Planning_V02 26102022.
- MRP planning parameters which are governing MRP run and covered in detail in Sheets 01 – 44 in KDS_D2S- Planning_V02 26102022 should be maintained in MRP settings, and Work Scheduling settings of material master data.
- The material which is getting planned should have/part of a valid bill of material.
- The master data like production version (Routing and BOM) should be available for all the materials which are getting planned in the MRP run.

Process Steps

The system calculates net requirements for all the requirement quantities that are to be planned. The system thereby compares available stock and the receipt elements (Purchase requisition/ Order, planned /Production order with requirements (Demand). In the case of a material shortage, that is, if the available stock (including firmed receipts) is smaller than the quantity required, the system creates procurement proposals.

The system calculates the quantity required and the procurement proposals are generated according to the lot sizing procedure maintained in the material master MRP1 view.

The procurement proposal is also scheduled which means that, for materials procured externally, the delivery and release dates are determined, and for materials produced in-house, the production dates are calculated.

For materials produced in-house, the dependent requirements of the components are determined during the BOM explosion. For each component, the dependent requirements date is displaced by the in-house production time of the higher-level material. Material will be planned in backward scheduling which is maintained in the customization for the plant and production order type.

Additional requirements (Planned independent requirement) created by the business will be planned by MRP.

The MRP run takes with reference to planning strategy maintain in MRP3 view and plans accordingly as make to order or make to stock.

The parameters of the planning strategy are defined in the KDS_D2S-Planning_V02 26102022.

Evaluate MRP results

The MRP results can be seen in the stock/requirement list (MD04). The receipts can be seen with reference to requirements. The exception messages are also displayed in the result list. The MRP planner will have an option to take the corrective actions and process the procurement proposal.

Carrying out Planning Run

Automatic Planning Run: The automatic planning run in MRP determines any shortages and creates the appropriate procurement elements. The system generates messages for critical parts and unusual situations so that users can rework the planning results in the specific area with problems. Planner will have an option to run “MRP LIVE”.

Indicative values for some important parameters which governs the MRP run in SAP

Sr No	Description	Finished Good	Semifinished	ROH
1	Base Unit of Measure	Based on Business Input. It can have EA, number, percentage, Length etc.	Based on Business Input. It can have EA, number, percentage, Length etc.	Based on Business Input. It can have EA, number, percentage, Length etc.
2	MRP types	X0 =>W/O MRP, with BOM explosion	X0 =>W/O MRP, with BOM explosion, if it is manufactured material and long lead time, critical products, spare parts etc, If Assy is relevant for material subcontracting, MRP type = PD and Assy below to subcontracting also set as PD.	PD => MRP VB – consumption-based planning.
3	MRP Controller	MRP Controller based on Entity	MRP Controller based on Entity	MRP Controller based on Entity
4	Purchasing Group	NA	Purchasing Group	Purchasing Group
5	Lot Sizing Procedure:	EX-Lot for Lot	EX-Lot for Lot	HB - Replenish to Max Stock for consumption-based planning EX – lot for lot
6	Planning Strategy	Combination of below strategies used Z2 – Combined strategy (primary – 40, secondary – 20 and 21)	Combination of below strategies used Z2 – Combined strategy (primary – 40, secondary – 20 and 21)	Z2 – Combined strategy (primary – 40, secondary – 20 and 21)
7	Procurement Type	E- Inhouse	X- Both Inhouse and External E- Inhouse Note: If use 'X', during planning if any one source of supply to be selected, need to set the priority in S4 else planning engine will pick up	F- External

			source supply based on earliest available.	
8	Special Procurement	NA	30 – for material subcontracting with 3rd party vendor	NA

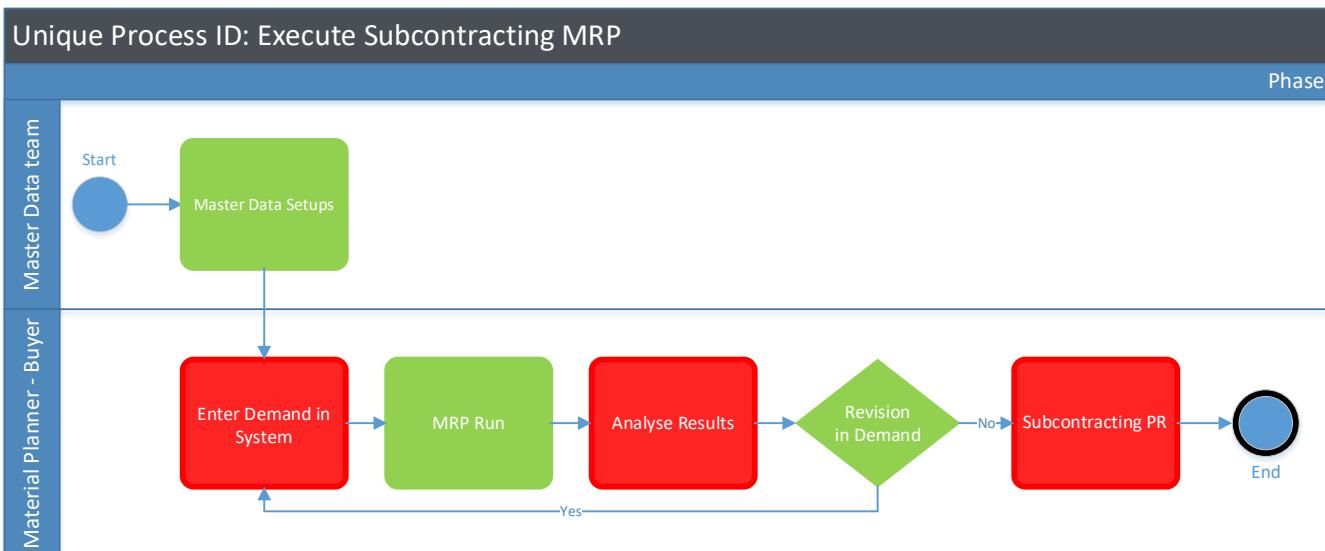
3.4 Execute Subcontracting MRP

3.4.1 Business Process Description

In subcontracting, the vendors are provided with materials (components), which they use to produce the finished product. The material subcontracting process starts with settings in material master, with special procurement key set to Subcontracting. Production version to be created with linking of BOM. Assign this production version to subcontracting info records.

Subcontracting components to be planned with subcontracting MRP area (subcontracting vendor as MRP area) and without MRP area. In addition to the above two case, the following scenarios also applicable in subcontracting, material issued directly to subcontractor by the vendor and material issued from another plant.

3.4.2 Process Diagram



3.4.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation	Tco de	Fi ori
P000		Start	P100	Start				

P100		Setup Master Data - Material master, BOM, Production version and info Record	P200	Process	Master Data team	Automated	
P200		Demand (dependent Demand or Direct demand from Sales Order/Planned Independent Requirement)	P300	Process	Material Planner - Buyer	Partially Manual	
P300		Execute MRP	P400	Process	Material Planner - Buyer	Automated	
P400		Review MRP Issues and Alerts	P500 P600	Process	Material Planner - Buyer	Partially Manual	
P500		Re-run MRP if needed after fixing the issues	P600	Decision	Material Planner - Buyer	Automated	
P600		Review the subcontracting Purchase requisition in MD04	P700	Process	Material Planner - Buyer	Partially Manual	
P700		End		End			

4. DETAILED SOLUTION DESIGN

4.1 Demand Planning

In Advantage SAP S/4 HANA system demand planning is a tool which help business to perform forecasting and planning demand for EDGE's products and services. It helps EDGE to optimize their supply chain operations by providing accurate demand planning forecasting and planning capabilities.

In S/4 HANA demand planning business can generate demand forecast based on the historical data, market demand and other factors. System allows users to simulate different scenarios and run what-if analysis to identify potential risk and opportunities in their supply chain. For EDGE this forecasting based on the historical data or market demand is outside SAP and final demand entered in SAP in the form of Planned Independent requirement. EDGE can simulate the impact of demand in the supply chain by what-if analysis. Make to order Sales order and WBS driven sales order are demand of the saleable product which will act as demand, if the material have planned independent demand linked to same WBS as sales order and sales orders are within backward and forward consumption horizon defined in the material master then the demand will be netted and netted demand will be the input for the material requirement planning in subsequent steps.

EDGE can also have demand created from Work breakdown (WBS) in the form of network order, when project team is releasing the demand to production or procurement before the actual sales order is created, such case network order/PIR created from WBS act as demand, if planned order or purchase requisitions created from WBS will act as supply elements and subsequent components will be planned.

4.1.1 Planning strategy

Planning strategies represent the business procedures for the planning of production quantities and dates. A wide range of production planning strategies are available in the SAP system, offering many different options ranging from pure make-to-order production to make-to-stock production. Depending on the strategy you choose, you can:

- Use sales orders and/or sales forecast values to create the demand program
- Move the stocking level down to the assembly level so that final assembly is triggered by the incoming sales order
- Carry out Demand Management specifically for the assembly

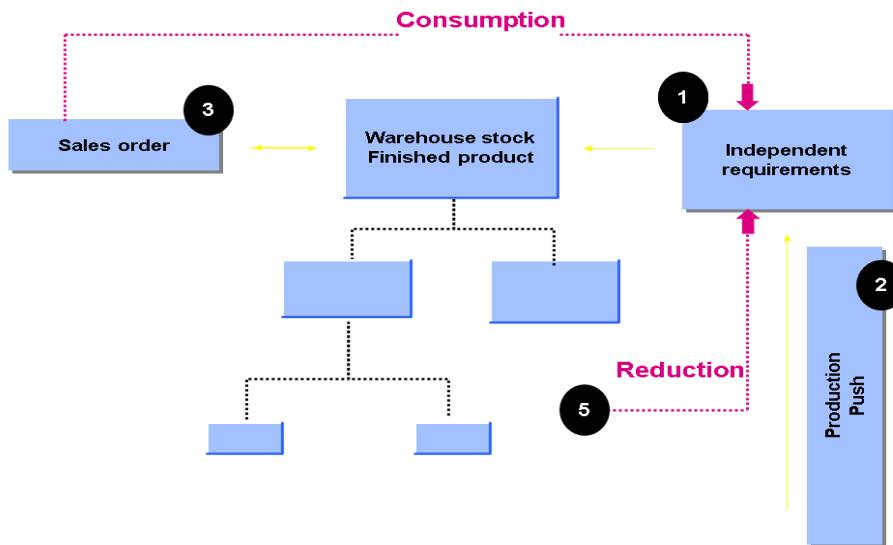
Based on the requirement description mainly make to stock (planning with assembly), make to order and project driven make to order demand are driving the supply planning.

4.1.1.1 Planning with final Assembly (40)

It makes sense to use this planning strategy if you can forecast production quantities for the final product.

Planned independent requirements are consumed by incoming sales orders so that the master plan is always adjusted to suit the current requirements situation. This means that the important feature of this planning strategy is that you can react quickly to customers' requirements. The smoothing of the master plan is less important.

Process flow



Planned Independent requirements are entered at the finished product level and trigger the production and procurement of the necessary assemblies and components before receipt of the sales order.

Planned independent requirements can be created based on the forecasting or any other reference.

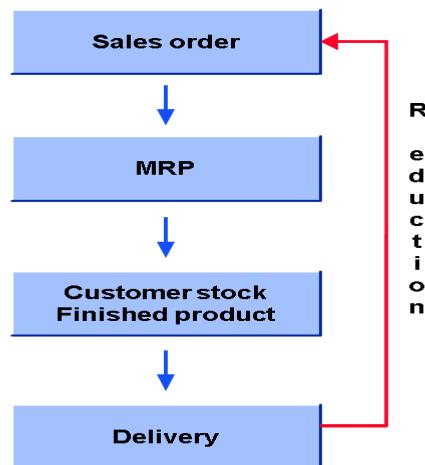
As soon as sales order is received, it consumes the planned independent requirements. You can then compare the planned independent requirements situation and actual customer requirements.

ATP check is performed during sales order processing, system checked whether sufficient planned independent requirements have been planned to cover the sales order.

Requirement form sales order passed on to production and lead to changes made to procurement if the requirements from the sales orders exceeded the planned independent requirement quantities. Orders are taken as they come. This strategy represents a production procedure in which each product is only produced once, although over time the same or similar production processes are repeated. Each product is specifically produced for an individual customer so that the finished product is rarely placed in stock.

4.1.1.2 Make to Order Production (20) / Make to Order Production/Project settlement (21)

In make to order production, products are produced specifically for an individual sales order. There is no demand management nor allocations involved. Orders are taken as they come. This strategy represents a production procedure in which each product is only produced once, although over time the same or similar production processes are repeated. Each product is specifically produced for an individual customer so that the finished product is rarely placed in stock.



1. The sales order quantities are planned for production using the sales order number. The quantities produced for the individual sales orders cannot be changed. Each quantity is maintained specifically for the individual sales order. A separate segment is created in the MRP list for make-to-order production.
2. Starting from the sales order, you can apply this type of planning to as many levels of the BOM as you want. Assemblies and components are produced or procured specifically for the pegged order and stock is managed separately for this sales order.
3. The production and procurement costs are maintained for each sales order in either a settlement order or in a project at sales order item level. This ensures a detailed analysis of the planned and actual costs.

Based on the section 3.1 EDGE entities HALCON, AL-TARIQ, NIMR and ADASI, have combination of make to stock and make to order and project scenarios are existing, but primarily the business is creating sales order with respect to make to order production with project settlement. So, the combination strategies with 40, 20 and 21 are suitable for the EDGE scenario. While creating the planned independent requirement, business can create demand with or without linking to WBS, which will help business to plan the components in advance, once sales order is received planned independent requirement (PIR) will be consumed by sales order if it within consumption horizon (from material master) and it is in same WBS level. For EDGE strategy group Z2 is created which is combination scenario and it should be updated in all the planning relevant material codes.

4.1.2 Planned Independent Requirement (PIR)

Planned independent requirements are used to perform Demand Management functions. A planned independent requirement contains one planned quantity and one date, or a number of planned independent requirements schedule lines, that is, one planned quantity split over time according to dates.

There are different Fiori apps available to create PIR, but for EDGE the PIR is linked to WBS, it needs to be created from App Create PIR (MD61). With this app, you can create planned independent requirements that are used as an estimation of the future demand for a particular product or service in material requirements planning (MRP).

 Create Planned Independent Requirements: Initial Screen

User Parameters More ▾

Planned Independent Requirements for

Material:

Product group:

Requirements Plan:

Ext. Req. Plan:

MRP Area:

Plant:

Define Version

Version: Requirements Plan

Planning Horizon

From: To: Planning period: Month

Planned Independent Requirement to be created with respect to requirements plan as you are using WBS reference and same material plant combination can have more than one WBS linked demand. In requirements plan some of the alpha numeric combinations are reserved for SAP, it is better to use to WBS (internal number), as reference to create PIR or any other reference naming, it also helps to get complete list of PIR's created under same WBS.

Plant/MRP area – Plant or MRP area in which the independent demand is creating.

Version – Demand version number, using this you can distinguish between PIR with different reference such as sales plan, production plan etc. For EDGE default is '00' as it is set active planning version, but they can use other available versions and do comparative analysis.

Planning horizon – Define your planning horizon in which you wanted to enter the independent demand.

Planning period – Indicate the period bucket in which you are entering the independent demand, EDGE can choose between week or month or day, it is recommended to use lower period bucket than higher period bucket.

Requirements Pl: TEST

Planning start: 03.04.2023 Planning End: 07.05.2024

Table Items Schedule Lines

Material	MRP...	V	A	WBS Element	BU	M 04.2023	M 05.2023	W 20.2023	W 22.2023	M 06.2023	W 23.2023
<input checked="" type="checkbox"/> IBPSUBCON200	01	00	<input checked="" type="checkbox"/>	EDG10.00001.01	PC			1	1		1
<input type="checkbox"/> IBPSUBCON201	2901	00	<input checked="" type="checkbox"/>	EDG10.00001.01	PC			1	1		1
<input type="checkbox"/> SIT1FG101	2901	00	<input checked="" type="checkbox"/>	TEST1234	EA			100			

Page: 1 / 2

Enter the material, MRP area, further select the line and press additional data

Indep. Reqmts: Additional Data

Strategy Group: Z2 Make-to-order production

Reference:

History: Active

Acct Asst Cat.

Consumpt.ind.: 1 Consume only with customer requirements

Planning Calendar:

Fi.Year Variant:

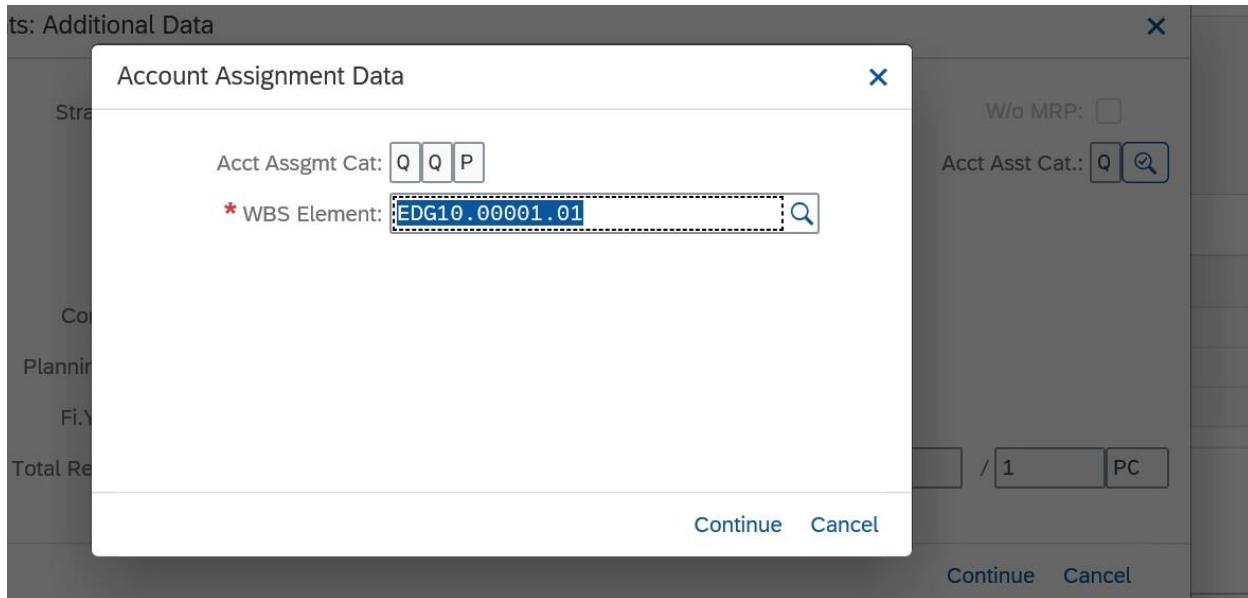
Total Reqmts Value: 3,200.00 AED

Price: 100.00 / 1 PC

Continue Cancel

Enter account assignment Category as 'Q'

Then press continue, then specify the WBS.



Once WBS is linked you can enter the independent demand in respective time bucket.

If you are entering PIR for MRP area specify the MRP area which independent demand is creating, else enter plant.

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	ED-12_010201	Start	P200	Start				
P200	ED-12_010201	Create PIR	P300	Process	Production Planner/Material Planner - External Procurement	Partially Manual	MD61	Create PIR
P300	ED-12_010201	Link PIR to WBS (optional)	P400	Process	Production Planner/Material Planner - External Procurement	Partially Manual	MD61	Create PIR
P400	ED-12_010201	Enter demand in specific period bucket	P500	Process	Production Planner/Material Planner - External Procurement	Partially Manual	MD61	Create PIR
P500	ED-12_010201	Save	P600	Process	Production Planner/Material Planner - External Procurement	Partially Manual	MD61	Create PIR
P600	ED-12_010201	End		End				

For production planner “Production planner” and procurement planner “Material Planner - External Procurement” roles can use as it is organizationally different functional role.

Monitor PIR

Fiori App - Maintain PIR, you can use this app to create and monitor planned independent requirements (PIRs) of materials in months or weeks. You can use this information to negotiate rates with your suppliers and, as a result, reduce costs or adjust capacity if needed etc.

You can perform the following tasks:

- Sort and filter the list of materials based on various filters such as reach, accuracy, plant, active version, period indicator
- Determine the reach of your PIRs and find materials with an insufficient reach
- See how accurate your PIRs are for each period
- Create additional PIR versions for each material
- Change a PIR version to active or inactive

Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tco de	Fiori
P100	ED-12_010 201	Start	P200	Start				
P200	ED-12_010 201	Review PIR	P300	Process	Production Planner/Material Planner - External Procurement	Human Triggered		Maintain PIRs
P300	ED-12_010 201	End		end				

For production planner “Production planner” and procurement planner “Material Planner - External Procurement” roles can use as it is organizationally different functional role.

4.1.3 Sales Order

A Sales Order is a contractual agreement between a sales organization and a sold-to party. A sales order contains information on the delivery of a quantity of material for a certain date. For the EDGE scenario sales orders are created at various levels of materials as they have finished good sales and spare parts sales. Details of the sales order processing and different types of sales are covered in Order management PDD document - AdvantEDGE_PDD_D2S_Contract Fulfillment_V0.8

Refer section - 4.1.1.2 Make to Order Production (20) / Make to Order Production/Project settlement (21) for strategy settings, this will be corresponding reference in sales orders. In order to link the component demand and subsequent levels to sales order or project WBS, the material master MRP 4 view parameter individual/collective indicator to be set as 1. If you set this indicator as 2, requirements quantities of the dependent materials are grouped together. If it leaves it as blank, depending on the demand the WBS or sales order the component will be linked to sales order or WBS. Best practice approach it is recommended to define either 1 or 2 in the material master level, as it helps to improve your inventory management. If it leaves it blank, unless closely monitored the stock and demand situation you may end up with unwanted inventory.

Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation *	Tco de	Fiori
P100	ED-07_010 101	Start	P200	Start				
P200	ED-07_010 101	Sales Order in S/4 HANA	P300	Process	Internal Sales Representative	Automated		Manage Sales Orders
P300	ED-07_010 101	PIR in S/4 HANA	P400	Process	Production Planner/Material Planner - External Procurement	Partially Manual	MD 61	Create PIR
P400	ED-07_010 101	If PIR and Sales Order in same level such as same demand WBS and within the same backward and forward horizon defined in the material master?	P500	Process	Production Planner/Material Planner - External Procurement	Automated	MD 04	Monitor Stock / Requirements List
P500	ED-07_010 101	If yes, Demand is netted	P600	Process	Production Planner/Material Planner - External Procurement	Automated	MD 04	Monitor Stock / Requirements List
P500	ED-07_010 101	If no - Total demand is sum of Sales order and PIR	P600	Process	Production Planner/Material Planner - External Procurement	Automated	MD 04	Monitor Stock / Requirements List
P600	ED-07_010 101	Netted Demand	P700	Process	Production Planner/Material Planner - External Procurement	Automated	MD 04	Monitor Stock / Requirements List
P700	ED-07_010 101	End		End				

For production planner “Production planner” and procurement planner “Material Planner - External Procurement” roles can use as it is organizationally different functional role.

4.1.4 Project Based Demand

Project based demand can be in the form of sales order item linked to WBS or network order linked demand. The details of the linking sales order and WBS are covered in the order management PDD - AdvantEDGE_PDD_D2S_Contract Fulfillment_V0.8.

Refer section - 4.1.1.2 Make to Order Production (20) / Make to Order Production/Project settlement (21), how strategy group settings defined, and this will have corresponding impact in sales order. In order to link the component demand and subsequent levels to sales order or project WBS, the material master MRP 4 view parameter individual/collective indicator to be set as 1. If you set this indicator as 2, requirements quantities of the dependent materials are grouped together. If it leaves it as blank, depending on the demand the WBS or sales order the component will be linked to sales order or WBS. Best practice approach it is recommended to define either 1 or 2 in the material master level, as it helps to improve your inventory management. If it leaves it blank, unless closely monitored the stock and demand situation you may end up with unwanted inventory.

Refer the A2D PDD for more details with respect to the project systems - ADVANTEDGE_PDD_A2D_5.3_Project_Execution_v0.2, ADVANTEDGE_PDD_A2D_5.2_Project_Planning_v0.4 these PDD's covering the project planning and other related details.

From the network if the demand created in the form of reservation or PIR system will respect the same plan the additional component requirements. Network can also create direct supply elements such as purchase requisition or planned order; it will be taken into consideration during planning.

4.2 Resource Planning

One of the major objectives for a company is the economic use of work centres. Resource/Capacity planning determines the production capacity that is required to meet the changing demands for your products.

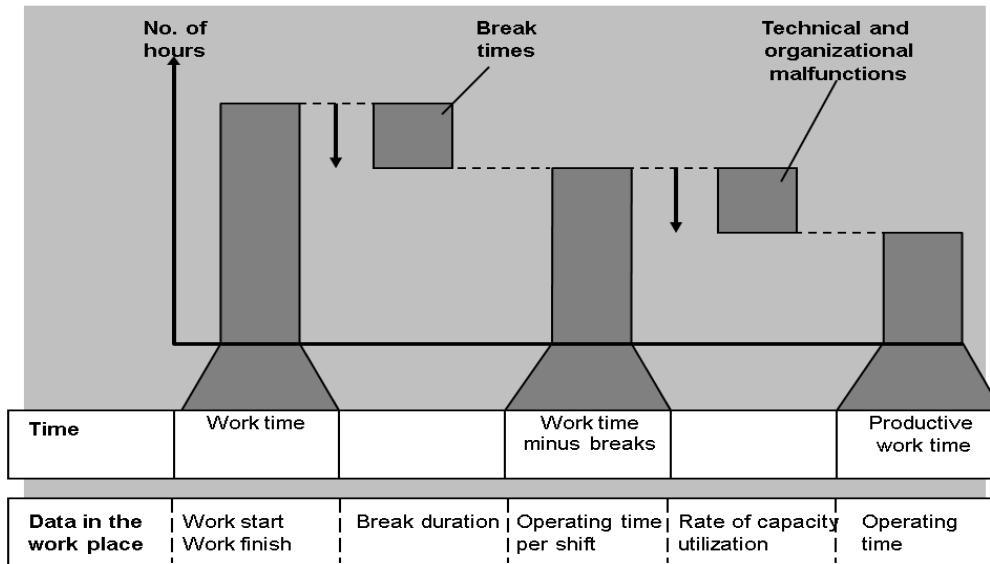
You can store the operating time and the daily available capacity at a work centre in a capacity in the work centre. You identify a capacity at the work centre using the capacity category. Various capacity categories can be assigned to the work centre, for example, a machine capacity or a labour capacity, but each capacity category can only be assigned once.

For every capacity in the work centre, you can maintain a standard available capacity and several versions of available capacity. The standard available capacity has unrestricted temporal validity.

You can specify available capacities that change over time in the versions of available capacity. You can use any units of measure and intervals of available capacity.

The available capacity (see figure below) is determined by:

- Work starts and work finish
- Length of breaks
- Rate of capacity utilization
- Number of individual capacities

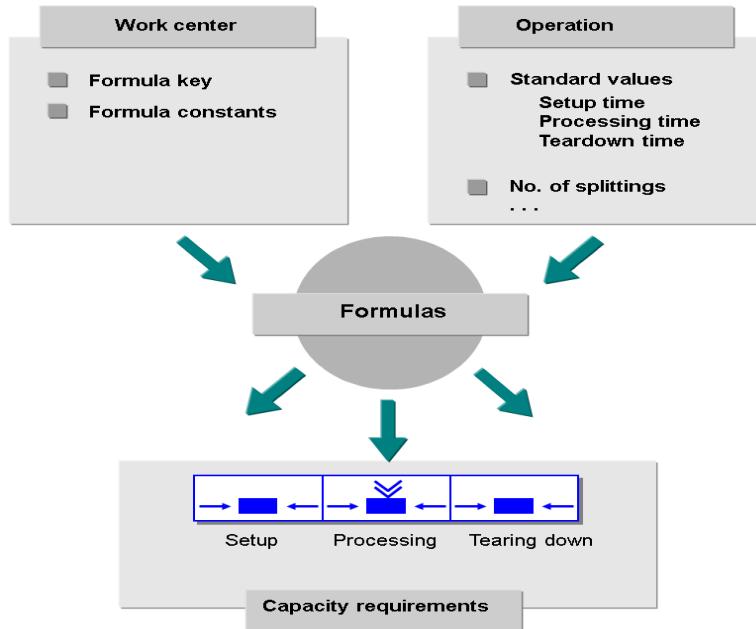


For EDGE the capacity details maintained in the Work centre master, and it will be used in planning, KDS is covered in P2P. The shift and global capacity definition defined in the work centre basic data view. During MRP, capacity is considered as infinitely available and propose the planned quantity. Subsequently below Fiori Apps help to review the capacity overload and manually adjust it in need basis.

Note: For NIMR labour capacity is planned outside SAP, final required capacity updated in SAP Work centre (Refer - AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7 and 84_Advantedge_PDD_P2P_Product Launch_P2_v0.7)

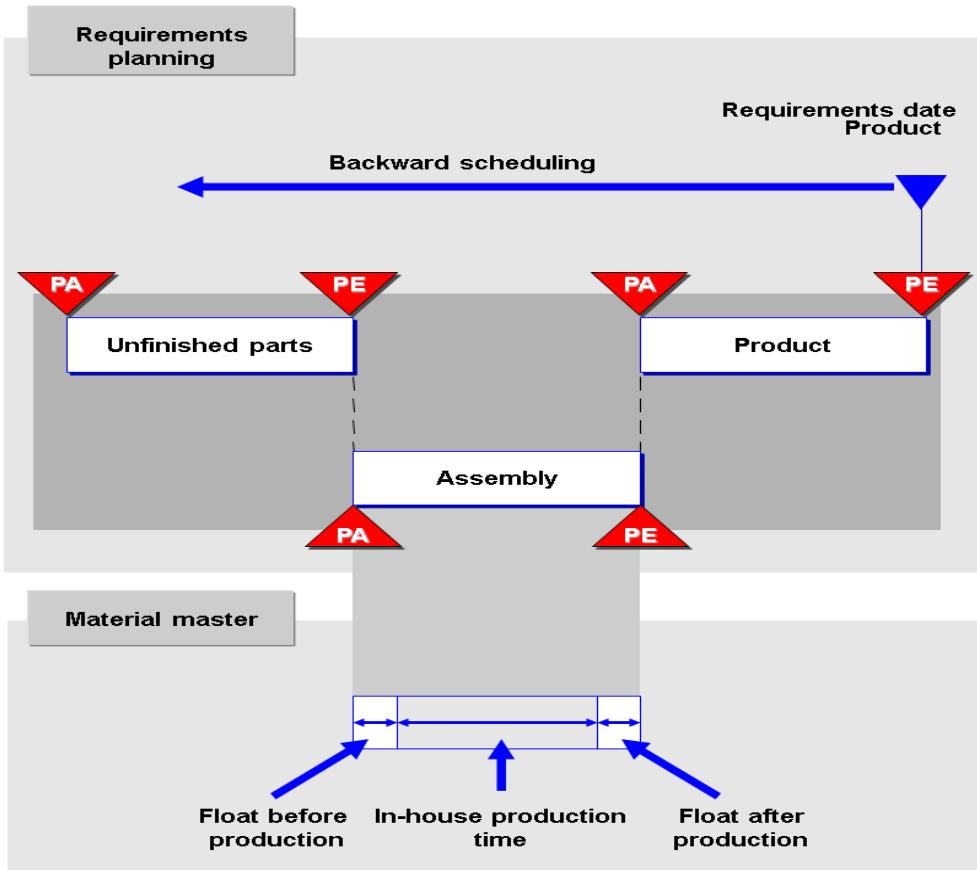
Calculating the capacity requirements of an operation for manufacturing a material takes place in scheduling using formulas from the work centre (work centre formulas are defined in the Workcenter capacity and scheduling views. For this, you must enter a formula to calculate the capacity requirements of the operations for each of the three operation segments setup, processing and teardown on the screen Capacity overview in work centre maintenance. Operations in networks, maintenance orders and process orders are not subdivided into operation segments. Here you specify a formula for the whole operation. If you fail to enter one of the formulas, no capacity requirements are calculated for the relevant operation segment or operation. For EDGE formula requirements are covered in S2P KDS.

If you use formulas with parameters that refer to standard values, you must enter the standard values of individual operations either in the routing or in the order.



Scheduling

In Material Requirement Planning (MRP) basic dates of a planned orders are calculated for every BOM levels. The system uses the in-house production times in the material master. The planning accuracy is carried out to the day.



Capacity Evaluation

You can use capacity evaluations to analyze capacity loads in your company. You can adjust the analyses for each user according to the planning level, planning horizon and the area of responsibility. Available capacities and capacity requirements can be selected according to various criteria and cumulated using any period split you choose.

You can use work center hierarchies to accumulate the available capacities of production work centers and their capacity requirements to superior planning work centers.

The task of material requirements planning is to guarantee material availability. The system calculates which materials must be procured or produced at what time and in what amounts so as to provide the quantities required.

Lead time scheduling and the calculation of capacity requirements in MRP provide the basis for the creation of a master plan that corresponds to capacity planning. This way the MRP controller obtains information about possible bottlenecks and overloads. Before the master plan becomes effective and the planning results affect subordinate BOM levels, the MRP controller can make changes that affect capacity for chosen materials.

Before capacity planning can take place, you must create capacity requirements within lead time scheduling, that is, determine the production dates. The system only generates capacity requirements if it executes lead time scheduling using the times specified in the routing.

Determining Basic Dates: The system carries out a planning run that uses the requirements date to determine the basic order dates. The basic order dates are calculated to the exact day.

The system carries out backward scheduling to determine the basic dates. It starts from the finish date and calculates backwards using the goods receipt processing time and the in-house processing time maintained in the material master and thus calculates the basic start date.

If backward scheduling generates a basic date in the past, then the system automatically switches to forward scheduling and sets the current date as the basic start date.

Lead time Scheduling: Lead time scheduling calculates the concrete production dates. The system uses the times in the routing to carry out lead time scheduling. With detailed scheduling you usually use the routing to carry out scheduling and capacity requirements planning for a BOM level. The lead time is divided up into the operation segments: setup, processing and teardown.

For EDGE can adopt both approach such as basic date and lead time scheduling, but for lead time scheduling routing to be create with right activity durations.

4.2.1 Manage Work Center Capacity

With this app, you can visualize the capacities of work centres, and the load on work centres. The app allows you to detect overload situations along with the cumulative overload situation across the selected evaluation horizons based on bucket (or grouping) types, such as days or weeks. For a work centre, you balance several factors to ensure that you are optimally utilizing its capacity such that there are no overloads across your evaluation horizon, as well as no backlog in terms of orders or operations. With the information provided in the app, you can make informed decisions to achieve this balance.

4.2.2 Capacity Scheduling Table

With this app, you can preschedule your orders to be dispatched from a pacemaker work centre based on its priority. You can select the source of supply (production version) and the work centres to dispatch the orders on the dates that you choose. A work centre with the capacity duration that meets the capacity required to complete the operation gets highlighted for ease of selection. The app uses midpoint scheduling to adjust the operational time (of dispatch, reschedule and so on) according to the strategy that you have set. You can switch production versions when the work centre capacity is insufficient or reschedule orders that are coinciding in a time slot.

4.2.3 Capacity Scheduling Board

With this app, you get an overview of the operations performed at your work centres by visualizing their schedules over a time period. Pacemaker work centres are critical as they help determine the schedule of an order. You can use this app to plan optimum utilization of pacemaker work centres by matching their capacities with those of the orders that have to be dispatched.

4.3 Execute MRP Run & Monitor Material Replenishment

The main function of material requirements planning is to guarantee material availability, that is, it is used to procure or produce the requirement quantities on time both for internal purposes and for sales and distribution. This process involves the monitoring of stocks and, in particular, the automatic creation of procurement proposals for purchasing and production.

MRP procedures

MRP procedure is different MRP process in SAP.

Material Requirement Planning: MRP is carried out using current and future sales figures. The planned and the exact requirement quantities trigger the net requirements calculation. The requirement elements of this calculation include sales orders, planned independent requirements, material reservations, dependent requirements received from BOM explosion, and so on. The net requirements calculation can give the exact requirements for each day.

As you require exact requirement quantities for MRP, this means that you can work with particularly low safety stocks.

Consumption Based Planning: Consumption-based planning procedures have no reference to the master plan. This means that the net requirements calculation is not triggered by an independent or a dependent requirement. Instead, the net requirements calculation is triggered when stock levels fall below a reorder point or by forecast requirements calculated from past consumption data.

The advantage of this type of planning is that it is easy to use, and you do not require extensive data.

The reorder point should cover the average material requirements expected during the replenishment lead time.

The safety stock exists to cover both excess material consumption within the replenishment lead time and any additional requirements that may occur due to delivery delays. Therefore, the safety stock is included in the reorder level.

The following values are important for defining the reorder point:

- Safety stock
- Average consumption
- Replenishment lead time

In reorder planning, to avoid over planning, sales orders, dependent requirement, reservations are not included in the net requirement calculation as these already included in the reorder level. But in certain cases, it is necessary to include these additional demands within the replenishment lead time to ensure no stockout situation. EDGE is also doing spare parts sales, it is better to consider the demand within the replenishment lead time while planning the supply, this will ensure no stock out situation. Separate MRP type ZV created for the same, business can assign it is right material master. MRP type ZV will consider demand such as sales order, dependent demand within replenishment lead time and plan the supply quantity.

For the NIMR specific requirement for maintaining the safety stock in the material, but at the same time it is not required to be considered in MRP planning. We cannot use standard safety stock filled as it triggers supply elements during planning. Workaround is to capture the safety stock value in material class characteristic (ZNIMR_SAFETY_STK). In report from the material class and characteristic value can be read and shown it. Assumption taken list of material characteristics is finalized as part of MDG solution and reporting requirement covered in the EWM.

Material requirement planning and consumption-based planning are two different approaches, we cannot use interchangeably in planning. In reorder point planning, you can consider external demand within the replenishment lead time or entire horizon and create a supply element. In this case supply element is created if total demand is more than your reorder point quantity, then supply element is created for total demand (within replenishment lead time (PDT+GR processing time) or (Inhouse production time +GR processing time.) or all demands (depending on the MRP type configuration)) + reorder point quantity, this is to ensure you are not going below your reorder point.

Net Requirement Calculation

System calculate stock, for EDGE following stock is taken into consideration unrestricted stock and stock in quality inspection, during MRP will consider all goods issues and goods receipts for a material.

Therefore, the system checks to make sure that for each issue date, the requirement is covered by one by one or several receipts or by warehouse stock. If it is not the case system calculate the shortage and create a procurement proposal. The lot sizing procedure, scrap and rounding determine the quantity in the procurement proposal.

Net Requirement calculation for Material Requirement Planning

Plant stock
- Safety stock
+ Receipts (purchase orders, firmed procurement proposals, production orders)
- Requirements quantity (for example, planned independent and customer requirements, material reservations, forecast requirements for unplanned additional requirements)
= Available stock

Net- Requirement Calculation for Reorder based planning.

Plant stock
+ Open order quantity (purchase orders, firmed planned orders, firmed purchase requisitions)
= Available stock

Calculating procurement Quantity

- The system adjusts the determined shortage quantities to match the parameters of the required lot-sizing procedure and thus determines the lot size.
- If you have made an entry for scrap, the system calculates the scrap quantity and settles this against the lot size.
- If you have defined a rounding value or rounding profile, the system rounds up the lot size and thus calculates the procurement quantity.
- If you have made an entry for scrap, the system calculates the scrap quantity again and settles this against the lot size in order to determine the yield.

Scheduling

The system executes scheduling in MRP. During the net requirements calculation, the system determined the shortage quantities and material shortage dates. During the procurement quantity calculation, the system calculated the procurement quantities necessary for covering requirements.

During scheduling, the system determines start and finish dates for the procurement elements of materials that are produced in-house and for materials that are procured externally.

In-house Production

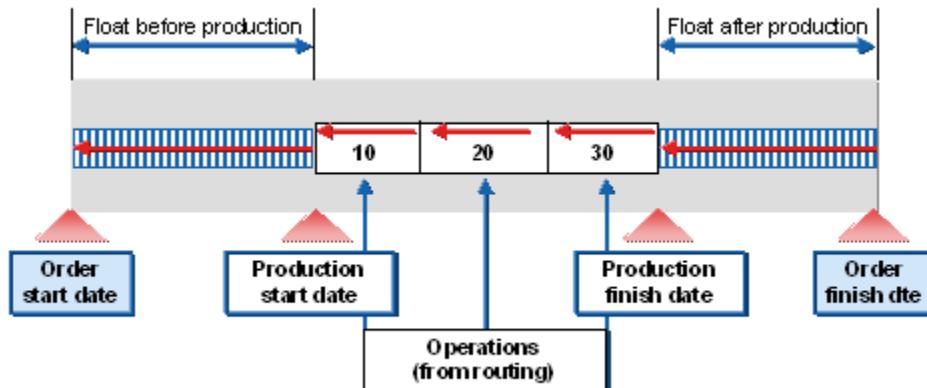
1. The system calculates the basic dates for planned orders.
2. The basic dates are the order finish date and the order start date. The order finish date determines the latest possible date by which production has to be finished and the order start date determines the earliest possible start of production.
3. Basic dates are calculated automatically during every planning run.
4. The system calculates the exact production dates (lead time scheduling).
5. Additionally, capacity requirements are created during lead time scheduling.
6. Lead time scheduling is only carried out on request.

Calculating Production Dates (Lead time Scheduling)

In lead time scheduling, the precise production times, that is, the production start date and the production finish date, are specified for materials that are produced in-house. Capacity requirements are also created during lead time scheduling and the date on which the components must be provided is also determined.

The production dates are determined using the routing. The system hereby uses the floats that are allocated to the material via the scheduling margin key in the material master. These floats include the float before production and the float after production, as well as the extra time factors specified in the routing such as the queue times, setup times, labor times, machine times, and so on.

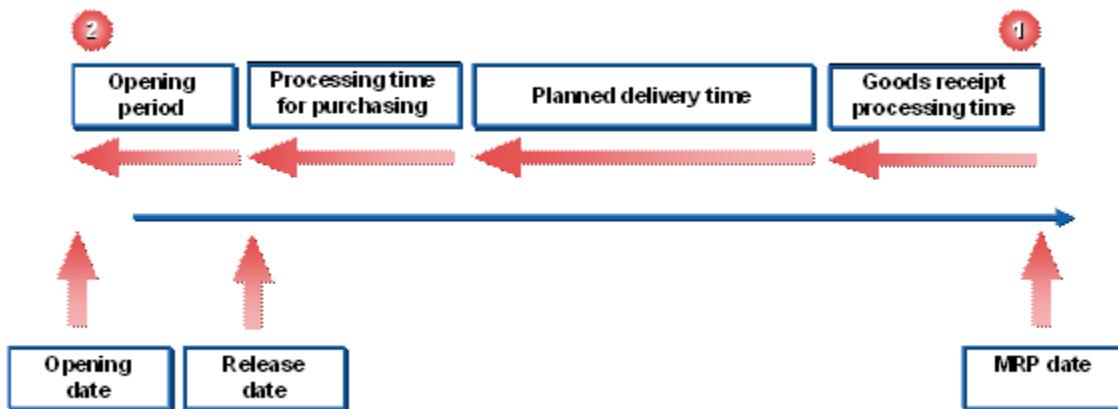
1. The system calculates the float after production using the order finish date and thus determines the production finish date. Starting from the production finish date, the individual operations of the routing are then scheduled backwards. The starting date of the first operation is the production start date.
2. The float after production is the number of workdays that are planned as a buffer between the production finish date and the order finish date. This serves to compensate for interruptions during production to avoid displacing the order finish date.
3. The system checks whether the production start date is later than the order start date.
4. The float before production is the number of workdays that are planned as a buffer between the order start date and the production start date. By using this float, delays in material staging do not cause delays in starting production.
5. The system checks whether the production start date is earlier than the order start date and, if necessary, determines new production dates.



Scheduling for External Procurement

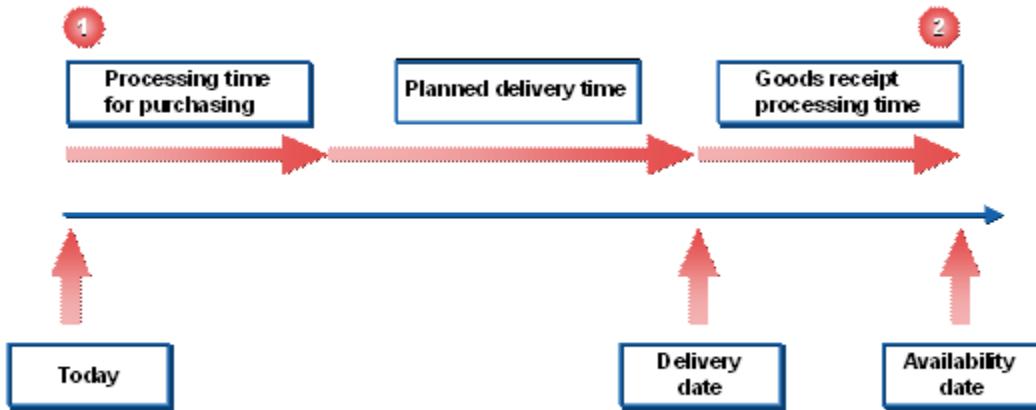
- In the MRP and forecast-based planning procedures, backward scheduling is used to determine the basic dates. In reorder point planning, however, the basic dates are determined by forward scheduling.
- For the planned order this includes the order's start date and the order's finish date.
- For the purchase requisition, the following dates are determined:
- The delivery date (which corresponds to the order finish date)
- The release date (which corresponds to the order start date)

Backward Scheduling for external procurement



For EDGE Planned delivery time and GR processing time reading from material master and processing time is configured as 2 days in configuration HALCON, AL TARIQ, ADASI and NIMR as per the KDS. Opening Date is taken from the schedule Margine key.

Forward Scheduling for External Procurement



Source determination priority during MRP run

MRP select source with following priority

1. Source of supply assigned in Quota
2. Source of supply for which source list entry maintained
3. Schedule line agreement

Contract

Purchasing info records with auto sourcing indicator. If several purchase info records exist, MRP select the one in priority: Purchasing info record with given plant, purchasing info record with smaller supplier number, purchasing info records with smaller purchase organization, purchasing info records with smaller purchasing group.

In short

- Priority=1 for scheduling agreements with given plant.
- Priority=2 for scheduling agreements without given plant
- Priority=3 for contracts with given plant
- Priority=4 for contracts without given plant
- Priority=5 for contracts with given plant but with reference org
- Priority=6 for contracts without given plant but with reference org
- Priority=11 for info record with given plant
- Priority=12 for info record without given plant

Refer SAP note – 2614920.

For manufacturing part number scenario, source list is mandatory, for automatic source determination. Refer SAP note – 2420547.

For the in-house production scenario, production version is only source of supply. During MRP run using MRP live, system validate the production version validity, planned order qty and lot size defined in the production version based on this system select production version, if there are more than one production version matching the condition, selection is based on the least one from production version.

Shelf Life

Shelf-life parameters such as total shelf life, min shelf life etc. are to be maintained in the material master for enabling the shelf life for a material. During the goods receipts, manufacturing date or shelf-life

expectation updated in the batch (Refer D2S EWM PDD - AdvantEDGE_PDD_D2S_Warehouse Management_P2_v0.X). Once the material master is set up, the MRP system considers the shelf life of the products. The system considers the shelf life of the product when generating the planned order and purchase requisitions, ensuring that your order or produce enough material to meet demand while minimizing waste due to required product. Batch level batch shelf expiration will be tracked using report MB5M. Batch shelf-life expiry is not considered during MRP run in S/4 HANA. Based on the alerts, these batches to be identified and take required corrective actions details are covered in the EWM PDD - D2S EWM PDD - AdvantEDGE_PDD_D2S_Warehouse Management_P2_v0.X

Schedule MRP Runs

With this app you can create and schedule a job for executing your MRP runs. To automate the planning process, the MRP run is carried out on a regular basis so you can use this app to create a job that performs this task for you; reducing your workload by running this task smoothly in the background. During the MRP run, the system checks whether current material demand can be covered by current inventory and expected material receipts. In regenerative planning, the system plans all materials irrespective of whether they have been changed since the last MRP run. In net change planning, the system only plans materials that have changed since the last planning run. If current demand is not covered, the system creates planned orders in the case of in-house production and either purchase requisitions or schedule lines for external procurement.

The initial screen is subdivided into three sections:

Planning Scope (Define at least one selection criterion.)

Plant:	<input type="text"/>	
Material:	<input type="text"/>	
Product group:	<input type="text"/>	
MRP Controller:	<input type="text"/>	
Material Scope:	<input type="text"/>	

Also to be Included in Planning

Changed BOM

Components:

All Order BOM

Components:

Stock Transfer Materials:

Control Parameters

Regenerative Planning:

Scheduling: 

Planning Mode:^{*} 

Output Material List (Job Log):

1. The section Planning Scope contains the following fields:

- Plant - You can choose whether you want to plan one or several plants. All MRP areas in the specified plants are planned together. No selection option is available for planning individual MRP areas. The planning run is always performed for the complete plant.
- Material - You can choose whether you want to plan one or several materials.
- Product Group - You can choose whether one or several product groups are to be planned.
- MRP Controller - You can plan all the materials in one or in several plants for one individual MRP controller or for several MRP controllers.
- Material Scope - You can further influence the materials to be included in the planning run. You have the following options to define which materials are to be planned:
 1. All Materials - includes all materials in the planning run that also adhere to the other planning scope settings.
 2. MRP Materials Only - includes all materials in the planning run that also adhere to the other planning scope settings but excludes those materials that have been assigned an MPS MRP type in the material master.
 3. MPS Materials Only - includes materials that have been assigned an MPS MRP type in the material master and that also adhere to the other planning scope settings.

2. The section Included in Planning section contains the following options:

- Changed BOM Components - If you leave this checkbox blank, the system only plans the materials that you selected in the Planning Scope section. If you want to plan the selected materials plus all their components, you must select this checkbox.
- All Order BOM Components - Select this indicator if you want to plan all order BOM components in addition to the materials selected in the Planning Scope section.
- Stock Transfer Materials - If you leave this checkbox blank, the system only plans the locations of the plants that you selected in the Planning Scope section. If you want to plan the selected plants plus their supplying plants, you must select this checkbox.
- The section Control Parameters contains the following options:
 - Regenerative Planning - If you select this checkbox, the system plans all plant materials irrespective of whether they have been changed in some way relevant to planning since the last planning run. If you leave this checkbox empty, the system executes a net change planning meaning that only the materials that have been changed in some way relevant to MRP since the last planning run are included in planning.
 - Scheduling - Determines whether the system is only to calculate basic dates for planned orders, or whether you also want to perform lead time scheduling. You have two options for scheduling:
 - Determination of Basic Dates for Planned Orders

The system also assumes this entry if you leave this field blank. That is, if no entry exists here the system only calculates basic dates for planned orders.
 - Lead Time Scheduling and Capacity Planning

With this setting, the system performs lead time scheduling for planned orders. This includes all planned orders that are new or have been changed or have been re-exploded for the BOM. The system will continue to use lead time scheduling in the future for planned orders that have already undergone lead time scheduling, even if you change this setting back to 1. If, however, you carry out the planning run using planning mode 3 and scheduling mode 1, the system deletes all planned orders that are not yet firmed and creates new ones with basic dates.

In lead time scheduling, the system calculates the precise production times, that is, the production start date and the production finish date for materials that are produced in-house. Capacity requirements are also created and the date on which the components must be provided is determined.

Planning Mode: The planning mode controls how the system is to deal with procurement proposals (planned orders, purchase requisitions, scheduling agreement lines) from the last planning run that are not yet firmed in the next planning run. You have two options to define the planning mode:

- Planning Mode 1: Adapt Planning Data

If the system finds an unfirmed procurement proposal that completely matches a requirement, it reuses this procurement proposal. If the system finds an unfirmed procurement proposal that only partially matches a requirement (for example, the quantity is correct, but the date does not suit the requirement), the system deletes this unfirmed procurement proposal and creates a new one. The system explodes the BOM again for the recreated procurement proposals.

- Planning Mode 3: Delete and Recreate Planning Data

The system deletes all unfirmed procurement proposals and creates new procurement proposals to match the requirement situation.

- Name for Performance Log:

You can define the name of the file under which you can find the performance results of the MRP Live run in the MRP Live Performance Log report. You can enter the name of your choice.

For EDGE plant specific variants can be created and scheduled during weekend as weekly jobs with regenerative planning. Another planning run can be set up daily without regenerative planning, which helps to react to the change in demand and supply situation.

Special Planning Process

1) MRP Area

The MRP area represents an organizational unit for which material requirements planning is carried out independently.

For EDGE storage location MRP areas are created for following scenarios,

- Inventory from specific storage location (SLOC) to be excluded from MRP planning – Set MRP type = ND at the MRP area level material master extension.
- Plan spare parts separately from plant stock – Set appropriate MRP type and other filed parameters at the MRP area level material master.

Subcontracting related to MRP area is not required now as there is no advanced planning tools are used, it is defined to get more clarity on the inventory and stock movements.

2) Cross Plant Planning

For EDGE the current design is one plant linked to one company code and company code to company code sourcing is considering it as sales and procurement scenario. Refer S2P PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7 and ADVANTEDGE_PDD_S2P_P2_Contract Management_v2.7 for more details on the process. As per S2P process this is buy and sales process, so the any sales order created will be a demand for MRP if it set for planning relevant.

3) Subcontracting

In subcontracting, the vendor is provided with materials (components), which he uses to produce the finished product.

Master Data setup:

- a. In Material master MRP2 view special procurement type to set appropriately for subcontracting.
- b. Purchasing master data for the subcontractor to be created such as info records, contract etc.
- c. Link production version with Info records

4) Requirement Grouping for Individual Project Planning

Requirement grouping for individual project planning enables you to group material requirements that are caused by WBS element within project or cross project. Requirement grouping is possible only within the operative WBS.

For EDGE within same WBS, lot sizing procedures are defined like monthly lot size (ZM), yearly lot size (ZY) will help to respect the lot size from material master during MRP run like rounding value.

For cross WBS grouping, based on the WBS master data setup and MRP group combination defined in Project system and lot size MRP can group the supply element.

Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tco de	Fiori
P100	ED-12_01 0201	Start	P200	Start				
P200	ED-12_01 0201	Planned Independent demand	P300	Process	Production Planner/ Material Planner - External Procurement	Partially Manual		Manage PIRs
P200	ED-12_01 0201	Sales Order demand	P300	Process	Internal Sales Representative	Automated		Manage Sales Orders
P200	ED-12_01 0201	Network Demand	P300	Process	Project Manager	Partially Manual		
P300	ED-12_01 0201	MRP Run	P400	Process	Production Planner/ Material Planner - External Procurement	Automated		Schedule MRP Runs
P400	ED-12_01 0201	Run MRP situation job	P500		Production Planner/ Material Planner - External Procurement	Automated		Detect MRP Situations
P500	ED-12_01 0201	Review MRP Master Data issue	P600	Process	Production Planner/ Material Planner - External Procurement	Partially Manual		Display MRP Material Issues
P600	ED-12_01 0201	Review MRP situations	P700	Process	Production Planner/ Material Planner - External Procurement	Partially Manual		Detect MRP Situations
P700	ED-12_01 0201	Re-run MRP if needed	P800	Process	Production Planner/ Material Planner - External Procurement	Partially Manual		Schedule MRP Runs
P800	ED-12_01 0201	End		End				

4.4 Fiori Apps for MRP

- Display MRP Master Data issues:

With this app you can see all issues concerning master data that were detected during an MRP Live planning run. The system displays all the issues and restrictions as well as success messages that were created in the last MRP Live run.

Issues (16)								
	Material	Plant	MRP Area	Issue	Category	Source	MRP Controller	Accepted
<input type="checkbox"/>	Weapons FG01	Emirates Advanced Research	Emirates Advanced Research 3001	⚠️ No valid BOM or No valid production version	BOM Explosion Issue (B)	MRP Live on HANA (H)	PERSON 1 (001)	No >
<input type="checkbox"/>	Weapons-Missile (Air) FG03	ADASI LLC	ADASI PLANT MRP AREA 2901	⚠️ No valid BOM or No valid production version	BOM Explosion Issue (B)	MRP Live on HANA (H)	Standard MRP Cont (001)	No >

– Monitor Material Coverage – Net Segment

With this app, you can monitor all the make-to-stock and collective requirements materials in a selected area of responsibility. You are provided with a list of all materials with net requirements segments that might have coverage issues according to a specified shortage definition. The shortage definitions contain a set of rules that the system uses for calculating the material shortages. These rules define the scope of the shortage calculation meaning the supply and demand elements to be considered and the conditions that have to be met to be a relevant shortage. You can use the default filter Time till Shortage to check the coverage of materials within a specific time frame.

This app provides you with the information that you need to be able to react to the shortage situation on time, meaning that you can avoid disruptions to production or to the fulfillment of customer demands. From this app, you can directly navigate to the Manage Material Coverage app to view details of the selected materials and check different solutions.

Materials (2,125)						
	Material Number	Material Description	Vendor Name	Vendor	First Shortage On	Shortage Quantity
<input type="checkbox"/>	SP001	Bearings			28.09.2022	2 EA
<input type="checkbox"/>	IBPRW107	IBP Raw material (stock transfer) - XO		2 Vendors	28.11.2022	5 EA
<input type="checkbox"/>	SFG21	Strategy 70 Test			28.12.2022	9 PC
<input type="checkbox"/>	RM20004953R2	SPCR			14.12.2022	492 PC
<input type="checkbox"/>	IBPRW100	IBP Raw material 2			14.12.2022	210 EA

– Monitor Material Coverage – Net and Individual Segments

With this app, you can monitor all the materials in a selected area of responsibility. This includes make-to-stock and collective requirements materials, make-to-order and engineer-to-order materials, as well as materials for direct production and direct procurement. You are provided with a list of all materials with a net requirement segment or individual segments. These materials might have coverage issues according to a specified shortage definition. The shortage definition you choose contains a set of rules that the system uses for calculating the material shortages. These rules define the scope of the shortage calculation, meaning the supply and demand elements to be considered and the conditions that have to be met to be a relevant shortage. You can use the default filters Time till Shortage, Material, and Individual Segment to narrow down the scope of your list.

This app provides you with the information that you need to be able to react to the shortage situation on time, meaning that you can avoid disruptions to production or to the fulfillment of customer demands. From this app, you can directly navigate to the Manage Material Coverage app to view details of the selected materials and check different solutions.

ZStandard1

Search

Shortage Definition: * Material: Time till Shortage: Individual Segment:

MRP Standard

Hide Filter Bar Restore Filters (1) Go

Materials (2293)											
Material No.	Individual Segment	First Shortage	First Shortage On	Shortage Quantity	Shortage Duration (Working Days)	Stock Availability	Plant	Days' Supply (Working Days)	Time till Shortage (Calendar Days)	Safety Time (Working Days)	Intraday Supply
SP001		28.09.2022	28.09.2022	2 EA	137	<div style="width: 100%; background-color: green; height: 10px;"></div>	4601	-139	-195	0	-139.00
IBPFG100	CustSt 1000139-10	18.10.2022	18.10.2022	1 PC	123	<div style="width: 100%; background-color: red; height: 10px;"></div>	2901	-125	-175	0	-125.00

Revoke Acceptance of Shortages Manage Materials

Select Columns (measurements used in chart)

Sort Table (prioritize measurements in chart)

Configure Chart (horizon)

available

not available

non working day

– Manage Material Coverage

With this app, you can solve any coverage issues for your materials based on the settings you made in the Monitor Material Coverage app. This app shows you any net requirements segments, individual customer and project segments, as well as direct production and direct procurement segments that exist for each material. To help you solve your shortages, the system proposes different solutions. You can simulate the solution to preview its effects and you can apply the solution that best solves your issue.

The screenshot shows the 'Manage Material Coverage' application interface. On the left, a sidebar lists 'Materials (1)'. A search bar is at the top. Below it, 'IBPGF100' is shown with a quantity of '-1 PC'. It has a note 'test FG (Plant 2901)' and a status '124 days overdue'. Below this, 'Plant 2901' and 'CustSt 1000139-10' are listed. The main panel is titled 'Material Details' for 'IBPGF100'. It shows a note 'test FG (Plant 2901)', a status 'Individual Segment: CustSt 1000139-10', and a note '124 days overdue'. Below this, there are tabs for 'STOCK/REQUIREMENTS LIST', 'MATERIAL INFORMATION', and 'NOTES'. The 'STOCK/REQUIREMENTS LIST' tab is selected, showing a table for 'Stock/Requirements List (1 Shortage)'. The table has columns: Date, MRP Element, Actions, Additional Information, Rescheduling, Quantity, and Available. A note says 'The system cannot propose solutions for materials produced in-house.' At the bottom right of the table are buttons for 'Create Order', 'Start MRP Run', and 'Open...'. The date '01.08.2016' is highlighted in a red box.

Planners can review the supply and demand situation and re-run the MRP if needed, they also can simulate the supply situation if more than one source supply exists and choose the right source of supply and convert it for the next stage of procurement.

The screenshot shows the 'Manage Material Coverage' application interface. On the left, a sidebar lists 'Materials (1)'. A search bar is at the top. Below it, 'TG0011' is shown with a quantity of '-50 PC'. It has a note 'Trading Good 0011.PD.Regular Proc.' and a status 'in 6 days'. Below this, 'Plant 1710' is listed. The main panel is titled 'Material Details' for 'TG0011'. It shows a note 'Trading Good 0011.PD.Regular Proc. (Plant 1710)', a status 'in 6 days', and a note '-50 PC'. Below this, there are tabs for 'STOCK/REQUIREMENTS LIST', 'MATERIAL INFORMATION', and 'NOTES'. The 'STOCK/REQUIREMENTS LIST' tab is selected, showing a table for 'Stock/Requirements List (1 Shortage)'. The table has columns: Date, MRP Element, Additional Information, Quantity (PC), and Available (PC). A note says 'Click to solve this shortage' and the date '01.08.2016' is highlighted in a red box. At the bottom right of the table are buttons for 'Accept Shortage' and 'All'. Below this, another table titled 'Material Shortage' shows proposed changes for the shortage. It has columns: Date, MRP Element, Additional Information, Quantity (PC), Available (PC), Proposed Changes, Rating, and Actions. Three rows are listed: '[New Purchase Order] Domestic US Supplier 1', '[New Purchase Order] Domestic US Supplier 2', and '[New Purchase Order] Domestic US Supplier 3 (Ariba Netw)'. Each row has 'Simulate' and 'Apply' buttons.

– Monitor Production Orders or Process Orders

With this app, you can monitor the status of the production orders or process orders in your area of responsibility. Two tiles are provided for this app, one for each order type. In the list you can view if materials will be finished too late for the pegged requirements, if the components required for these materials will not be available in time, and if milestones and operations are delayed. The system determines if materials will be finished too late based on the shortage definition you select. You can use filters to limit the scope of your selection.

This app provides you with all the necessary information to be able to react quickly to critical situations and avoid delays in production. You can navigate from this app directly to the Manage Production Orders or Process Orders app to find detailed information about the selected materials and components and view the status of the milestone and operations.

– Monitor Stock/Requirement List

This app is an SAP GUI for HTML transactions. These classic transactions are available in the SAP Fiori theme to support a seamless user experience across the SAP Fiori launchpad.

– Monitor Stock/Requirements List – Generic Material (MD04P)

This app is an SAP GUI for HTML transactions. These classic transactions are available in the SAP Fiori theme to support a seamless user experience across the SAP Fiori launchpad. This App will show the pegging information between demand, supply and stock in real time.

The screenshots illustrate the SAP Stock/Requirements Pegging application interface, showing various ways to view MRP data:

- Screenshot 1:** Shows a summary view for Material SIT1FG101 at MRP Area 2901. It displays Free Available Stock (2911), Temporarily Assigned Stock/Requirements (7 EA), and Stock/Requirement Overview (7 EA). The table below shows detailed MRP elements for PidOrd 0000056533.

MRP element	Stock No.	Ex. Delivery Date	Char1	Char2	Char3	Stk Seg.	Element is fixed	Stock Storage Location	Quantity	BUn	Material	Supplying/Receiving Plants
PidOrd	0000056533	10	12.04.2023					2911	7	EA	SIT1FG101	

Subtotal: 7 EA

- Screenshot 2:** Shows a detailed view of all MRP elements for Material SIT1FG101. The table lists numerous entries with columns for MRP element, Stock No., Ex. Delivery Date, Char1, Char2, Char3, Stk Seg., Element is fixed, Stock Storage Location, Quantity, BUn, Material, and Supplying/Receiving Plants.
- Screenshot 3:** Shows a view filtered by Plant 2901. It displays Free Available Stock (2911), Temporarily Assigned Stock/Requirements (12.04.2023), and Stock/Requirement Overview (12.04.2023). The table below shows detailed MRP elements for PidOrd 0000056533.

MRP Status	Short Descrip.	MRP elemnt	MRP No.	E Req	Storage Location	Delivery Date	MRP elemnt	Stock Number	E Stock	Storage Location	Req.Seg.	Stk Seg.	Plan Date	ReqmtsPlan	Ex
A	Free Available Stock					12.04.2023	PidOrd	0000056533	2911				12.04.2023		

Subtotal: 12.04.2023

The screenshot shows a software interface titled "Stock/Requirements Pegging". At the top, there's a toolbar with various icons. Below the toolbar, a header bar displays "Plant" and "2901". Underneath is a navigation bar with tabs: "T - Temporarily Assigned Stock/Requirements", "Σ - Stock/Requirement Overview" (which is selected), and "I - Additional Information". The main area is a table with three columns: "Stock / Requirement", "Summarized Quantities", and "Excluded Quantities". The table data is as follows:

Stock / Requirement	Summarized Quantities	Excluded Quantities
- Stock		
Purchase Requisitions		
Purchase Orders		
Confirmations		
Planned Orders	147	
Production Orders	1	
Batches		
Others	3	
Overall Stock	151	
- Requirements		
Reservation		
Sales Order		
Sales Contract		
Returns Order		
Forecast	33	
Reservation for Production Orders	100	

- Detect MRP situations.

Template used for Situation Handling that informs specific members of your material requirements planning organization about exception messages that occurred during the MRP run for purchase orders or production orders that are no longer needed.

This is scheduled job, scheduled after the MRP run and review the results log.

The screenshot shows a software interface titled "Job Details". At the top, there's a header with "EDGE" and "Job Details". To the right are search, notification, and settings icons. Below the header, the status is shown as "Scheduled".

The main area is titled "MRP Situation Handling Template_4601". There are tabs for "General Information", "Scheduling Options", "Run Details", and "Parameters". The "Parameters" tab is currently selected.

Under the "Parameters" tab, there's a section titled "Parameters" with the following fields:

- Material: [Input field]
- MRP Area: [Input field]
- MRP Controller: [Input field containing 001, 002, 003, 060]
- Plant: [Input field containing 4601]

The screenshot shows two main sections of the EDGE application interface.

Top Section: The title bar includes the 'EDGE' logo, a search bar, and various navigation and filter buttons. A sub-header 'Standard' is visible. Below this is a table titled 'Jobs (12) Standard' with columns for Status, Log, Results, Steps, Description, Planned Start, and Created By. The table lists five scheduled jobs and one finished job related to MRP Situation Handling Templates.

Bottom Section: The title bar shows 'Document (ID 22766)' and includes a search bar, filter icons, and an 'Exit' button. Below this is a summary table with two rows: 'Data statistics' (Number of 33) and 'Records passed' (33). Further down is a detailed table with 14 columns (Material, Plnt, MRP Area, MRPcn, El, MRP elemnt, MRP No., MRP itm, Sche, MRP segment, Planning segment, MRP Situation, Exception Message) containing four rows of data for FG01.

Exception messages will help business to take required corrective action.

4.5 Solution prerequisites

4.5.1 Process predecessor and successor

Predecessor – Master Data such as material master, BOM, Routing, Production Version

Successor – Planned orders, purchase requisitions, planned independent requirements, MRP Run.

4.5.2 Master data prerequisites

- Processing material master and MRP views
- Processing material BOM
- Maintaining calendar
- Processing Routing
- Processing Production Version
- Processing of procurement source of Supply – Info record, contract etc.

4.5.3 Organizational structure requirements

- Company Code
- Sales Organization
- Distribution Channel
- Division
- Shipping Point

4.6 Detailed solution design

4.6.1 Demand Planning

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Maintain PIRs	Review PIR's	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Create PIR	Create PIR	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Manage Sales Orders	review Sales Order	Desktop/tablet	Internal Sales Representative	S/4 HANA
Monitor Stock / Requirements List	Review Demand and Supply	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Detect MRP Situations	MRP Alerts	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Display MRP Material Issues	MRP Master Data issues	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Monitor Stock/Requirements List – Generic Material (MD04P)	Pegging Information	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA

4.6.2 Resource Planning

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Display Material	Display Material	Desktop/tablet	Master Data Specialist	S/4 HANA

Maintain Bills of Material	Display Bills of Material	Desktop/tablet	Master Data Specialist	S/4 HANA
Display Routing	Display Routing	Desktop/tablet	Production Engineer - Discrete Manufacturing	S/4 HANA
Manage Production Version	Manage Production Version	Desktop/tablet	Production Engineer - Discrete Manufacturing	S/4 HANA
Schedule MRP runs	Schedule MRP Live	Desktop/tablet	Production Planner	S/4 HANA
Monitor Material Coverage	Review MRP alerts and Days of coverage	Desktop/tablet	Production Planner	S/4 HANA
Maintain PIRs	Review PIR's	Desktop/tablet	Production Planner	S/4 HANA
Create PIR	Create PIR	Desktop/tablet	Production Planner	S/4 HANA
Manage Sales Orders	review Sales Order	Desktop/tablet	Internal Sales Representative	S/4 HANA
Monitor Stock / Requirements List	Review Demand and Supply	Desktop/tablet	Production Planner	S/4 HANA
Detect MRP Situations	MRP Alerts	Desktop/tablet	Production Planner	S/4 HANA
Display MRP Material Issues	MRP Master Data issues	Desktop/tablet	Production Planner	S/4 HANA
Monitor Material Coverage – Net Segment	Review Demand and Supply - Make to stock	Desktop/tablet	Production Planner	S/4 HANA
Monitor Material Coverage – Net and Individual Segments	Review Demand and Supply	Desktop/tablet	Production Planner	S/4 HANA
Manage Material Coverage	Review Demand and Supply	Desktop/tablet	Production Planner	S/4 HANA
Monitor Production Orders or Process Orders	Production Order Review	Desktop/tablet	Production Planner	S/4 HANA
Monitor Stock/Requirements List – Generic Material (MD04P)	Pegging Information	Desktop/tablet	Production Planner	S/4 HANA

Manage Work Center Capacity	Review Capacity	Desktop/tablet	Production Planner	S/4 HANA
Capacity Scheduling Table	Capacity scheduling	Desktop/tablet	Production Planner	S/4 HANA
Capacity Scheduling Board	Capacity scheduling	Desktop/tablet	Production Planner	S/4 HANA

4.6.3 Execute MRP Run & monitor material replenishment: Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Display Material	Display Material	Desktop/tablet	Master Data Specialist	S/4 HANA
Maintain Bills of Material	Display Bills of Material	Desktop/tablet	Master Data Specialist	S/4 HANA
Display Routing	Display Routing	Desktop/tablet	Production Engineer - Discrete Manufacturing	S/4 HANA
Manage Production Version	Manage Production Version	Desktop/tablet	Production Engineer - Discrete Manufacturing	S/4 HANA
Schedule MRP runs	Schedule MRP Live	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Monitor Material Coverage	Review MRP alerts and Days of coverage	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Maintain PIRs	Review PIR's	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Create PIR	Create PIR	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HANA
Manage Sales Orders	review Sales Order	Desktop/tablet	Internal Sales Representative	S/4 HANA

Monitor Stock / Requirements List	Review Demand and Supply	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Detect MRP Situations	MRP Alerts	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Display MRP Material Issues	MRP Master Data issues	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Monitor Material Coverage – Net Segment	Review Demand and Supply - Make to stock	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Monitor Material Coverage – Net and Individual Segments	Review Demand and Supply	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Manage Material Coverage	Review Demand and Supply	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Monitor Production Orders or Process Orders	Production Order Review	Desktop/tablet	Production Planner	S/4 HAN A
Monitor Stock/Requirements List – Generic Material (MD04P)	Pegging Information	Desktop/tablet	Production Planner/Material Planner - External Procurement	S/4 HAN A
Manage Work Center Capacity	Review Capacity	Desktop/tablet	Production Planner	S/4 HAN A
Capacity Scheduling Table	Capacity scheduling	Desktop/tablet	Production Planner	S/4 HAN A
Capacity Scheduling Board	Capacity scheduling	Desktop/tablet	Production Planner	S/4 HAN A

4.6.4 Execute Subcontracting MRP; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Display Material	Display Material	Desktop/tablet	Master Data Specialist	S/4 HAN A

Maintain Bills of Material	Display Bills of Material	Desktop/tablet	Master Data Specialist	S/4 HAN A
Display Routing	Display Routing	Desktop/tablet	Production Engineer - Discrete Manufacturing	S/4 HAN A
Manage Production Version	Manage Producti on Version	Desktop/tablet	Production Engineer - Discrete Manufacturing	S/4 HAN A
Schedule MRP runs	Schedule MRP Live	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Monitor Material Coverage	Review MRP alerts and Days of coverage	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Manage Sales Orders	review Sales Order	Desktop/tablet	Internal Sales Representative	S/4 HAN A
Monitor Stock / Requirements List	Review Demand and Supply	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Detect MRP Situations	MRP Alerts	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Display MRP Material Issues	MRP Master Data issues	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Monitor Material Coverage – Net Segment	Review Demand and Supply - Make to stock	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Monitor Material Coverage – Net and Individual Segments	Review Demand and Supply	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Manage Material Coverage	Review Demand and Supply	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A
Monitor Production Orders or Process Orders	Producti on Order Review	Desktop/tablet	Material Planner - External Procurement	S/4 HAN A

Monitor Stock/Requirements List – Generic Material (MD04P)	Pegging Information	Desktop/tablet	Material Planner - External Procurement	S/4 HANA
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4.6.5 Associated Fiori Apps

Fiori App Name	App Description	App Type	Device Type
Display MRP Key Figures	With this app, you can view detailed information on each MRP run. This information is available if the MRP run has been completed, is still running, or was terminated.	Transactional	Desktop, Tablet
Display MRP Master Data Issues	With this app you can see all issues concerning master data that were detected during an MRP Live planning run. The system displays all the issues and restrictions as well as success messages that were created in the last MRP Live run.	Transactional	Desktop, Tablet
Monitor Material Coverage	Businesses can monitor all the materials in make-to-stock and make-to-order materials, and materials for direct procurement.	Analytical	Desktop, Tablet
Manage Product master	Business can use this app to search, display, edit, create, and copy master data for products Business can get an overview of your material stock.	Master data	Desktop, Tablet
Create MRP Change Requests	With this app, you can create change requests for existing purchase order schedule lines based on the list of rescheduling proposals from MRP rescheduling checks.		
Schedule MRP Runs	Business can create and schedule a job for executing your MRP runs to automate the planning process.	Transactional	Desktop, Tablet
Maintain MRP Controllers	Business can create, change, and delete MRP controllers per plant.	Master data	Desktop, Tablet
Convert Planned orders	These classic transactions are available in the SAP Fiori theme for support	Transactional	Desktop, Tablet
Manage Work Center Capacity	Business can visualize the capacities of work centers, and the load on work centers.	Master data	Desktop, Tablet
Capacity Scheduling Table	This is a control tower App in which business get the full visibility of the Orders, capacity, and procurements.	Analytical	Desktop, Tablet
Monitor Production Orders	Business can monitor the status of the production orders or process orders in your area of responsibility.	Analytical	Desktop, Tablet

Monitor External Requirement	Business can monitor the uncovered requirements originating from sales orders and stock transport orders in a selected area	Analytical	Desktop, Tablet
Monitor Internal Requirements	Business can ensure that components are available in the right quantity and in time so that internal requirements originating from production orders, process orders, maintenance orders, and network orders can be fulfilled.	Analytical	Desktop, Tablet
Manage Planned Order	Business can manage the planned orders through Fiori which internally connects to system.	Transactional	Desktop, Tablet
Monitor Material Coverage - Net Segments	This app provides you with the information that you need to be able to react to the shortage situation on time, meaning that you can avoid disruptions to production or to the fulfillment of customer demands.	Transactional	Desktop, Tablet
Monitor Stock/Requirements List – Generic Material (MD04P)	You can review Pegging information using this App	Transactional	Desktop, Tablet
Capacity Scheduling Board	With this app, you get an overview of the operations performed at your work centers by visualizing their schedules over a time period. Pacemaker work centers are critical as they help determine the schedule of an order. You can use this app to plan optimum utilization of pacemaker work centers by matching their capacities with those of the orders that have to be dispatched.	Transactional	Desktop, Tablet

4.6.6 Reporting Overview

Display MRP Key Figures

EDGE material planners can view detailed information on each MRP run. This information is available if the MRP run has been completed, is still running, or was terminated. In the overview screen, the system lists all the individual MRP runs that have been carried out. You can access the details screen by clicking on an individual row. In the following screen, you can check all available key figure information such as the settings used to perform the planning run, the number of materials processed as well as various durations. A graphic is also available showing the run history. Directly you can see the progress of the planning run and analyze the runtime information. Sections are also available showing detailed information about low-level code or the individual steps performed in the planning run.

Display MRP Master Data Issues

Material planners at EGDE can see all issues concerning master data that were detected during an MRP Live planning run. The system displays all the issues and restrictions as well as success messages that were created in the last MRP Live run. You can restrict the issues that are displayed in the list by accepting certain issues and then

using filters. However, the content of this list is refreshed every time MRP Live is carried out and an accepted issue will reappear in the list after the next planning run if it has not been solved.

5. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

5.1 Role/Skill Class Inventory

Role	Skills	Knowledge
Production Planner	SAP-PP	An employee who is responsible for production planning and scheduling. Production Planner will create Planned Independent Requirement and Responsible for MRP run.
Material Planner - External Procurement	SAP-PP	An employee who is responsible for procurement of material, create demand and run planning run.

5.2 Security roles as per process design



D2S MRP Job Role
03052023.xlsx

Detailed security roles are attached.

Primarily there are two roles, one for production – “Production Planner” and another for procurement “Material Planner - External Procurement”

6. PROCESS FITNESS & GAP ANALYSIS

6.1 Process Variation (legal, geographical or business-led)

For the case of NIMR, planning has an exceptional case. Planning happens in Excel and results are subsequently to be updated in the SAP System. Therefore, the work center capacities cannot be mapped using Time Intervals for mapping the capacity activities as these time intervals are not available.

In order to enable the users to put in plan numbers into the system and then monitor and view the capacity loads generating per period, a solution is required for this exception where activity units can be set to fixed count units like EACH that can be updated from the EXCEL source, and this will help accumulate and check the load in each process, effectively providing a feasible production plan as per user inputs.

Since the time duration of each activity performed for building up materials in NIMR are not available, a fixed criteria like the one defined above will help the planners to view the load on the work centre in terms of the total units in production at the time of execution.

6.1.1 Sub-Process Variation

NA

6.1.1.1 Business Unit Level

All the business processes are harmonized across ADASI/AL TARIQ/HALCON/NIMR entities.

6.1.1.2 Geography/Legal Entity Led

All the business processes will be as per the requirement of AL TARIQ/ADASI/HALCON/NIMR entities. The legal entity will be as per UAE rules.

6.2 GAP Register

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req . id.
	No GAP identified					

6.3 Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets

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6.4 WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Use from myConcerto (New/Rework/Rep)	Ref # from WRICEF inventory	Assign system / SAP component

7. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

7.1 Integration points

Process ID (L4 process)	Type (legacy system, DT Ops, functional ..)	Related technical scope	Leading stream	Business process Integration with domain	Description	In	out
	D2S	L2C	Sales Order publishing to S/4 and assignment of WBS – Time GAP? How it impacts the planning.				
	D2S	S2P	Procurement Source of Supply – Auto source determination				
	D2S	P2P	Production Version – Determination				
	D2S	P2P	Maintenance Spare Parts Planning				
	D2S	P2P	Customer Service Spare parts Planning				
	D2S	A2D, R2R	Individual/collective indicator setting				
	D2S	P2P	Planned order to Production Order conversion horizon				
	D2S	S2P	Purchase Requisition to Purchase Order conversion horizon				
	D2S	A2D	Material Requirement Planning – Expectations from Project side- - How the preproduction plan is releasing for plan or execution.				

7.2 Inbound Communication

The Inbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Inbound communication includes any required emails, forms or handoffs between parties that are required to initiate the sub process. Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description

7.3 Outbound Communication

Outbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Outbound Communication includes any emails, forms, handoffs between parties that result from the sub process. Typically, these are output results and documentation that result from the process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description

7.4 Other Issues

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY

12 PLANNING

12.2 MATERIAL AND PRODUCTION PLANNING

TABLE OF CONTENT

Table of Content.....	2
1. Introduction	4
1.1 Change History	4
1.2 Approval Details	4
1.3 Other Related Documents.....	4
2. Business Process (Level 2)	5
2.1 To-Be Process Overview and Context	5
2.2 Key Value Drivers for the Business Process.....	5
2.3 Key Design Decisions	7
2.4 Standard KPI and reports	7
3. Process Design.....	9
3.1 Material Planning	10
3.1.1 Production Material Planning	11
3.1.2 Consumables Planning	14
3.2 Material Subcontracting (External) Orders	18
3.2.1 Business Process Description.....	18
3.2.2 Process Diagram.....	20
3.2.3 Activity List.....	20
3.3 Spare Parts Planning – Service Materials	22
3.3.1 Business Process Description.....	22
3.3.2 Process Diagram.....	24
3.3.3 Activity List.....	24
3.4 Spare Parts Planning – Maintenance Materials	25
3.4.1 Business Process Description.....	25
3.4.2 Process Diagram.....	27
3.4.3 Activity List.....	27
3.5 Production planning	28
3.5.1 Production Planning.....	28
3.6 Master Data Maintenance for Planning	33
3.6.1 Business Process Description.....	33
3.6.2 Process Diagram.....	37
3.6.3 Activity List.....	38
4. Detailed Solution Design	39
4.1 Material Planning	39
4.1.1 Production Material Planning	42
4.1.2 Consumable Planning.....	44
4.1.3 Material Subcontracting	45
4.1.4 Spare Parts Planning – Service Material	47
4.1.5 Spare Parts Planning – Maintenance Materials.....	48
4.2 Production Planning	49
4.2.1 Master Data Maintenance for Planning.....	50
5. Role Definition.....	66
5.1 Role/Skill Class Inventory	66
5.2 Security roles as per process design.....	66

6. Process Fitness & Gap Analysis	67
6.1 Process Variation (legal, geographical or business-led).....	67
6.1.1 Sub-Process Variation	67
6.2 GAP Register	67
6.3 Process Fitness	68
6.4 WRICEF Register	68
7. Integration Points.....	69
7.1 Integration points.....	69
7.2 Inbound Communication.....	69
7.3 Outbound Communication.....	69
7.4 Other Issues.....	70

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
v0.0	3.08.2021	Template Creation	Dr. Christian König
P2_v0.1	5.08.2022	Update into new PDD format	Moritz Waubke
Change of versioning numbering policy			
V0.7	16.06.2023	First Version	Faraz Quddusi, Syed Mudassir, Hans, Sunny Jacob
V0.8	20.06.2023	Quality pre-review by ROI	Dr. Piotr Rykaczewski
V0.8	04.07.2023	Incorporate business feedback during walkthrough session	Faraz Quddussi
V0.8	10.07.2023	Incorporate DT feedback (Deep, Ahmad, Aslam)	Faraz Quddussi
V0.8	24.07.2023	Incorporate GPO feedback	Faraz Quddussi
V0.9	27.07.2023	GPO approval (V0.8 → V0.9)	
V0.9	29.01.2024	BPH ID in Activity Tables Update of Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See cover sheet			

1.3 Other Related Documents

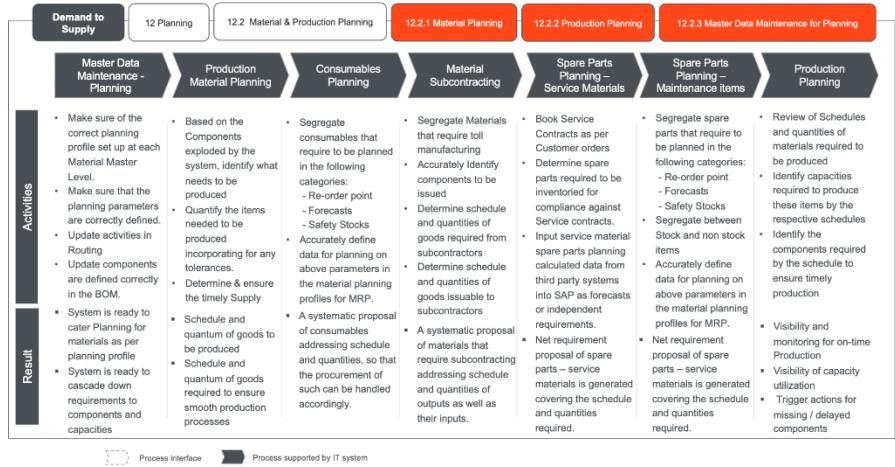
Please insert links/References to related Documents (issues, data entities, extreme automation, etc.)

Related Document	Comment
AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7	D2S KDS Document
KDS (KDS_P2P-PP_11.01.2022_V1.0)	P2P KDS Document

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

PROCESS MODEL: BUSINESS PLANNING ADVANTEDGE



30

For the most efficient usage of the planning systems, **multiple L2 high-level processes** have been identified covering various time horizons from long-term to short-term.

The Material and Production planning processes cover the below-mentioned sub-processes at L4:

12.2.1.1 Production Material Planning
12.2.1.2 Consumables Planning
12.2.1.3 Material Subcontracting (External Orders)
12.2.1.4 Spare Parts Planning Service Materials
12.2.1.5 Spare Parts Planning Maintenance Materials
12.2.2.1 Production Planning
12.2.2.3 Master Data Maintenance for Planning

2.2 Key Value Drivers for the Business Process

The new S/4HANA material planning & replenishment system streamlines material requirements planning. The purpose for implementing it includes effective monitoring of stock-outs, capacity planning/levelling, automated creation of procurement proposals for purchasing & production and enabling EDGE production planners to guarantee availability of procured or produced materials at the right time.

The key value driver for EDGE is to develop an ability to make material planning process efficient, cost-effective, and automated using standard and streamlined SAP processes. The planning process at EDGE must have credible processes in place so that it imparts the confidence in the EDGE customer's mind that their investments are secure.

Below are some tangible and intangible benefits of using SAP HANA powered material planning system;

- Reduce the cost of customer service and support by making proactive decisions in response to changing demand
- Increase annual procurement savings and reduce revenue loss with clear visibility across the supply chain
- Improve on-time delivery performance by tailoring available capacity and receipts to meet required product quantities
- Improve inventory accuracy by considering inventory data, lead times, and procurement timing in planning

2.3 Key Design Decisions

Process ID		KDD ID	Type	Description
12.1.1.3	KDD_A_2D_66	Foundation	Perform Material Planning in MSP or apply a mixed approach with planning in MSP and SAP PS both. The final decided approach is that users will be allowed to make material planning in either MSP Tasks or SAP PS Network Activities or both.	

2.4 Standard KPI and reports

KPIs

1. Equipment efficiency
2. Maintenance effectiveness
3. Downtime %
4. Manage KPIs and Reports

KPI – Key Performance indicators are the measuring tools for application performance. Below are the KPIs that can be used for measurement

1. Equipment efficiency:

Efficiency of equipment is a key measure that helps evaluate how efficient an equipment has remained in providing its availability. It is measured in terms of the maintenance inputs consumed by an equipment as a percentage of the output operating time the machine has given.

Equipment Efficiency % = Percentage of the number of maintenance labour hours spent on an equipment / equipment operating time.

The source for the maintenance labour hours information can come from the equipment maintenance orders. And the equipment operating time is the net equipment availability time after deducting for any downtimes.

2. Maintenance effectiveness

Maintenance effectiveness can only be measured in terms of the machines' performance in terms of its availability for production. The following formula will be used:

Maintenance Effectiveness % = Operating time / (operating time + downtime for maintenance) as a percentage.

This represents equipment availability from maintenance perspective, and it's a measure of evaluating maintenance performance. The source of information for Operating time and Downtime will be through production confirmation information system.

To correctly record for downtimes, the time ticket for downtimes must be recorded through the production confirmation processes in the production execution cycle.

3. Downtime %

Downtime due to maintenances compromises the machines availability factor. The following formula provides a measure of the lost capacity factory in terms of time dimension.

Downtime % = Downtime for Maintenance/ (Operating Time + Downtime for maintenance)

The source of this formula too will be through production confirmation time tickets.

4. Manage KPI and Reports

Manage KPIs and Reports app is a single platform for creating all analytical applications using KPIs, reports, and stories. You can create applications that can be launched directly from SAP Fiori launchpad. You can configure metrics in the KPI, visualize the data either in chart or table format, and analyze the data to improve the quantity and quality of the different business units belonging to an organization.

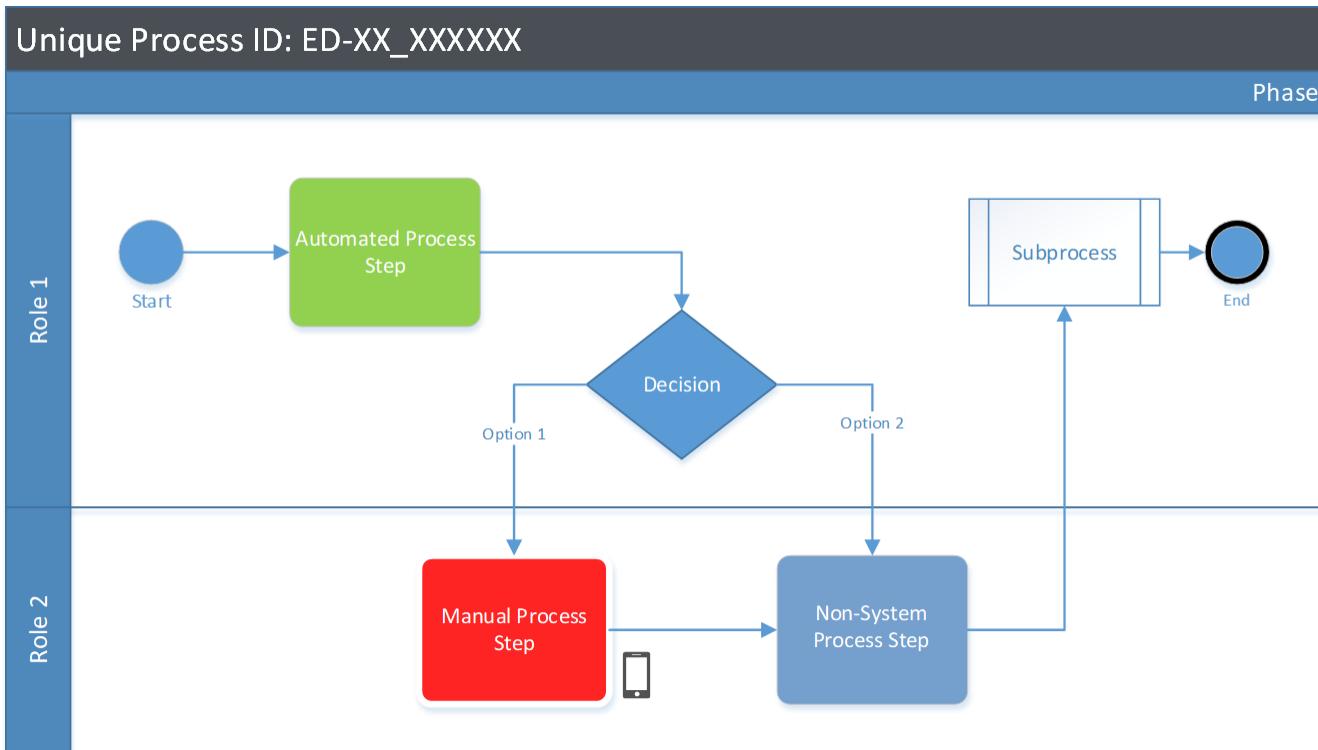
Reports – Reports are used to visualization of Planning situation and take necessary actions if necessary. Below are the reports that can be used.

5. Display MRP Key Figures
6. Display MRP Master Data Issues
7. Monitor Material Coverage - Net Segments

3. PROCESS DESIGN

In the following chapters processes are described in swimlane flow diagrams, in which the swimlanes represent responsible roles and the flow is shown in process steps of different kinds (see legend).

Example for swimlane flow chart:

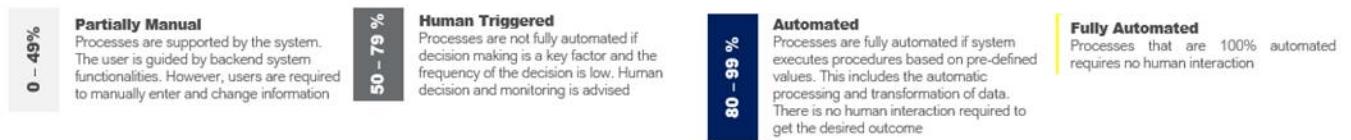


Legend:



For each swimlane flow diagram, a corresponding activity list exists, with additional details:

- Process Step - Number of process step (Pxxx)
- BPH ID - BPH ID of L4 process
- Description - Short description of the step
- Role - Responsible role for executing the step
- SAP-Automation - Options: Partially Manual, Human Triggered, Automated, Fully Automated, Sub-Process/Non-System (blank); details on definition see below
- Tcode - SAP Transaction Code (SAP EWM in Italic letters)
- Fiori - Y, if Fiori App is available



3.1 Material Planning

Material planning scope is essential to ensure the availability of materials and it is a basic foundation for production planning. The Material Requirement Planning MRP process is discussed in detail in PDD 12.1 sections: 12.1.4. The MRP controller or the Material Planner at EDGE who monitors the material shortage situation and solves any issues on time.

The primary purpose is to ensure that sufficient supplies have been planned to cover requirements — whether from sales orders or from production, for example. The goal is to ensure that both customer and production demand are fulfilled on time and to avoid any disruptions due to missing parts or components.

The demand for material may come from planned independent requirements or dependant requirements triggered from definite customer orders or projects. The process of material planning covers the end-to-end process ensuring delivery of finished goods items to the customer as well as ensuring the availability of the components materials that come from the procurement process.

EDGE entities require to automate the planning of the procurement process. The business requires MRP runs to be executed automatically on a regular basis and in the right sequence so as to cover up the independent and dependent requirements.

EDGE aims to setup the material planning to guarantee material availability to avoid delays in order fulfilment. To do this, the proposed system design must check the availability of each material in the planning run and creates purchase requisitions or planned orders if it detects short-ages.

Certain tools will also be required to facilitate the planners at EDGE to adjust the current demand and supply situations, these are discussed later in the subsequent sections.

The benchmark criteria for the material planning system tools at EDGE will be the following:

- system support in detecting material shortages, uncovered requirements as well as any issues regarding production orders.
- further automated support for solving issues to avoid delays or disruptions due to missing items.
- Tools must be available for communicating with EDGE's supplier if solving the issues requires changing a purchase order or stock transport order.
- Internal Planning Documents: Planned orders to be created automatically during the system's planning run. However, system must also allow to create new planned orders or change existing ones manually to optimize the replenishment situations.
- For appropriate execution of the production plan, the planned orders must be convertible to both production orders and process orders depending on the production execution process requirements.
- System must allow to convert the planned orders manually or to create a job to automate the conversion process.
- For processes that are to be executed inhouse, planned orders should be convertible to production orders only in such instances. The material components required for production are contained as items in the

planned order should be copied to the production order. The dependent requirements for the components to be converted into reservations. With the conversion to production orders, the responsibility is passed on from the MRP controller to the production supervisor at the respective production process at EDGE.

- For processes that are to be executed externally, or where the components are to be procured externally, planned orders for such material are to be convertible into purchase requisitions.
- Purchase requisitions created automatically during the MRP run should be locked first for checking and reviewing by the respective procurement authority at EDGE. A subsequent handover will pass on the responsibility of these purchase requisitions to the purchasing department for converting them into purchase orders.

In terms of reporting for the Material Planning, a comprehensive stock/requirements list will be required that displays all supply and demand elements for all materials with a net requirement segment or individual segments in the form of a table and enables to gain a quick overview of the stock/requirements situation for the material.

3.1.1 Production Material Planning (ED-12_010204)

3.1.1.1 Business Process Description

Production Material Planning scope in an MRP system is a tightly integrated closed-loop system that encompasses the entire enterprise core supply chain. It tracks all activity and continuously interacts with planning and scheduling systems to keep everything in line – helping the business operations stay focused on fulfilling customer orders on time and in full.

EDGE's success is highly dependent on its production material planning, and in maintaining the right inventory levels for its on-time production and delivery. The company is into manufacturing of complex products and production volumes that are managed on orders and in projects. The ability to forecast and plan for materials and components is critically important at EDGE for effective management of production and finished goods inventory so as that no parts are left over or short in the process.

The key production materials' planning processes at EDGE will be:

1. Accurately define what needs to be produced.

EDGE's Engineering is responsible for creating and managing the bill of materials (BOM) for all final products and sub-assemblies. Also called a product structure, the BOM is a hierarchical model of exactly what goes into each unit. The final product deliverable to customer may have many sub-assemblies and packaging instructions as well. Each sub-assembly may have two or more components and each component may have a list of parts. The BOM will describe the order in which the material will be needed, what parts are dependent on other parts, and how many of each will be required. Furthermore, with respect to the packaging instructions where relevant, each final product will require appropriate packaging unit function to cater to the handling of these materials through the final production stages to the shipment to the customer (refer the use of handling units for appropriate mapping).

2. Quantify the demand.

The system will calculate the required quantity and date for final products needed to meet demand. The calculation is based on the sales department's customer orders and forecasts, minus expected on-hand inventory.

EDGE is a true build-to-order manufacturer and therefore will primarily focus on customer orders or engineer-to-order projects. However, Make-to-stock scenarios using re-order points and safety stocks should be possible in the system to cater to the spare parts and kits requirements at various stages of production. These critical parts will generally be those items that do not carry an expiry and require a large lead time. The selection of the items will be done in the master data by the MDM, the system should be able to support the hybrid planning models for different materials.

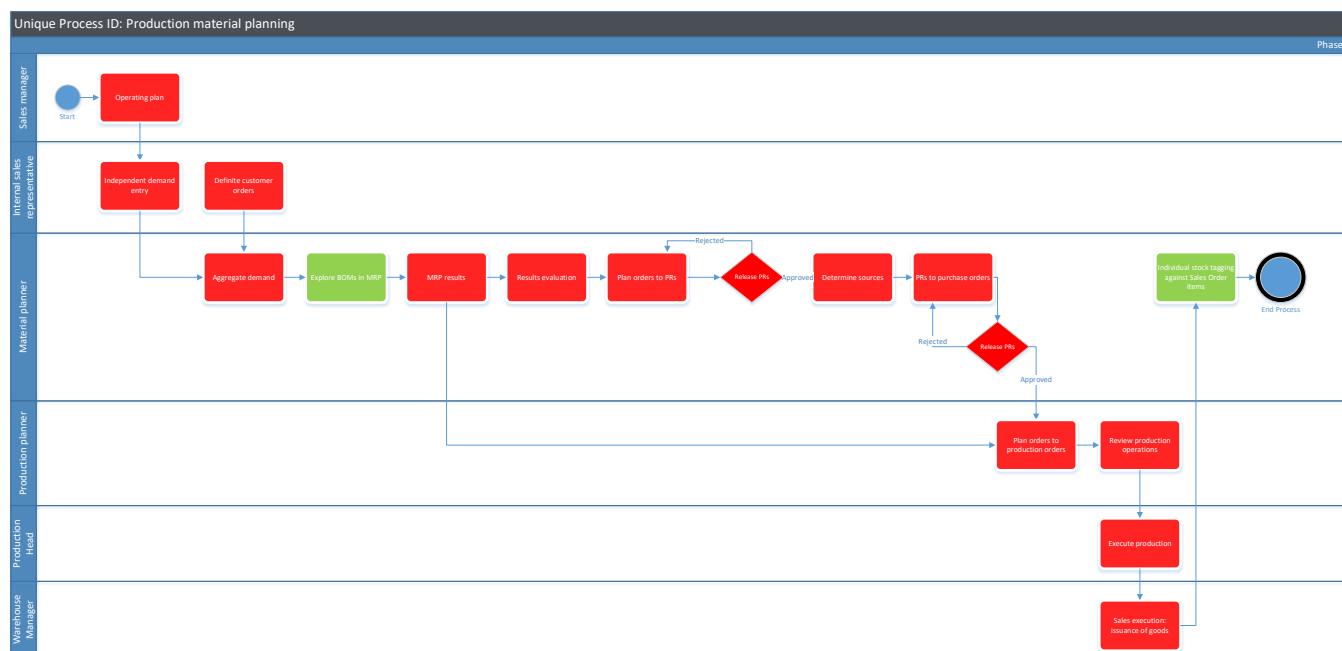
Effectively EDGE will use a combination of orders and forecasts for planning future production. The consolidated information on above criteria will feed production schedule, which is the agreement between all the stakeholders on what will be produced at given capacity.

3. Determine the supply.

Using the BOM for all the products, the MRP run will, step-by-step, calculate the assemblies, components, and materials that must be produced or purchased over the planning period. Next, the system is required to check the needed quantities against available inventory, called netting, to identify net shortages for each component. Using predefined parameters, such as lot sizing, it determines the proper “make or buy” quantity for each item. Finally, it should calculate the proper start date for the acquisition, using either the purchase or production lead time as appropriate and sends this information to the purchasing department or production control.

System should be able to facilitate Material Source Lists to build material vendor relationships so as to pre-determine the sources of supply.

3.1.1.2 Process Diagram



3.1.1.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tco de	Fi or i
P000	ED-12_010204	Start	P100	Start				
P100	ED-12_010204	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Human Triggered		
P200	ED-12_010204	Manual Independent Demand Entry in SAP System	P400	Process	Internal Sales Representatives	Partially Manual		
P300	ED-12_010204	Creations of Sales Order as per Definite Customer Requirement and Confirmation	P400	Process	Internal Sales Representatives	Human Triggered		
P400	ED-12_010204	Determine netted Demand of Finished Goods to be produced, allow for tolerances where applicable	P500	Process	Material Planner	Partially Manual		
P500	ED-12_010204	Explode Finished Goods BOMs in MRP	P600	Process	Material Planner	Automated		
P600	ED-12_010204	MRP Run Results Evaluation	P700	Process	Material Planner	Partially Manual		
P700	ED-12_010204	Analysis of Requirements for all component categories	P800	Process	Material Planner	Partially Manual		
P800	ED-12_010204	Conversion of Planned Orders to Purchase Requisitions	P900	Process	Material Planner	Partially Manual		
P900	ED-12_010204	Release of Purchase Requisition	P1000 P800	Decision	Material Planner	Partially Manual		
P1000	ED-12_010204	Determine Sources of Supply	P1100	Process	Material Planner	Partially Manual		
P1100	ED-12_010204	Conversion of Purchase Requisitions to Purchase Orders	P1200	Process	Material Planner	Partially Manual		
P1200	ED-12_010204	Release of Purchase Orders	P1300 P1100	Decision	Material Planner	Partially Manual		
P1300	ED-12_010204	Conversion of Planned Orders to Production Orders for in-house activities	P1400	Process	Production Planner	Partially Manual		
P1400	ED-12_010204	Review of Production Order Operations and their Schedules	P1500	Process	Production Planner	Partially Manual		
P1500	ED-12_010204	Onward Execution of Production Planning Process based on MRP results	P1600	Process	Production Head	Partially Manual		

P1600	ED-12_010204	Onward execution of Sales Execution process based on sales order	P1800	Process	Warehouse Manager	Partially Manual		
P1700	ED-12_010204	System enablement to tag Stock produced against sales order item (against individual sales order and its line item)	P1800	Process	Material Planner	Automated		
P1800	ED-12_010204	End		End				

3.1.2 Consumables Planning (ED-12_010205)

3.1.2.1 Business Process Description

EDGE requires a hybrid of Make to Order and Make to Stock strategies for the combination of materials in use at EDGE. EDGE will require consumption-based planning procedures for planning of their consumables. The concept is to make use of simple materials planning procedures that can be used to achieve set targets with relatively little effort.

EDGE plans to implement these planning procedures for such materials that are used / consumed in areas without in-house production and/or in production plants for planning both B- and C-parts and operating supplies.

EDGE is relying on the following systematic mechanisms configured and maintained at the material master level to implement proper consumables planning using the standard MRP modules:

- Using forecast requirements inputs from the users at EDGE
- A Robust Inventory Management function that is well defined and will be kept always be up to date.

The Inventory Management function referred above requires to be fully operational for an effective consumption-based planning. The following key procedures must be part of the inventory management function to provide relevant information for the MRP runs:

- Reorder point procedure
- Forecast-based planning

3.1.2.1.1 REORDER POINT PROCEDURE

The **reorder point** should cover the average material requirements expected during the replenishment lead time.

The **safety stock** exists to cover both excess material consumption within the replenishment lead time and any additional requirements that may occur due to delivery delays. Therefore, the safety stock is included in the reorder level.

The following values are important for defining the reorder point:

- Safety stock
- Average consumption
- Replenishment lead time

The following values are important for defining the safety stock:

- Past consumption values (historical data) or future requirements
- Vendor/production delivery timelines
- Service level to be achieved
- Forecast error, that is, the deviation from the expected requirements

3.1.2.1.2 Manual Reorder Point Planning

In manual reorder point planning, EDGE will define both the reorder level and the safety stock level manually in the appropriate material master.

3.1.2.1.3 FORECAST BASED PLANNING

The forecast, which calculates future requirements using historical data (analysed by EDGE and forecasts entered manually), will be carried out at regular intervals at EDGE. This offers the advantage that requirements, which are automatically determined, are continually adapted to suit current consumption needs. The forecast requirement is reduced by the material withdrawal so that the forecast requirement quantity that has already been produced is not included in the planning run again.

3.1.2.1.4 Reducing Forecast Requirements

- Reducing forecast requirements by consumption

If consumption is higher than the forecast requirements in the current month, then the system is supposed to reduce future forecast requirements. The horizon should be the current period in time.

- Reducing current forecast requirements by consumption

If consumption is higher than the forecast requirements in the current month, then the system is not supposed to reduce future forecast requirements. The horizon should be the current period in time.

- Average reduction of the forecast requirements

The reduction of the forecast requirements is based on average daily consumption. Actual consumption data is not relevant.

The system will calculate the average daily requirement first using the formula forecast requirement/number of workdays in the forecast period.

The forecast requirements will then be reduced by the quantity resulting from the following formula: number of workdays worked x average daily requirements.

3.1.2.1.5 Period Pattern and Forecast Periods

Material Planners at EDGE will specify the period pattern for the forecast (daily, weekly, monthly or per accounting period) and the number of periods to be included in the forecast individually for each material. It is possible, however, that the forecast period pattern is not specific enough for planning purposes. In this case, EDGE can define per material that the forecast requirements should be divided according to a finer period pattern for

planning. Material Planners can also define how many forecast periods are to be taken into account during requirements planning. The splitting indicator is defined in Customizing for MRP per plant and per period unit and is assigned to the material in the material master.

3.1.2.1.6 Creation of procurement proposals for Consumable materials

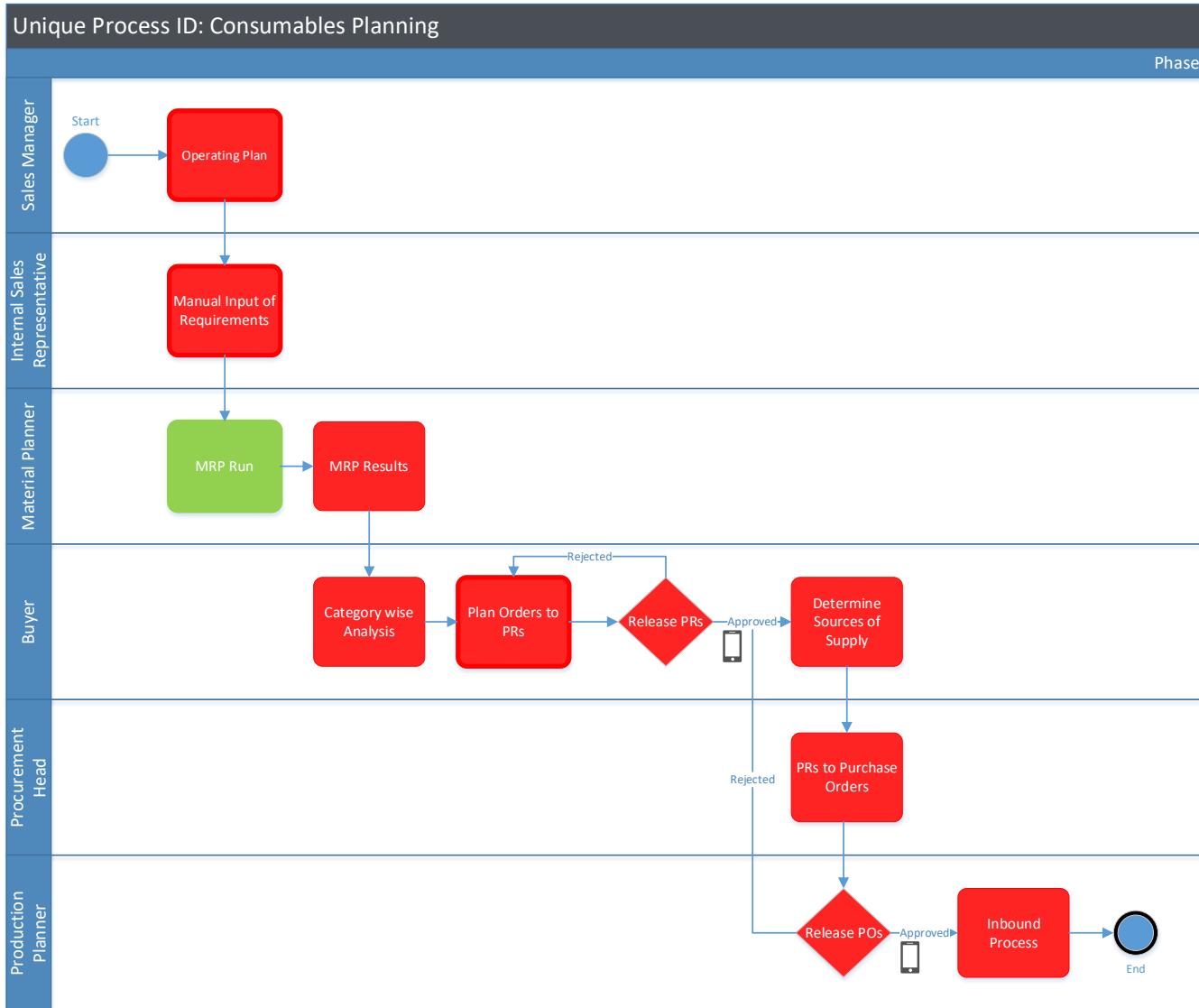
The type of procurement proposal to be created automatically in the planning run will depend on the procurement type of the material as defined by the Master Data Administrators at EDGE. For in-house production, the system will be set to always create a planned order. For external procurement, the MRP controller can choose between a planned order and a purchase requisition. If the MRP controller chooses a planned order, it then has to be converted into a purchase requisition in a separate step so that it is made available to Purchasing.

The purpose of creating a planned order is that the MRP controller is to be assigned more control over the procurement proposals. The purchasing department cannot order the material until the MRP controller has checked and converted the order proposal. If a purchase requisition is created, it is immediately available to the purchasing department which can then take over the responsibility for material availability and warehouse stocks.

3.1.2.1.7 Automatic planning run

EDGE expects an automatic planning run that determines shortages and creates the appropriate procurement elements. The system is supposed to create notes for critical parts and exceptional situations providing you with the necessary information for processing the planning results.

3.1.2.2 Process Diagram



3.1.2.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tco de	Fi or i
P000	ED-12_010205	Start	P100	Start				
P100	ED-12_010205	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Human Triggered		

P200	ED-12_010205	Set up Requirements input for Consumables: Re-order point based or forecast based	P300	Proc ess	Internal Sales Represent atives	Human Triggere d		
P300	ED-12_010205	MRP Run by schedule	P400	Proc ess	Material Planner	Automa ted		
P400	ED-12_010205	MRP Run Results Evaluation	P500	Proc ess	Material Planner	Partially Manual		
P500	ED-12_010205	Analysis of Requirements for all material categories	P600	Proc ess	Material Planner	Partially Manual		
P600	ED-12_010205	Conversion of Planned Orders to Purchase Requisitions	P700	Proc ess	Buyer	Partially Manual		
P700	ED-12_010205	Release of Purchase Requisition	P800 0 P600	Deci sion	Buyer	Partially Manual		Y
P800	ED-12_010205	Determine Sources of Supply	P900	Proc ess	Buyer	Partially Manual		
P900	ED-12_010205	Conversion of Purchase Requisitions to Purchase Orders	P100 0	Proc ess	Buyer	Partially Manual		
P1000	ED-12_010205	Release of Purchase Orders	P110 0 P800	Deci sion	Procureme nt Head	Partially Manual		Y
P1100	ED-12_010205	Onward Process of Receiving Materials against Purchase Orders	P120 0	Proc ess	Production Planner	Partially Manual		
P1200	ED-12_010205	End		End				

3.2 Material Subcontracting (External) Orders (ED-12_020101)

3.2.1 Business Process Description

This section describes EDGE's process where it procures materials using subcontracting. It describes how subcontract orders are required to be processed in Purchasing and Inventory Management. The requirement for Material Subcontracting arises where EDGE entities engage in outsourcing specific items of the assemblies. This is particularly required in the case of NIMR where there's scope of outsourcing for certain assembly items, the same

outsourcing process will be considered if Al-Tariq gets items assembled from Halcon. In most of the Al-Tariq – Halcon transactions, its more of a buying and selling nature, therefore the material subcontracting process will be applied where an assembly is being outsourced and the component items are provided to get that done.

In subcontract order processing, the vendor receives materials (components) with which it produces the end product that is used as a part or component in the EDGE production process. The following business processes are involved:

- EDGE orders the end product using a subcontract order. The components that the vendor needs to manufacture the end product are specified in the purchase order.
- In Inventory Management, the components are required to be posted to the stock of material to be provided to vendor. The components are then supplied to the vendor.
- The vendor performs its service and delivers the ordered material (the end product). The consumption of the components is to be posted.
- If, after the goods receipt has been posted, the vendor informs you that a larger or smaller quantity of the components was actually consumed than planned in the purchase order, an adjustment posting is performable in the components' quantities available at the vendor.
- The vendor charges for his or her service. The invoice is posted, and onwards executed by the Finance Professionals.

3.2.1.1 Stock of Material Provided to Vendor

The quantities of the components to be provided to the vendor are entered into the stock of material to be provided to vendor. This stock will have the following features:

- It is managed as part of EDGE's total valued stock and is available for MRP.
- It is only managed at plant level, since it is not stored at your own company but on the vendor's site.
- EDGE can classify these stocks into two categories:
- Free for Use Stock - Unrestricted
- In Inspection Stock – Quality Inspection Stock
- EDGE requires the stock to be transferred between the two stock types. However, withdrawals will be allowed to be posted from unrestricted stock only.
- EDGE must be able to take a physical inventory of the stock of material to be provided to vendor.
- A consumption posting for the components is to be made from the stock of material provided to vendor only upon the goods receipt of the product in EDGE inventory. For each goods receipt item, the system will copy the components with their quantities as goods issue items. This is to be posted as a consumption entry in the system.
- Subsequent adjustment for over/under consumption – The system must allow for catering any greater or smaller quantity of the components that were consumed than had been planned in the purchase order, the difference must be posted as a subsequent adjustment.
- Transfer postings – The system must allow for transfer postings for stock of material provided to vendor. Transfer postings should be catered for:
- Plant to plant in one step

Unrestricted-use stock to quality inspection stock and vice versa

EDGE requires the following key process documents to handle subcontracting scope:

- Purchase Requisition
- Purchase Order

Each subcontract item has one or more sub-items that contain the individual components the vendor needs to perform the subcontract work or value-added service.

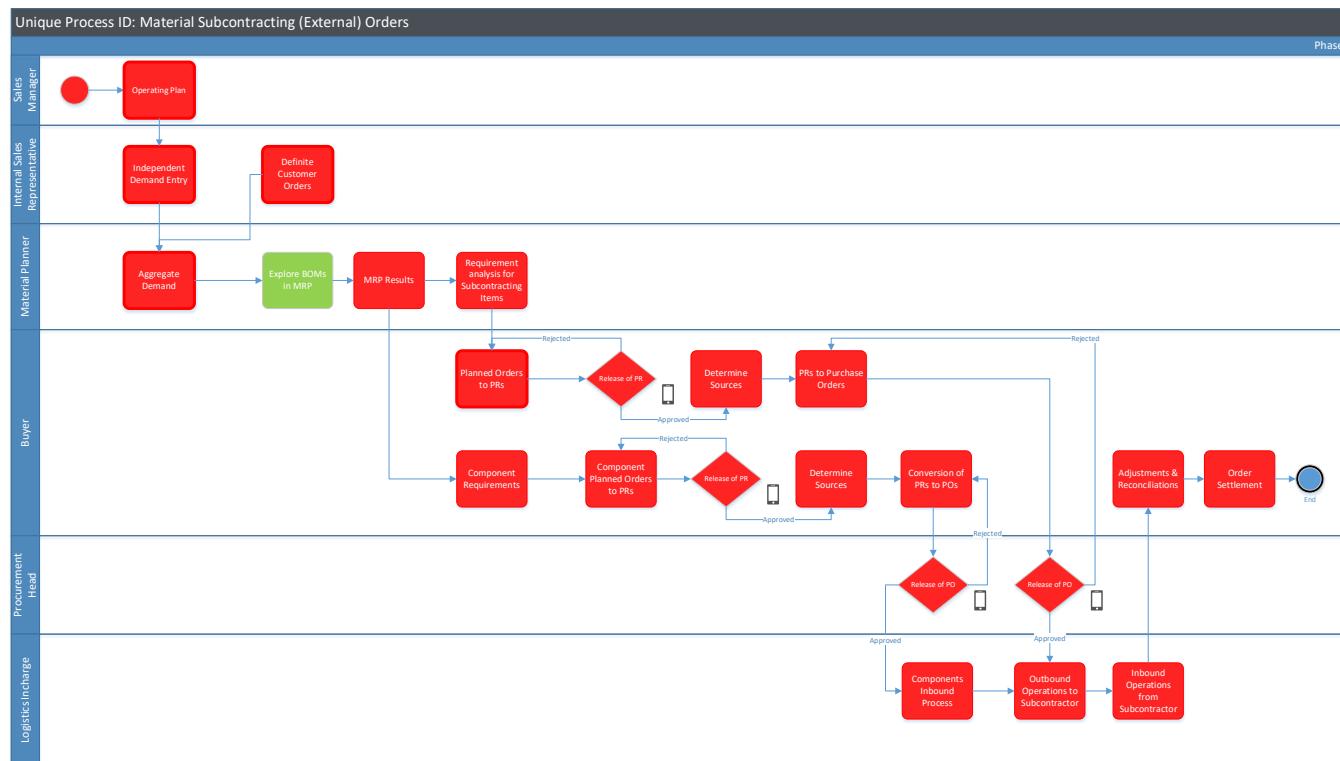
The individual component items can either be

Entered or changed manually as per requirement

Copied from an existing bill of material

EDGE requires separate bill of material versions / variants for items that are subcontracted and produced internally based on make or purchase decisions.

3.2.2 Process Diagram



3.2.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation *	Tco de	Fi or i
P000	ED-12_020101	Start	P100	Start				

P100	ED-12_020101	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Human Triggered		
P200	ED-12_020101	Manual Independent Demand Entry in SAP System	P400	Process	Internal Sales Representatives	Partially Manual		
P300	ED-12_020101	Creations of Sales Order as per Definite Customer Requirement and Confirmation	P400	Process	Internal Sales Representatives	Human Triggered		
P400	ED-12_020101	Determine Net Demand of Finished Goods to be produced, allow for tolerances where applicable	P500	Process	Material Planner	Partially Manual		
P500	ED-12_020101	Explode Finished Goods BOMs in MRP	P600	Process	Material Planner	Automated		
P600	ED-12_020101	MRP Run Results Evaluation	P700 P1300	Process	Material Planner	Partially Manual		
P700	ED-12_020101	Analysis of Requirements for Subcontracting Materials	P800	Process	Material Planner	Partially Manual		
P800	ED-12_020101	Conversion of Planned Orders to Purchase Requisitions – For Subcontracted Materials	P900	Process	Buyer	Partially Manual		
P900	ED-12_020101	Release of Purchase Requisition	P1000 P800	Decision	Buyer	Partially Manual		Y
P1000	ED-12_020101	Determine Sources of Supply	P1100	Process	Buyer	Partially Manual		
P1100	ED-12_020101	Conversion of Purchase Requisitions to Purchase Orders	P1200	Process	Buyer	Partially Manual		
P1200	ED-12_020101	Release of Purchase Orders	P1300 P2000 P1100	Decision	Procurement Head	Partially Manual		Y
P1300	ED-12_020101	Determine MRP Results Requirements for all Component Materials to be issued for Subcontracting	P1400	Process	Buyer	Partially Manual		
P1400	ED-12_020101	Conversion of Planned Orders to Purchase Requisitions – For Subcontracted Materials	P1500	Process	Buyer	Partially Manual		
P1500	ED-12_020101	Release of Purchase Requisition	P1600 P1400	Decision	Buyer	Partially Manual		Y
P1600	ED-12_020101	Determine Sources of Supply	P1700	Process	Buyer	Partially Manual		

P1700	ED-12_020101	Conversion of Purchase Requisitions to Purchase Orders	P1800	Process	Buyer	Partially Manual		
P1800	ED-12_020101	Release of Purchase Orders	P1900 P1700	Decision	Procurement Head	Partially Manual		Y
P1900	ED-12_020101	Receipt and Stocking of Subcontracting Component Materials	P2000	Process	Logistics InCharge	Partially Manual		
P2000	ED-12_020101	Issuance to Subcontractor	P2100	Process	Logistics InCharge	Partially Manual		
P2100	ED-12_020101	Receipt of Subcontracting output materials in stock	P2200	Process	Logistics InCharge	Partially Manual		
P2200	ED-12_020101	Provide for any adjustments	P2300	Process	Buyer	Partially Manual		
P2300	ED-12_020101	Settle Open Orders after complete Recovery	P2400	Process	Buyer	Partially Manual		
P2400	ED-12_020101	End		End				

3.3 Spare Parts Planning – Service Materials (ED-12_020102)

3.3.1 Business Process Description

By definition, the spare parts are used to replace defective, faulty, worn off or expired parts. However, in case of high-tech industrial products, they are also sold out for maintenance at customer end. They are to be kept in stock for provisioning against such customer contracts too. For EDGE, the material master record of this material type can contain purchasing data as well as sales data.

EDGE requires the spare parts planning in two unique and strategic business models:

Asset Centric – Designed to provide for internal Maintenance, Repair, and Operations (MRO) with a goal to improve their asset availability and reliability. The scope of such materials is defined as Spare Parts | Maintenance Materials and is covered in detail in section 3.4 of this document.

Distribution Centric – Designed for enterprises engaged in the selling of parts to customers. This scope requires maintaining inventories for such materials that are required to be sold out to the customers or are required against Service Contracts. The scope of such materials is termed as the Service Materials Spare Parts category and the scope is discussed in detail in this section.

EDGE requires an effective planning function specific to service parts and transparency throughout the supply chain, right from the moment demand occurs through to the delivery of the product.

The following business processes are to be catered in the service materials spare parts planning:

- A systematic process to cater to customers that expect a high service level regarding the service parts availability
- Setting up Materials forecasts of Service Materials will take into consideration all the process prerequisites that are covered in more detail in section 3.1.2.1.
- As some EDGE entities require re-order-point planning for Service Materials, all the procedural aspects of manual re-order point planning covered in section 3.1.2.1 will be applied to service materials as well.

Specifically for NIMR, In these scenarios of re-order point planning, an MS Excel based third party tools are used by EDGE entities for planning and forecasting service materials and spare parts. It's a systematic process to allow the entry of such outputs as manual forecast inputs in the SAP system.

EDGE's service materials are generally secured by a Service Contracts with the customers. Therefore, the process requires capabilities for forecasting, inventory planning, procurement, and distribution of service parts to customers as per contracts. The planning horizon for planning of Service materials to be kept up to 5 years' time that accommodates all the business divisions at EDGE. These capabilities ensure targeted service levels are maintained. Thus, making it ideal for EDGE's distribution network to distribute aftermarket service parts against customer contracts.

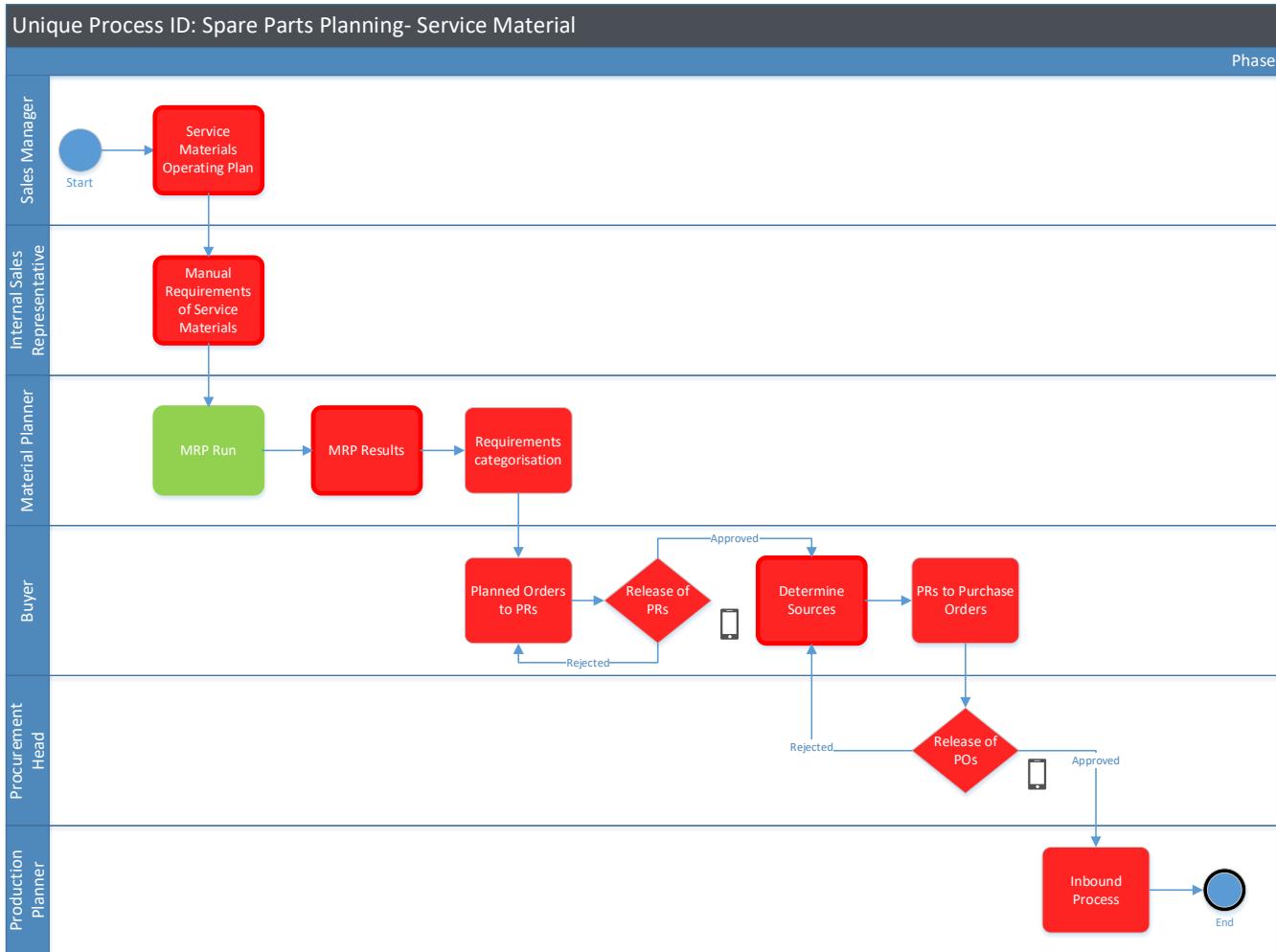
The above process describes the tactical planning functions of service parts planning. The outcome of these activities is used by the operational planning tasks in order to, on one hand, generate the appropriate procurement proposal, and on the other hand to manage the movements of parts from suppliers to the customers.

Given the huge number of SKU's being handled by the EDGE inventory of spare parts, the warranty agreements and the demand patterns of typical aftermarket parts, surplus and obsolescence issues are common. Therefore, those items that carry a useful life, must be maintainable at the Material master level in the form of shelf life. For these items, shelf-life expiration date must be possible to be maintained in the business transactions. This will help in reporting for items that are nearing expiry. Moreover, spare parts planning determines when the best time is to remove a part from stock depending, among others, on the market responsiveness. Since the obsolete stock is an important source of cash loss within the parts business, the potential return of using such a tool is very high.

EDGE EXCEPTION CASE:

AL TARIQ and HALCON do not have the scope for Spare Parts Service Materials.

3.3.2 Process Diagram



3.3.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation *	Tco de	Fi or i
P000	ED-12_020102	Start	P100	Start				
P100	ED-12_020102	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Human Triggered		
P200	ED-12_020102	Set up Requirements input for Maintenance Materials through Service Contracts	P300	Process	Internal Sales Representatives	Human Triggered		
P300	ED-12_020102	MRP Run on a prescheduled	P400	Process	Material Planner	Automated		
P400	ED-12_020102	MRP Run Results Evaluation	P500	Process	Material Planner	Partially Manual		

P500	ED-12_020102	Analysis of Requirements for all material categories	P600	Process	Material Planner	Partially Manual		
P600	ED-12_020102	Conversion of Planned Orders to Purchase Requisitions	P700	Process	Buyer	Partially Manual		
P700	ED-12_020102	Release of Purchase Requisition	P800 P600	Decision	Buyer	Partially Manual		Y
P800	ED-12_020102	Determine Sources of Supply	P900	Process	Buyer	Partially Manual		
P900	ED-12_020102	Conversion of Purchase Requisitions to Purchase Orders	P1000	Process	Buyer	Partially Manual		
P1000	ED-12_020102	Release of Purchase Orders	P1100 P800	Decision	Procurement Head	Partially Manual		Y
P1100	ED-12_020102	Onward Process of Receiving Materials against Purchase Orders	P1200	Process	Production Planner	Partially Manual		
P1200	ED-12_020102	End		End				

3.4 Spare Parts Planning – Maintenance Materials (ED-12_020103)

3.4.1 Business Process Description

EDGE being in the defence products manufacturing, is a heavily asset intensive industry. It is among the key challenges to maintain optimum level of spare parts in the inventory. Keeping lower levels of parts than required could mean non availability of parts in time to carry out planned and unplanned maintenance, thereby increasing equipment down time. Reduced availability of equipment can lead to lower production and impacts meeting customer delivery schedules. On the other hand, keeping higher inventory of spare parts means higher inventory carrying cost which will increase overall production cost. Also, industry often experiences the risk of excessive stock of parts in the inventory becoming obsolete over a period of time due to technology and engineering advancements. Either way, it is a challenge for maintenance planners and the stock planners to keep the optimum level of stock on continuous basis.

EDGE's manufacturing plants and maintenance departments face the challenge of lowering operating cost and improving service levels. Manufacturing systems need to be more sophisticated due to demand for agility and flexibility over involving greater capital investments. This has added complexity in maintaining machinery in running condition with minimal impact to production and minimal impact to customer delivery schedules.

EDGE's system requires to be catered demand unpredictability, part alternatives, high service levels, and accurate forecast of part requirement. These elements add to the complexity to the planning for spare parts.

Here are a number of business process requirements that drive spare parts planning:

- Ability to plan for parts based on a variety of factors such as criticality, cost, consumption, combination of these factors
- Integration of production and operation planning to optimize equipment availability
- Optimize spare parts storage with respect to usable life as well as storage space constraints
- Ability to dynamically update part availability due to material transfers
- Handle shelf-life expiry and maximize usable life
- Ability to track service levels and parts consumption and to update planning dynamically
- Ability to carry out cycle counting based on criticality, parts consumption, parts value, etc.

Spare parts in Maintenance Materials category can be broadly classified as:

- Stock Items: Materials for which stock is usually maintained in the warehouse.
- Non-Stock Items: Materials that are usually one-time purchases and not maintained as stock in warehouse.

Both the above categories are required to be catered in the system.

In EDGE's business processes, requirement for maintenance spare parts is generated in the following ways:

- Re-Order planning: Warehouse Clerk maintains the minimum and maximum stock levels for most of the MRO items. Procurement process is triggered based on the Re-order level. System needs to create dependent requirements for all the parts that are subject to requirements planning.
- Manual purchase requirements: Purchase requirements are manually created by users as and when the parts are required (during emergency breakdown for example).
- Automatic purchase requisitions: System automatically generates purchase requisitions for non-stock items, if they are used in the work orders.

The list below outlines the key processes step by step covering the re-order planning of spares. The key parameters to be catered in the system are re-order point, lot sizes, minimum and maximum stock levels, in-house and external storage capacities, etc.:

- Determination of requirements: Requirements are determined based on MRP planning or manual purchase requirements
- Approval process: Once purchase requisitions are approved by authorized personnel, they are converted to purchase orders to carry out the procurement process
- Source determination: Potential sources of supply based on past orders and existing long-term purchase agreements. This speeds up the process of creating the requests for quotation (RFQs)
- Quotations: Functionality to compare a number of quotations, different pricing and terms, etc.
- Purchase order processing: Information from requisition to quotation can be included in a purchase order. Different types of POs include scheduling agreements, contracts etc.
- Goods receipt and inventory management: Goods receiving personnel can confirm the receipt of goods simply by entering the PO number. By specifying permissible tolerances, 'over' and 'under', deliveries of ordered goods can be limited.

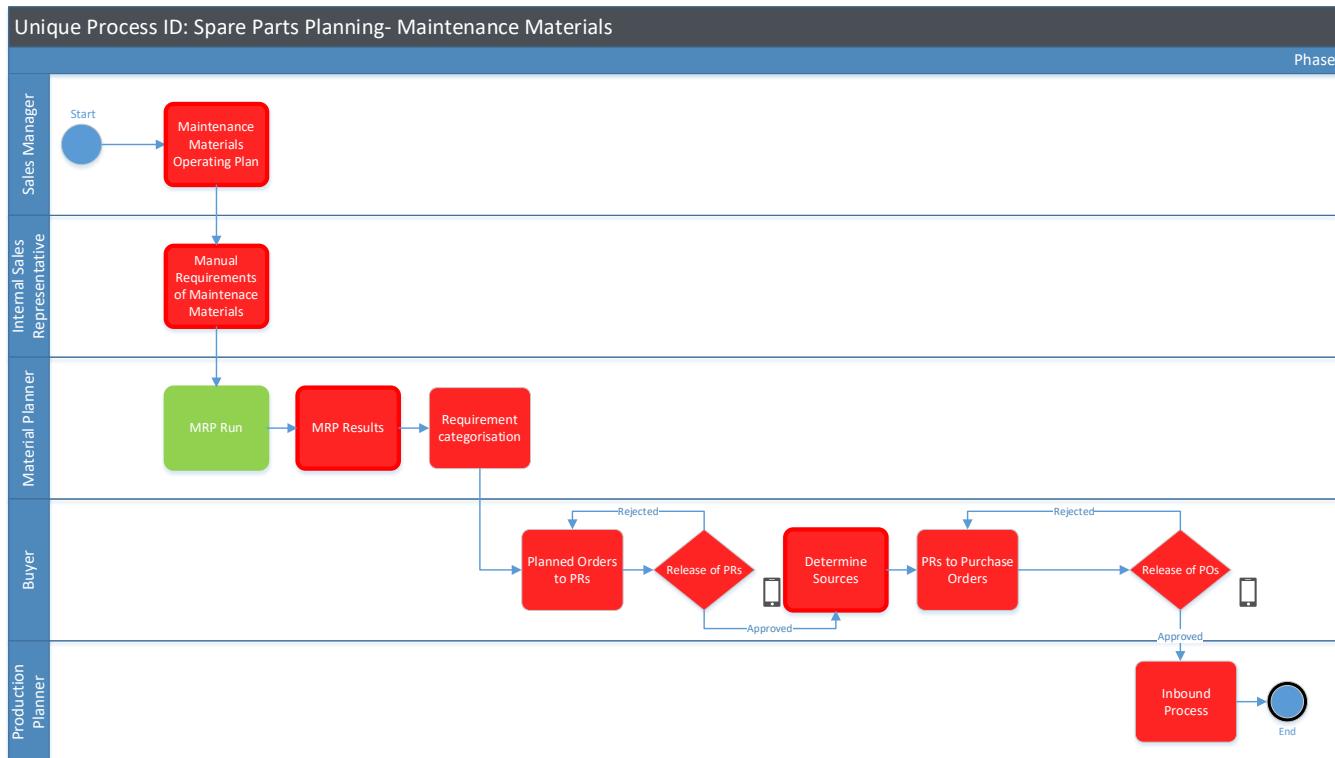
- Invoice verification: Invoices can be verified, and accounts payable clerk is notified of quantity and price variances for clearing and payment.

The following key functions will be required in the system, to effectively plan for maintenance spare parts:

3.4.1.1 Order Management:

Work orders must support component planning. Stock items as well as non-stock items can be planned on work orders. Stock items create reservations instantly on saving work orders. Materials are issued to work orders from stock. If parts are not available in stock, system creates purchase requisitions. Purchase requisitions are created immediately on saving work orders for non-stock items.

3.4.2 Process Diagram



3.4.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tco de	Fio ri
P000	ED-12_020103	Start	P100	Start				
P100	ED-12_020103	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Human Triggered		

P200	ED-12_020103	Set up Requirements input for Maintenance Materials: Re-order point based or forecast based – manual entry to system (source of calculations can be third party system)	P300	Process	Internal Sales Representatives	Human Triggered		
P300	ED-12_020103	MRP Run on a prescheduled	P400	Process	Material Planner	Automated		
P400	ED-12_020103	MRP Run Results Evaluation	P500	Process	Material Planner	Partially Manual		
P500	ED-12_020103	Analysis of Requirements for all material categories	P600	Process	Material Planner	Partially Manual		
P600	ED-12_020103	Conversion of Planned Orders to Purchase Requisitions	P700	Process	Buyer	Partially Manual		
P700	ED-12_020103	Release of Purchase Requisition	P800 P600	Decision	Buyer	Partially Manual		Y
P800	ED-12_020103	Determine Sources of Supply	P900	Process	Buyer	Partially Manual		
P900	ED-12_020103	Conversion of Purchase Requisitions to Purchase Orders	P1000	Process	Buyer	Partially Manual		
P1000	ED-12_020103	Release of Purchase Orders	P1100 P900	Decision	Buyer	Partially Manual		Y
P1100	ED-12_020103	Onward Process of Receiving Materials against Purchase Orders	P1200	Process	Production Planner	Partially Manual		
P1200	ED-12_020103	End		End				

3.5 Production planning (ED-12_020201)

3.5.1 Production Planning

3.5.1.1 Business Process Description

Material Requirements Planning (MRP) addresses the coverage of demand by supply elements (for example, inhouse production orders) without considering the available capacity. Production capacity planning supports the MRP planner in changing the production plan in such a way that the capacity constraints are considered while keeping the demands in time and quantity in mind.

The operational aspects of production plan to execution process are covered in thorough details in the following PDDs:

[8.1 Production Planning & Scheduling](#)

[8.3 Manufacturing Execution](#)

The following section should be read from planning process guidance perspective in addition to the processes covered in detail in the above two PDDs.

In terms of EDGE's business process for production, the combination of MRP and Capacity Planning will be jointly dealt in the scope of Production planning. The following key business processes must be accounted for in the system design and implementation:

- The planner must review when and how much capacity is available for a work centre. The system must enable the planner to analyse and take into consideration capacity planning along with material requirement planning.
- The planner is required to release the production/process order before it can be processed. You can use the time period between creating and releasing an order, for example, to carry out company checks and preparations. You can instruct the system to perform a component availability check at order release.

The above processes enable planners to manage and regulate the manufacturing process. It is typically performed by the production supervisor who is responsible for dispatching production operations to individual machines if a work centre/resource has several alternative machines and for assigning shop floor specialists to operations or machines. The production supervisor also decides on measures to mitigate machine breakdowns or missing components.

In addition to the role in production planning, the production managers must also take it to an end-to-end level of monitoring and involvement in the following production execution related processes:

- System should allow production supervisors / managers to change production orders or process orders, perform scheduling and rescheduling, and check component availability.
- To complete the production process, system should allow to set the status of the production/ process order to technically complete and the planner can complete the order settlement. When an order is settled, the actual costs incurred for the order are settled to one or more receiver cost-objects (for example, to the account for the material produced or to a sales order).

- Technical completion means ending a production order from a logistical view-point. The following actions are executed for orders with this status:
 - The order is no longer relevant for MRP
 - Reservations for components are deleted
 - Capacity requirements are deleted, locked capacities are freed up
 - Purchase requisitions for external operations or non-stock materials are deleted
 - The order and its operations are set to completed.
 - An order with this status should no longer be changed.
 - An order with this closed status should no longer allow postings for the order such as a material withdrawal or a confirmation.

The system must provide the shop floor with up-to-date information to keep the production process running as smoothly and efficiently as possible. To this end, you can define in detail how the production process is to be executed and the data required to be collected during production. The system should allow a comparison of this data with existing data to continually make improvements to the process. The following information systems should be part of the production planning stages:

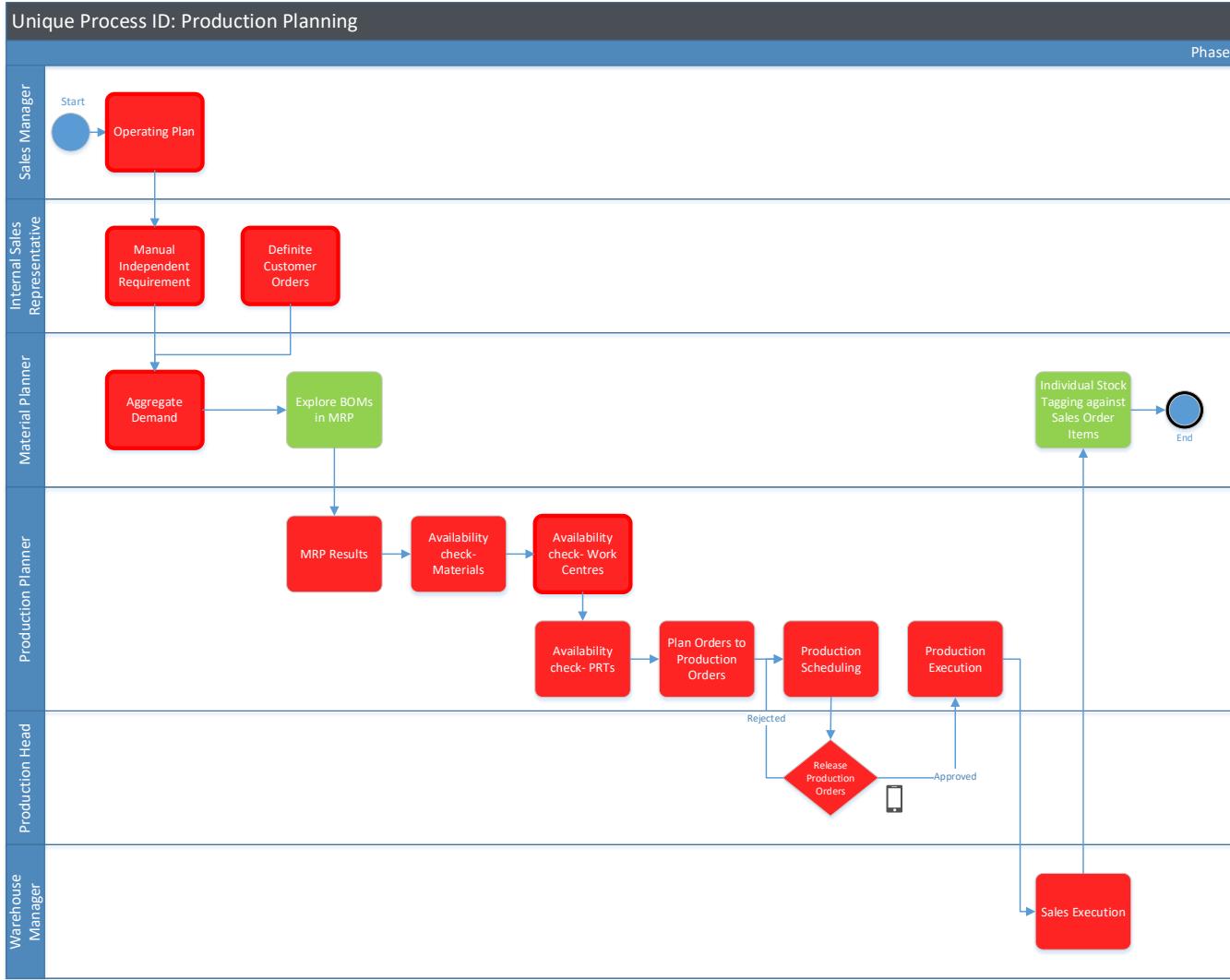
Order Progress Report.

This report shows which documents, MRP elements, stocks, and deliveries exist for products and their components that have been ordered by a customer. The order progress report gives a quick overview of the status of production and procurement, statements about the adherence to delivery dates or delays and this information can be displayed for more than one sales order or a WBS element. From the report, users can navigate to the individual procurement elements, the stock/requirements list, or the stock overview, for example.

Order Information System

This report provides users with reporting functions for production orders, planned orders, and process orders. Users can view all the orders in the system, including the orders with deletion flags or deletion indicators. For production and process orders, users can display the order headers, items, documented goods movements, operations, components, the production list, and confirmations, for example. From the report, users also have various navigation options.

3.5.1.2 Process Diagram



3.5.1.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tc code	Fi ori
P000	ED-12_020201	Start	P100	Start				
P100	ED-12_020201	Creation of Annual Operating Plan through Forecasts	P200	Process	Sales Manager	Human Triggered		

P200	ED-12_020201	Manual Independent Demand Entry in SAP System	P400	Process	Internal Sales Representatives	Human Triggered		
P300	ED-12_020201	Creations of Sales Order as per Definite Customer Requirement and Confirmation	P400	Process	Internal Sales Representatives	Human Triggered		
P400	ED-12_020201	Determine net Demand of Finished Goods to be produced, allow for tolerances where applicable	P500	Process	Material Planner	Partially Manual		
P500	ED-12_020201	Explode Finished Goods BOMs in MRP	P600	Process	Material Planner	Automated		
P600	ED-12_020201	MRP Run Results Evaluation	P700	Process	Production Planner	Partially Manual		
P700	ED-12_020201	Ensure availability of all Component Materials	P800	Process	Production Planner	Partially Manual		
P800	ED-12_020201	Ensure Availability of all Work Centres Capacities	P900	Process	Production Planner	Partially Manual		
P900	ED-12_020201	Ensure Availability of all PRTs	P1000	Process	Production Planner	Partially Manual		
P1000	ED-12_020201	Conversion of Planned Orders to Production Orders for in-house activities	P1100	Process	Production Planner	Partially Manual		
P1100	ED-12_020201	Review of Production Order Operations and their Schedules	P1200	Process	Production Planner	Partially Manual		
P1200	ED-12_020201	Release of Production Orders	P1300 P1100	Decision	Production Head	Partially Manual		Y
P1300	ED-12_020201	Onward Execution of Production Planning Process based on MRP results	P1400	Process	Production Planner	Partially Manual		
P1400	ED-12_020201	Onward execution of Sales Execution process based on sales order	P1500	Process	Warehouse Manager	Partially Manual		
P1500	ED-12_020201	System enablement to tag Stock produced against sales order item (against individual sales order and its line item)	P1600	Process	Material Planner	Automated		

P160 0	ED-12_020201	End		End				
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3.6 Master Data Maintenance for Planning (ED-12_020202)

3.6.1 Business Process Description

The operational aspects of following key master data for planning are covered in detail in the following PDD:

[8.4 Product Launch](#)

The following section serves as a planning process pre-requisites and guidelines for each of the master data element discussed below, each scope should be read in addition to the detailed processes covered in the above referred PDD.

3.6.1.1 PLANT

EDGE requires a manufacturing unit level mapping in the system for its facilities and locations.

From the system perspective, plant is a manufacturing location where all the production of materials and products takes place, and it is also the place where these products are temporarily stored before they are exported out to the warehouses. From finance perspective, plant is a place where inventory valuation takes place.

EDGE will require plants for each of its manufacturing locations of the 4 companies. In addition to the manufacturing facilities, the utilities and other shared services structures will also be mapped in the system using plants.

EDGE will create this master data for Plant one time through the configuration blueprint.

3.6.1.2 MRP AREA

Plant is the highest organizational structure to be used in planning for the EDGE MRP, however, there can be instances where various organizational units need to be classified together for executing MRP.

The MRP Area represents an organizational unit for which material requirements planning is carried out independently. As materials planning is usually carried out at plant level, all available stock in the plant (described

as available warehouse stock) is taken into account during planning. However, stocks from individual storage locations can be excluded from requirements planning or they can be planned independently. These stocks are then not included in material requirements planning at plant level. On the other hand, consignment stocks from the vendor are always included in MRP.

EDGE requires a combination of MRP Areas from selected plant storage locations, along with the overall MRP runs at Plant Level. MRP will be executed for individual MRP areas. In the definition of MRP areas, several storage locations will be grouped into one MRP area a MRP will be carried out for this MRP area.

EDGE will create this master data for MRP AREA one time through the configuration blueprint. However, a systematic process to keep the MRP areas updated in case of new storage location will require a system change document to be initiated by the requesting department. This will be routed to the System Administrators and SAP Functional Support Team to take the appropriate measures in the SAP System.

3.6.1.3 MRP TYPES

As discussed in sections above, various types of material requirement planning are required in different categories of materials. Largely, it will be a combination of MAKE-TO-ORDER strategy for the final production materials, while MAKE-TO-STOCK / Replenishment based strategy for base components, service materials and maintenance spares. This can be largely classified in the system as following categories / types of MRP:

- MRP
- Time-phased planning
- Manual reorder point planning
- Automatic reorder point planning
- Forecast-based planning

Material master data will be created based on the above MRP types mapping to material types.

3.6.1.4 WORK CENTRES

Work Centres are machine or resources that run the production operation. EDGE has a master list of various work centre categories that will be used across the production process:

- Production Lines
- Production Floors
- Production Machines
- Production Resources

Work centres are used in task list operations and work orders. Task lists are for example routings, maintenance task lists, inspection plans and standard networks. Work orders are created for production, quality assurance, plant maintenance and for the Project System as networks.

WORK Centers can be created and maintained on a regular basis as there can be changes and updates in the work centres frequently. The production department is going to raise the master data change request to the SAP Master Data Manager / Administrator Team. The SAP MDM team will take the right pre-requisite information and system validations to process this change.

3.6.1.5 MATERIALS

Materials in SAP is a logical representation of goods or service that is an object of production, sales, purchasing, inventory management etc. From EDGE's perspective, it is a mapping of the units of goods from raw stages to production, and all the further goods and units that are required to facilitate this production.

The data in a material master record will be divided into two categories:

- Data of a purely descriptive nature
This is data with an information content such as name, size, or dimension.
- Data that the system will use to perform a control function
This is data such as MRP specifications and price control.

The following protocol will be used in the system to update and maintain material masters:

- Separate Material Master number ranges will be defined for each material category
- The source department that is raising a request for the generation of the new material will compile all the information related from the description to the design of the material. This information will be routed through the workflow to Costing Department to complete the pricing control.
- The compiled information will be received by the MDM team, and they will create or change the material master in the system.
- In case of production materials, in addition to the design and control information, the following additional scopes of information will be combined and submitted along with the material information:
 - Bill of Material
 - Routing
 - Activities
- In case of production materials, there are subsequent steps to be performed by the finance after the creation of material and its respective BOM, and Routing, i.e., the Standard Cost Estimate and Price Release. Therefore, a workflow request is to be routed to the respective Cost Controller to maintain the Standard Cost Estimate and Standard price for the respective materials.
- In case the materials are packaged, there are subsequent steps to be performed by the MDM team with respect to material packaging. These will be termed as Packaging Instructions. These too can be created after the material is created in the system; however, its information can be routed along with the material's descriptive and design information.
- In case of procurement materials, the source of supply must be maintained in the following order:
 - Source List
 - Purchase Info Record – Specifying the details of negotiated rates and quantitative limits
 - If the above two are not specified, the source of supply determination in the planning stage will not be effective.

3.6.1.6 ROUTING

Routine defines the list of activities to be performed for the production process. Routing defines a sequence of activities performed at the work centre. Routing plays an important role in calculating production cost, machine time and labour time.

Routing information is created at the time of creating a new material master. As discussed in previous section for materials, Routing information will be coupled up with the description and design information of all production materials. It will be routed from the requesting production department to the MDM team to be created along with the creation of new material master.

Various versions of routing for internal and external processing are possible and will be provided to the MDM for creation in the system.

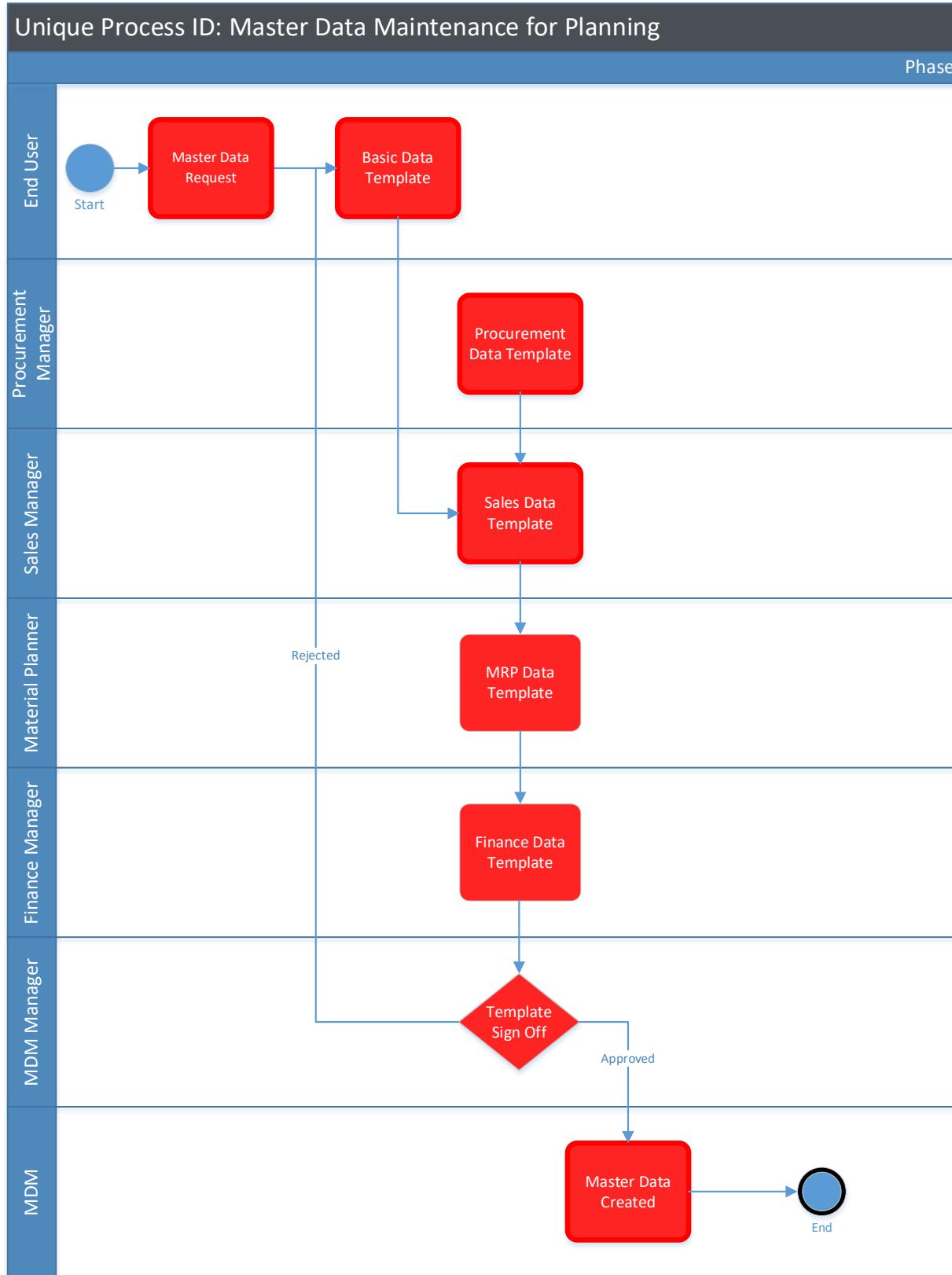
3.6.1.7 BILL OF MATERIAL

SAP bill of materials (BOM) is one of the elements of SAP PP master data which contains information like list of components and their quantities required to produce an assembly or a finished good (FG).

BOM is created with the creation of a new material master for a production or assembly product. As discussed in previous section for materials, BOM information will be coupled up with the description and design information of all production materials. It will be routed from the requesting production design department to the MDM team to be created along with the creation of new material master.

BOM versions are possible considering different combinations of source / component materials. This information too will be routed from the product engineering and product design department to the MDM team.

3.6.2 Process Diagram



3.6.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tco de	Fi or i
P000	ED-12_020202	Start	P100	Start				
P100	ED-12_020202	Request for Master Data	P200	Process	End User	Partially Manual		
P200	ED-12_020202	Details to be filled out on the Template by Indenting Department	P400	Process	End User	Partially Manual		
P300	ED-12_020202	Details to be filled out on the template by Procurement	P400	Process	Procurement Manager	Partially Manual		
P400	ED-12_020202	Details to be filled out on the template by Sales	P500	Process	Sales Manager	Partially Manual		
P500	ED-12_020202	MRP Details to be filled out on the template by Planner	P600	Process	Material Planner	Partially Manual		
P600	ED-12_020202	Details to be filled out on the template by Finance	P700	Process	Finance Manager	Partially Manual		
P700	ED-12_020202	Final Template for Sign Off	P800 P200	Decision	MDM Manager	Partially Manual		
P800	ED-12_020202	Master Data Creation in the system	P900	Process	MDM	Partially Manual		
P900	ED-12_020202	End		End				

4. DETAILED SOLUTION DESIGN

4.1 Material Planning

Refer the PDD document - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7 (Section 4.3) for the MRP planning details, this section of the document will cover addition requirements for MRP planning process. The section 4 of the above mentioned PDD document covered how system determine the shortages and covering the requirement by creating supply element. What type of supply elements to be created depending on the material master procurement type definition. If the material set procurement type as 'F' externally procured, the supply elements will create as purchase requisition and follow the scheduling backward or forward depending on the reorder-based planning or material requirement planning as mentioned in the PDD section. If the material is updated with procurement type as "E", the supply elements will create as planned order and backward scheduling and capacity requirements are calculated (refer PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.3). The MRP process can be set as background job, for EDGE following approaches recommended.

- 1) Schedule daily MRP run with no regenerative planning, scheduling as lead time scheduling and planning mode as adopt planning. This job can be scheduled plant wise during off working hours.
- 2) Schedule weekly MRP run with regenerative planning, scheduling as lead time scheduling and planning mode as adopt planning. This job can be scheduled plant wise during weekends.

The above-mentioned combined approach help EDGE to react to the shortages much faster, as the business grows it is possible to schedule jobs short frequent if needed.

Post MRP run another job schedule is recommended to schedule, "Detect MRP situation", this job will help to collect exception message and planner can review the logs and take required corrective action. Refer PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.4 for the details regarding the Fiori App.

Fiori App "Display MRP Master Data issue" helps planner to review the master data issues and help to take required corrective actions, like missing production version etc.

Fiori App "Monitor Material Coverage- Net and individual Segments" this will help planner to review all the material and alerts related to his/her area of responsibility (such as MRP controller), details of the App covered in the PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.4.

Fiori App "Manage Material Coverage" help planner to simulate and see how to expedite the ad hoc plan or use alternate source of supply (refer PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.4).

Depending on the supply and demand situation for manufactured product, planned orders are created if the shortage exist, such planned order planner can review and make change in dates or quantity, once changes are done in planned order, planned order is set as firmed, subsequent planning run will not change the firmed supply element planned order.

Activity List

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	MRP Run	P300	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P300	Run MRP situation job	P400		Material Planner - External Procurement/ Production Planner	Automated		Detect MRP Situations
P400	Review MRP Master Data issue	P500	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Display MRP Material Issues
P500	Review MRP situations	P600	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Detect MRP Situations
P600	Re-run MRP if needed	P700	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Schedule MRP Runs
P700	Material with Procurement type 'F', Purchase requisition created. (Assumption - source of supply is determined during the MRP run based on the master data setup)	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	Review The purchase requisition with the lead time or nearing the lead time and adjust if needed	P900	Process	Material Planner - External Procurement	Partially Manual		Monitor Material Coverage – Net and Individual Segments
P900	Convert Purchase requisition to Purchase Order	P2000	Process	Material Planner - External Procurement	Partially Manual		Create Purchase Order Advanced
P700	Material with Procurement type "E", planned order created (Assumption - source of supply is determined during MRP run based on the master data setup)	P1100	Process	Production Planner	Automated		Schedule MRP Runs
P1100	Review Planned Orders within the production freeze horizon	P1200	Process	Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments
P1250	Schedule the planned Order (if needed)	P1200	Process	Production Planner	Partially Manual		Capacity Scheduling Board/Capacity Scheduling Table
P1200	Convert planned order to production Order	P2000	Process	Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments or Convert planned orders

P700	Material with Procurement type "X", depending on source of supply, planned order or purchase requisition	P800	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P700	Material with Procurement type "X", depending on source of supply, planned order or purchase requisition	P1100	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P700	Material with Procurement type 'F' or 'X', special procurement type = 30, Subcon purchase requisition created	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P200	End						

"Material Planner - External Procurement" role is for Buyer and "Production Planner" role is for production planner.

Conversion of Planned Order Production Order can be a scheduled job based on the business specific filters using the Fiori App – " Schedule Order Conversion ".

Purchase requisition auto conversion can also to a scheduled job using the tcode/Fiori App – ME59

Planners have provision to create planned order, purchase requisitions ad hoc, the created orders will be in firmed status, subsequent planning run will respect the same orders, if any shortage further with respect to demand, new supply elements will be created, if the supply is more than the demand excess alerts will be generated.

Activity List for Planned order creation (Manual) – This is high level process flow; detailed process flow refers P2P PDD - AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	Create Planned Order	P300	Process	Production Planner	Partially Manual		Create Planned Order
P300	Review component and operations	P400	Process	Production Planner	Partially Manual		Create Planned Order
P400	Save Planned Order	P500	Process	Production Planner	Partially Manual		Create Planned Order
P500	End						

Activity List of Purchase Requisition Creation (Manual) – This high-level process detailed process for purchase requisition and purchase order are covered in the S2P PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	Create Purchase Requisition	P300	Process	STP – Procurement Buyer	Partially Manual		Create Purchase Order, Create Purchase Order - Advanced
P300	Review Source of Supply	P400	Process	STP – Procurement Buyer	Partially Manual		Create Purchase Order, Create Purchase Order - Advanced
P400	Save Purchase Requisition	P500	Process	STP – Procurement Buyer	Partially Manual		Create Purchase Order, Create Purchase Order - Advanced
P500	End						

SAP will allow planners to convert planned order to purchase requisition and send it for procure externally.

Any change in requirement qty or change in date for the purchase order can be communicated to supplier via mail or any other means (refer PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7). PDD for S2P procure to Pay also covering the approval process.

4.1.1 Production Material Planning

PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.3 covering how the MRP planning considering the demand and requirement date into consideration and planning supply quantity within the lead time, if any deviation system will generate appropriate alerts.

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	MRP Run	P300	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P300	Run MRP situation job	P400	Process	Material Planner - External Procurement/ Production Planner	Automated		Detect MRP Situations
P400	Review MRP Master Data issue	P500	Process	Material Planner - External Procurement/	Partially Manual		Display MRP Material Issues

				Production Planner			
P500	Review MRP situations	P600	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Detect MRP Situations
P600	Re-run MRP if needed	P700	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Schedule MRP Runs
P700	Material with Procurement type 'F', Purchase requisition created. (Assumption - source of supply is determined during the MRP run based on the master data setup)	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	Review The purchase requisition with the lead time or nearing the lead time and adjust if needed	P900	Process	Material Planner - External Procurement	Partially Manual		Monitor Material Coverage – Net and Individual Segments
P900	Convert Purchase requisition to Purchase Order	P2000	Process	STP – Procurement Buyer	Partially Manual		Create Purchase Order Advanced
P700	Material with Procurement type "E", planned order created (Assumption - source of supply is determined during MRP run based on the master data setup)	P1100	Process	Production Planner	Automated		Schedule MRP Runs
P1100	Review Planned Orders within the production freeze horizon	P1200	Process	Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments
P1250	Schedule the planned Order (if needed)	P1200	Process	Production Planner	Partially Manual		Capacity Scheduling Board/Capacity Scheduling Table
P1200	Convert planned order to production Order	P2000	Process	Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments or Convert planned orders
P700	Material with Procurement type "X", depending on source of supply, planned order or purchase requisition	P800	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P700	Material with Procurement type "X", depending on source of supply, planned order or purchase requisition	P1100	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P700	Material with Procurement type 'F' or 'X', special procurement type = 30, Subcon purchase requisition created	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs

P2000	End						
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Source of supply determination and prioritization refer PDD doc - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7 section 4.3.

4.1.2 Consumable Planning

The reorder point should cover the average material requirements expected during the replenishment lead time.

The safety stock exists to cover both excess material consumption within the replenishment lead time and any additional requirements that may occur due to delivery delays. Therefore, the safety stock is included in the reorder level.

The following values are important for defining the reorder point:

- Safety stock
- Average consumption
- Replenishment lead time

The following values are important for defining the safety stock:

- Past consumption values (historical data) or future requirements
- Vendor/production delivery timelines
- Service level to be achieved
- Forecast error, that is, the deviation from the expected requirements

Activity list for reorder-based planning without external demand

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	Stock within reorder point?	P300	Process		Automated		
P300	Yes - Make planning file entry	P600	Process		Automated		

P300	No - No action required	P400	Process		Automated		
P400	Material withdrawn -	P500	Process	Production Operator	Partially Manual		MIGO
P500	Stock within reorder point?	P200	Process		Automated		
P600	MRP Run	P700	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P700	If planning file exist, replenishment order created with respect to lot size procedure (under plant stock level)	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	End	End					

Activity List – Reorder point planning with external demand

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	(Stock + supply element) - demand (sales order + reservation (within replenishment lead time)) is below reorder point?	P300	Process		Automated		
P300	Yes - Make planning file entry	P600	Process		Automated		
P300	No - No action required	P400	Process		Automated		
P400	Material withdrawn -	P500	Process	Production Operator	Partially Manual		MIGO
P500	(Stock + supply element) - demand (sales order + reservation (within replenishment lead time)) is below reorder point?	P200	Process		Automated		
P600	MRP Run	P700	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P700	If planning file exist, replenishment order created net demand within replenishment period + reorder quantity	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	End	End					

Requirement date calculation logic explained in the PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.3

4.1.3 Material Subcontracting

Pre-requisites

- 1) Assembly material which you are planning to subcontract should be updated with special procurement key – 30
- 2) Material should have purchased view
- 3) Subcontracting Bills of Material (BOM) created
- 4) Production version with BOM should be created
- 5) A purchasing info record with subcontracting will reflect the source of supply between vendor and material and it link the production version.

This document covers planning process related to subcontracting, subsequent processing of purchase requisitions converts in the S2P PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7, EWM PDD's

If you have more than one source of supply, make sure auto sourcing indicator set in the info record. Source of supply determination logic mentioned in the PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7, section 4.3

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	Material Master MRP 2, special Procurement - 30	P400	Master Data update	D2S-PP-Master Data Team	Partially Manual	MM03	Display Material
P200	Bills of Material	P400	Master Data update	BOM Engineer - PLM	Partially Manual	SC03	Display Bill of Material, Display Material BoM
P200	Production Version with BOM	P400	Master Data update	D2S-PP-Master Data Team	Partially Manual	C223	Manage Production Versions
P200	Subcon Info Record - Link to Production version and auto sourcing if more than one source of supply	P400	Master Data update	BOM Engineer - PLM	Partially Manual		Manage Purchasing Info Records
P400	Review Demand from Sales order or Dependent Demand from above assembly	P500	Process	Material Planner - External Procurement	Automated		Monitor Stock / Requirements List
P500	MRP Run	P600	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P600	Subcon purchase requisitions created for subcon material and components exploded in the purchase requisitions.	P700	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P700	End	End					

4.1.4 Spare Parts Planning – Service Material

As per process definition entities are using 3rd party tool to derive the EOQ and safety stock and update in the material master and subsequently planned in S/4 HANA using reorder-based planning. If the component is already using in bills of material component and it is planned based on the demand, you cannot set the reorder point planning. As you can either planned based on the demand or you can plan based on the reorder point, in such cases the reorder point can be updated as safety stock. MRP run will ensure that in any case stock will be above safety stock level.

Following are pre-requisite for reorder-based planning

- 1) Material master MRP type to be set relevant MRP type for reorder-based planning – VB, ZV
- 2) Re-order quantity to be updated in material master MRP 1 view
- 3) Select appropriate lot size, for reorder-based planning it is recommend using replenish to max stock level, which is usually set as EOQ quantity, so you can set lot size procedure as HB and Max stock level as EOQ.
- 4) Safety stock to be updated in the material master (optional)

Activity List

Re-order point planning without considering the external demand

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	Stock within reorder point?	P300	Process		Automated		
P300	Yes - Make planning file entry	P600	Process		Automated		
P300	No - No action required	P400	Process		Automated		
P400	Material withdrawn -	P500	Process	Production Operator	Partially Manual		MIGO
P500	Stock within reorder point?	P200	Process		Automated		
P600	MRP Run	P700	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P700	If planning file exist, replenishment order created with respect to lot size procedure (under plant stock level)	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	End	End					

Reorder based planning with external demand into consideration.

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				

P200	(Stock +supply element) - demand (sales order + reservation (within replenishment lead time)) is below reorder point?	P300	Process		Automated		
P300	Yes - Make planning file entry	P600	Process		Automated		
P300	No - No action required	P400	Process		Automated		
P400	Material withdrawn -	P500	Process	Production Operator	Partially Manual		MIGO
P500	(Stock +supply element) - demand (sales order + service order + order reservation (within replenishment lead time)) is below reorder point?	P200	Process		Automated		
P600	MRP Run	P700	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P700	If planning file exist, replenishment order created net demand within replenishment period + reorder quantity	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	End	End					

Approval process for purchase requisitions is covered in the S2P PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7

4.1.5 Spare Parts Planning – Maintenance Materials

As per process definition spare parts planning for asset maintenance is reorder based planning or manual procurement as on when need basis.

Following are pre-requisite for reorder-based planning.

- 1) Material master MRP type to be set relevant MRP type for reorder-based planning – VB, ZV
- 2) Re-order quantity to be updated in material master MRP 1 view.
- 3) Select appropriate lot size, for reorder-based planning it is recommend using replenish to max stock level, which is usually set as EOQ quantity, so you can set lot size procedure as HB and Max stock level as EOQ.
- 4) Safety stock to be updated in the material master (optional)

Activity List Re-order point planning without considering the external demand.

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	Stock within reorder point?	P300	Process		Automated		
P300	Yes - Make planning file entry	P600	Process		Automated		
P300	No - No action required	P400	Process		Automated		

P400	Material withdrawn -	P500	Process	Production Operator	Partially Manual	MIGO	Goods Movement, Post Goods Movement
P500	Stock within reorder point?	P200	Process		Automated		
P600	MRP Run	P700	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P700	If planning file exist, replenishment order created with respect to lot size procedure (under plant stock level)	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P800	End	End					

Refer S2P PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7 for subsequent process in purchase requisitions.

4.2 Production Planning

MRP run in S/4 HANA consider material demand and supply situation and calculate when you need the components with assumption that capacity is infinitely available and plan the component availability. Post planning production planner can access the Fiori app - Capacity Scheduling Board or Capacity Scheduling Table to review the capacity and adjust manually.

Process Step ID	Process Step Description	Next Step ID	Step Type	Owner	Automation*	Tcode	Fiori
P100	Start	P200	Start				
P200	MRP Run	P300	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P300	Run MRP situation job	P400	Process	Material Planner - External Procurement/ Production Planner	Automated		Detect MRP Situations
P400	Review MRP Master Data issue	P500	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Display MRP Material Issues
P500	Review MRP situations	P600	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Detect MRP Situations
P600	Re-run MRP if needed	P700	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Schedule MRP Runs
P700	Material with Procurement type 'F', Purchase requisition created. (Assumption - source of supply is determined during	P800	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs

	the MRP run based on the master data setup)						
P800	Review The purchase requisition with the lead time or nearing the lead time and adjust if needed	P900	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments
P900	Convert Purchase requisition to Purchase Order	P2000	Process	STP – Procurement Buyer	Partially Manual		Create Purchase Order Advanced
P700	Material with Procurement type "E", planned order created (Assumption - source of supply is determined during MRP run based on the master data setup)	P1100	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P1100	Review Planned Orders within the production freeze horizon	P1200	Process	Material Planner - External Procurement/ Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments
P1250	Schedule the planned Order (if needed)	P1200	Process	Production Planner	Partially Manual		Capacity Scheduling Board/Capacity Scheduling Table
P1200	Convert planned order to production Order	P2000	Process	Production Planner	Partially Manual		Monitor Material Coverage – Net and Individual Segments or Convert planned orders
P700	Material with Procurement type "X", depending on source of supply, planned order or purchase requisition	P800	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P700	Material with Procurement type "X", depending on source of supply, planned order or purchase requisition	P1100	Process	Material Planner - External Procurement/ Production Planner	Automated		Schedule MRP Runs
P700	Material with Procurement type 'F' or 'X', special procurement type = 30, Subcon purchase requisition created	P800	Process	Material Planner - External Procurement	Automated		Schedule MRP Runs
P2000	End						

For planned order related further processing refer the P2P PDD - AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7 and 83_Advancededge_PDD_P2P_Manufacturing Execution incl. MES_P2_v0.8.

4.2.1 Master Data Maintenance for Planning

Master data is important part of production planning, if the master is defined properly then the planning result will help planners take right decision on right time. Which will help to ensure stock out and excess stock situation.

4.2.1.1 Plant – Following plants are defined

2901 – ADASI

- 3401 – NIMR
- 4301 – HALCON
- 4601 – AL-TARIQ

All the above 4 plants are relevant for MRP planning, for detailed organizational structure refer the PDD – logistic and Transportation – Inbound (section -4.2.4).

4.2.1.2 Material Master

The material master contains information on all the materials that a company procures or produces, stores, and sells. It is the company's central source for retrieving material-specific data. This information is stored in individual material master records.

The material master is used by all components in the SAP Logistics System. The integration of all material data in a single database object eliminates redundant data storage. In the SAP Logistics System, the data contained in the material master is required, for example, for the following functions:

- In Purchasing for ordering
- In Inventory Management for goods movement postings and physical inventory
- In Invoice Verification for posting invoices
- In Sales and Distribution for sales order processing
- In Production Planning and Control for material requirements planning, scheduling, and work scheduling.

In this document Production Planning related detailed are discussed. Views MRP1, MRP2, MRP3 and MRP4 are relevant for MRP Planning and Work scheduling view is related to Production Execution. Parameters in this fields have impact in the planning and further execution.

Following are planning relevant fields and recommendations for EDGE.

Base Unit of Measure: Unit of measure in which stock of the material are managed. The system converts all the qualities you enter in other units of measure to the base unit of measure. Base UoM is the same as the stock keeping unit.

MRP type – Key that determines whether and how the material is planned. Following are commonly used options

- Manual reorder point planning
- Automatic reorder point planning
- Forecast-based planning.
- Material requirements planning with forecasts for unplanned consumption.
- Master production scheduling (MPS)
- Demand-driven replenishment
- No planning

D1 Demand-Driven Replenishment - firming type - 1 -

M0 MPS, FCST Consumption, No Firming

M1 MPS, FCST Consumption, Auto Firming, New Ords after PTF

- M2 MPS, FCST Consumption, Auto Firming, No New Ords in PTF
- M3 MPS, FCST Consumption, Manual Firming, New Ords after PTF
- M4 MPS, FCST Consumption, Manual Firming, No New Ords in PTF
- ND No planning
- P1 Forecast Consumption, Auto Firming, New Ords after PTF
- P2 Forecast Consumption, Auto Firming, No New Ords in PTF
- P3 Forecast Consumption, Manual Firming, New Ords after PTF
- P4 Forecast Consumption, Manual Firming, No New Ords in PTF
- PD Forecast Consumption, No Planning Time Fence
- R1 Time-phased planning
- R2 Time-phased w.auto.reord.point
- RE Replenishment plnd externally
- RF Replenish with dyn.TargetStock
- RP Replenishment
- RR
- RS
- V1 Manual reord.point w. ext.reqs
- V2 Autom. reord.point w. ext.reqs
- VB Reorder-Point Planning
- VI Vendor Managed Inventory
- VM Automatic reorder point plng
- VS Seasonal MRP
- VV Forecast-based planning
- X0 W/O MRP, with BOM Explosion

ZV Manual reord.point w. add.ext.reqs within lead time

For EDGE it is recommended to use PD for MRP planning, VB for reorder-based planning, ZV for reorder-based planning with demand into consideration within lead time. ND for no planning.

Reorder Point – If the stock falls below this quantity, the systems flag the material for requirements planning by creating a planning file entry. The report point is important only for reorder point planning. If MRP type selected is relevant for reorder point planning (VB or ZV), then this field to entered mandatorily in material master. For manual reorder point planning, enter reorder point manually, where are for automatic planning system determines the reorder point automatically.

MRP Controller – Person responsible for material planning. Refer P2P KDS for details of MRP controller.

Lot sizing Procedure – Key that determines which lot-sizing procedure the systems use within material planning to calculate the quantity to be procured or produced. A procedure in material requirement planning used to calculate order and production quantities (lot sizes). It divided into following groups.

- Static
- Period
- Optimum

Refer KDS for detailed list of Lot sizing procedures.

Minimum lot size – Minimum procurement quantity

Maximum lot size – Quantities that is not allowed to be exceeded during procurement.

Fixed lot size – Quantities that to be procured for fixed lot size MRP type.

Maximum stock level – Quantity of the material in this plant may not be exceeded. This applicable only if you have chosen to replenish to max stock as the lot sizing, say HB, H1.

Assembly scrap – Percentage scrap that occurs during production of the material if the material is an assembly. This used in material requirement planning to calculate lot size of the assembly. The system increases the quantity to be produced by the scrap quantity calculated.

Rounding values for purchase Order quantity – Value to a multiple of which the systems round up the procurement quantity. The rounding value is used in the planning run if no rounding profile has been specified in the material master record.

MRP Area exist indicator – Sates whether the specific MRP area parameters have been maintained for this material.

MRP 2 View

Procurement type – Indicate that defines how the material is procured. The following are possible options. The procurement type is defined by the material type you have chosen.

- The material is produced in-house (E)
- The material is procured externally (F)
- The material can be both produced in-house and procured externally (X)

Special Procurement type - Allows you to define the procurement type more exactly. The system determines the procurement type from the material type. You use special procurement when you want to be able to override the procurement type in the material master or define the procurement type more precisely. If the procurement type is in-house, you can nevertheless force the system to ignore the BOM and routing and process the material as if it were externally procured, by specifying the special procurement as external. If a material has a routing but no BOM, it is treated as an externally procured material even if the procurement type is in-house. Both the BOM and the routing are ignored. However, if you specify the special procurement type as in-house, the routing is included even if the material has no BOM. For EDGE special procurement key 30 is used for the material subcontracting scenario.

Issue Storage location - In the case of a material produced in-house, this is the key to the storage location that is copied to the planned order, production order, or run schedule quantity. If the material is a component, it is the issuing storage location to which a backflush is posted. If the material is produced, it is the receiving storage location to which the receipt of the material is posted.

Storage location for external procurement - Key of the storage location that is proposed in the purchase requisition in materials planning for subsequent storage of the material. In the case of a material procured externally, this storage location is proposed in the planned order in materials planning.

Inhouse Production time - Specifies the time in workdays needed to produce the material in-house. In-house production time is independent of the order quantity. The system requires the in-house production time to determine the planned dates for planned orders in materials planning.

Planned delivery time - Number of calendar days needed to obtain the material or service if it is procured externally. If you have different vendors for a material, you must specify an average value. The same applies if you order the material from a fixed vendor that has varying delivery times.

Goods Receipt processing time - number of workdays required after receiving the material for inspection and placement into storage.

Schedule Margin Key - Key that the system uses to determine the floats required for scheduling an order. You define the following floats with the scheduling margin key:

- opening period
- float after production (only in the case of in-house production)
- float before production (only in the case of in-house production)
- release period (only in the case of production order management)

Floats are maintained in workdays.

Safety stock - Specifies the quantity whose purpose is to satisfy unexpectedly high demand in the coverage period. The risk of shortfalls is reduced by having a safety stock. With manual reorder point planning, you can enter a value in the material master record. However, it is merely for information. With automatic reorder point planning and forecast-based planning, the system determines and adjusts the value automatically for forecasting purposes.

Minimum safety stock – The quantity that defines the lower limit for safety stock. These values cannot be exceeded.

Service Level – Percentage of requirement to be covered by the warehouse stock. System user service level to calculate the safety stock. Higher the service level higher the safety stock calculated for additional consumption or delays in delivery.

MRP 3

Period indicator – Period in which the material consumption values, and forecast are managed

Strategy group - The strategy group groups all the planning strategies that can be used for a particular material. The planning strategy represents the procedure used for planning a material and is (technically speaking) controlled by the MRP types. For EDGE it is recommended to use Z2 for all planning relevant materials.

Consumption mode – It specifies the direction on the time axis in which requirements are consumed.

- 1 Backward consumption only
- 2 Backward/forward consumption
- 3 Forward consumption only
- 4 Forward/backward consumption
- 5 Period-specific consumption

Consumption period: Backward - Determines the consumption period (in workdays) for backward consumption. Using backward consumption, sales orders, dependent requirements, or material reservations are assigned to and consume planned independent requirement quantities which lie within the consumption period and before the requirements date. The consumption period is specified in days and is valid from the current date. Enter a period between 1 and 999 days.

Consumption Period: Forward - Determines the consumption period (in workdays) for forward consumption. In forward consumption, sales orders, dependent requirements or material reservations consume planned independent requirements that lie within the consumption period after the requirements date. The consumption period is specified in days and is valid from the current date. Enter a period between 1 and 999 days.

Availability Check - Specifies whether and how the system checks availability and generates requirements for materials planning.

Total replenishment lead time - The total replenishment lead time is the time needed before the product is completely available again, that is, after all BOM levels have been procured or produced.

It is not calculated by the system but defined in this field as the total of the in-house production time(s) and/or the planned delivery time(s) of the longest production path.

This time is necessary if, for materials produced in-house, the replenishment lead time is to be taken into consideration in the availability check.

In an availability check where the system takes the replenishment lead time into consideration, it only checks whether there are sufficient incoming quantities and stocks available to cover the requirements within the replenishment lead time. Outside the replenishment lead time, the system assumes that the material is available in sufficient quantity.

Therefore, in this situation, it is usually necessary to depict the product's total replenishment lead time with all BOM levels as the replenishment lead time.

The following options exist for materials produced in-house if the replenishment lead time is included in the availability check:

The Total replenishment lead time field is maintained.

In this case, the time maintained in this field is used for the availability check. The Total replenishment lead time field is not maintained.

In this case, the system reads the in-house production time and, if available, the goods receipt processing time, and interprets the total of these two times as the replenishment lead time for the availability check.

There is no point in maintaining the Total replenishment lead time field for materials procured externally. In external procurement, the system adds the processing time from purchasing, the planned delivery time, and the goods receipt processing time and uses this total as the replenishment lead time for an availability check with replenishment lead time.

Indicator for cross Project material - The indicator determines if the system takes all stock and MRP-relevant units (inward/outward movement) in the project stock segments for all documents without account assignment into consideration.

Check individual segments of project only

1 Check plant segment and all segments of projects

MRP4

Dependent requirements ind. for individual and coll. Reqmts –

Indicator determining whether the following requirements are allowed for the dependent requirements of the material:

•Individual requirements

Requirement quantities of the dependent material are stated individually. Collective requirements

Requirement quantities of the dependent material are grouped together.

You can maintain this indicator in the following places:

In the material master record

For the explosion type of the BOM item (in Customizing for Basic Data in Define Explosion Types)

The setting for the explosion type overrides that in the material master record.

If the material is assigned to a material type that does not allow quantity-based inventory management in this plant, you can set the indicator to individual requirements only.

If the stock is to be managed in sales order stock or project stock, the indicator must be set to one of the following options:

- Individual and collective requirements
- Individual requirements only

If a material managed in project stock is to be procured from another plant using a cross-company-code stock transport order, the indicator must be set to 2 (collective requirements) in the issuing plant because, in this specific context, individual project stock management is not possible in both plants.

Requirement grouping – Defines whether additional individual/dependent requirements are written for components whose assembly is set such that total dependent requirements are created

- T Display of dependent requirements as a daily total
0 In rep. mfg, individual record in add to total requirements.

MRP relevancy for dependent requirement - This indicator controls whether dependent requirements are relevant to MRP or not. Dependent requirements include dependent reservations and stock transfer requirements.

Materials for dependent requirements are planned.

- 1 Materials for dependent requirements are not planned.

MRP Area related following field are applicable for EDGE – MRP type, reorder point, MRP controller, lot size procedure, Min lot, Max lot , rounding ,Max stock level, Fixed lot size, Special procurement type (if you are sourcing the material from plant use – 45, if you are using subcontracting (material) use 30), planned delivery time and consider delivery time indicator. Refer KDS for S2P for list of MRP areas are created for EDGE.

Entities where they wanted to exclude specific storage location stock, demand etc can use respective MRP area. Material needs to extend to specific MRP area and set MRP type as ND, so MRP will not consider the storage location data for planning. Where entities wanted to exclude specific storage location stock and plan it separately, they can assign appropriate MRP types and other filed parameters.

For NIMR spare parts planning, separate MRP area identified material master extended to the MRP area for separate planning. Within MRP area, MRP type used is 'PD', because NIMR wanted to consider the sales order demand for full horizon. For NIMR, the reorder point captured in the safety stock and Min and Max maintained in the material master. MRP type PD consider safety stock, sales order demand and plan the quantity according to the Min and Max defined in the material master.

4.2.1.3 Bills of Material

A formally structured list of the components that make up a product or assembly. The list contains the object number of each component, together with the quantity and unit of measure.

BOMs are used in their different forms in various situations where a finished product is assembled from several component parts or materials. Depending on the industry sector, they can also be called recipes or lists of ingredients and so on.

They contain important basic data for numerous areas of a company, for example:

- MRP
- Material provisions for production
- Product costing
- Plant maintenance

The Production Planning application component provides a solution for both the production plan (type and quantity of the products) and the production process. Preparations for production include the procurement, storage, and transportation of materials and intermediate products.

Bills of material (BOMs) and routings contain essential master data for integrated materials management and production control. In the design department, a new product is designed such that it is suitable for production and for its intended purpose. The result of this product phase is drawings and a list of all the parts required to produce the product.

Refer E2M PDD - AdvantEDGE_PDD_E2M_BOM Management_P2_v0.5 for more details on Bills of Materials

4.2.1.4 Work Centre

Operations are carried out at a work center. In the SAP system work centers are business objects that can represent the following real work centers, for example:

- Machines, machine groups
- Production lines
- Assembly work centers
- Employees, groups of employees

Together with bills of material and routings, work centers belong to the most important master data in the production planning and control system. Work centers are used in task list operations and work orders. Task lists are for example routings, maintenance task lists, inspection plans and standard networks. Work orders are created for production, quality assurance, plant maintenance and for the Project System as networks.

Data in work centers is used for

- Scheduling

Operating times and formulas are entered in the work center, so that the duration of an operation can be calculated.

- Costing

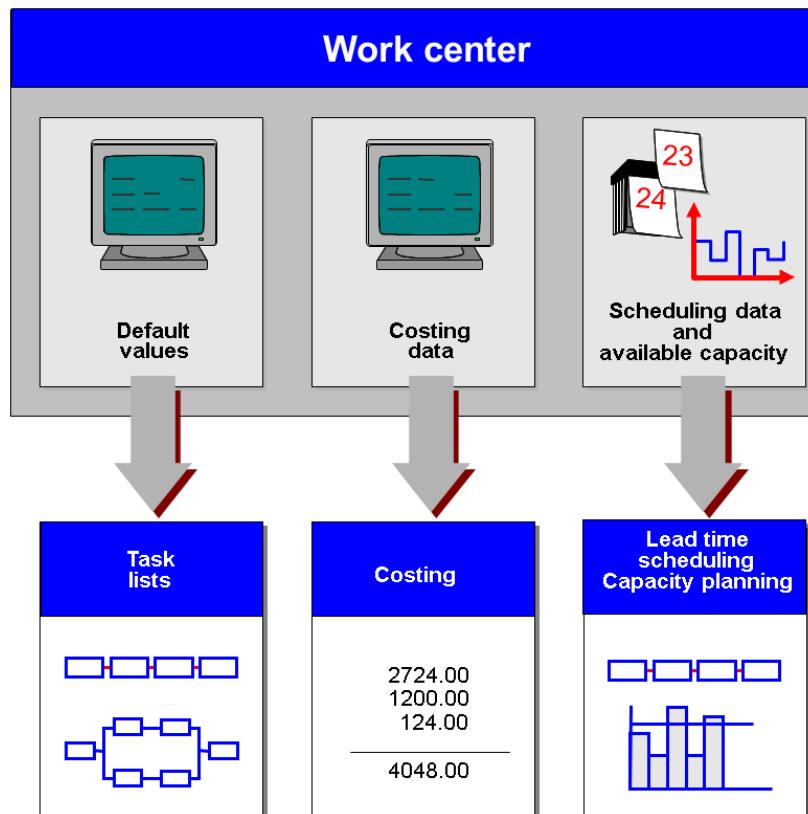
Formulas are entered in the work center, so that the costs of an operation can be calculated. A work center is also assigned to a cost center.

- Capacity planning

The available capacity and formulas for calculating capacity requirements are entered in the work center.

- Simplifying operation maintenance

Various default values for operations can be entered in the work center.



Structure

The data is grouped thematically together in screens and screen groups. Examples of such screen or screen groups are:

- Basic Data
- Assignments (to cost centers, Human Resource Management System (HR))
- Capacities

- Scheduling
- Default values
- Hierarchy
- Technical data

Planning will have impact with parameters defined in the below details.

Capacities

Capacity is the ability to perform a specific task.

You distinguish between various capacities in a work center, such as labor or machines, by using the capacity category. In order to plan capacities in a more detailed manner, you can define individual capacities for each capacity, for instance in the capacity category Person 3 employees or in the capacity category machine 5 lathes.

The following data is entered in a capacity:

- the operating time
- the available capacity
- Formulas for calculating capacity requirements.

Capacities can be entered and changed in work centers, but also independently. The system distinguishes between:

- Work center capacities
- Pooled capacities
- Reference capacities
- Default capacities

Work Centre Capacity

A work centre capacity is created in the work centre and is directly assigned to the work centre. You can however maintain the capacity separately.

For detailed capacity planning you can assign individual capacities to each capacity category in a work centre. You can determine available capacities for the individual capacities.

Apart from the available capacity and the assignments you can define other data in the work center for capacity planning, for instance.

- Formulas for calculating the capacity requirements of various operation segments (setup, processing, teardown) or for internal processing.
- Key for the chronological Distribution of capacity requirements during operation execution or during internal processing.

Pooled Capacity

A pooled capacity can be assigned to several work centres. It is created and edited independently of the work centre. This is useful if, for instance, a group of employees works in several work centres.

Reference Capacity

A reference capacity is used to simplify the maintenance of work centre capacities. It is used to copy or reference an available capacity from. Reference capacities are created and maintained separately from work centres.

Default Capacity

A default capacity is also used to simplify data maintenance. You can define a default capacity for every capacity category in the plant in Customizing. It suggests a default value for the header data every time you create a capacity.

Capacity Categories

Capacities in work centers are distinguished by capacity categories. Capacity categories are for example:

- Machine capacity
- Personnel capacity
- Processing unit
- Warehouse
- Warehouse + processing point

Each capacity category can be used once in each work centre. For every capacity category you can maintain several available capacities

Available Capacities

The productive working time of a capacity. If a capacity consists of several individual capacities: The productive working time for an individual capacity multiplied by the number of capacities. You can use a conversion factor to express an available capacity in another unit, for example tonnes. The productive working time is also called operating time in the SAP system.

The available capacity is always expressed with reference to a day or a shift

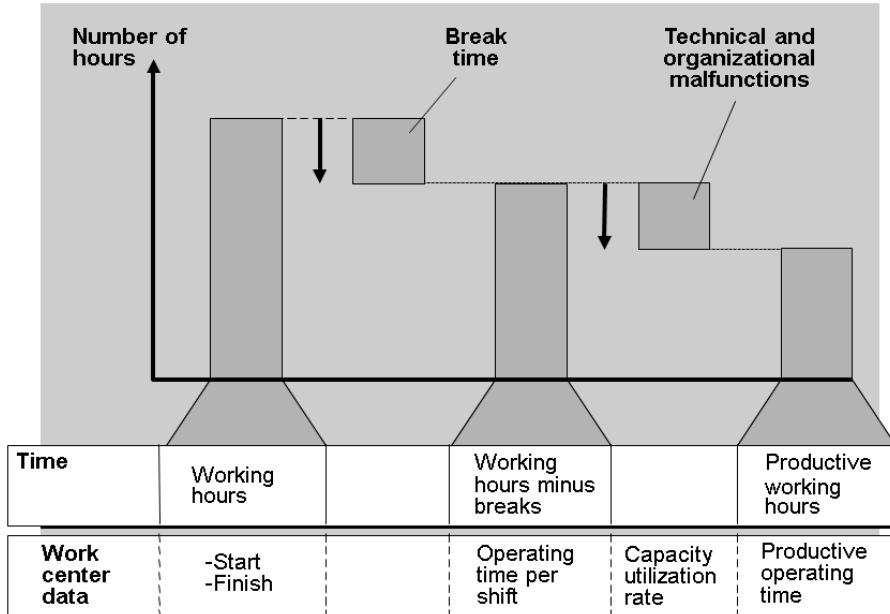
- Work starts and work finish
That is, at what time work starts and when it finishes.
- Breaks
The time during working time that is taken up by breaks.
- Rate of capacity utilization
The working time that remains after breaks can only be used productively up to a certain percentage (for example, due to organizational disturbances). This percentage is known as the rate of capacity utilization.
- The number of individual capacities that the capacity consists of.

The system calculates the operating time as:

$$\text{Operating time} = (\text{Working time} - \text{Break time}) \times \text{Capacity utilization rate}/100\%$$

The available capacity is then:

Available capacity = Operating time x number of individual capacities



Standard available capacity

In the simplest form you enter available capacities as standard available capacities. The validity period of a standard available capacity is not limited. The same capacity is available on every working day of the factory calendar. It is not possible to distribute the available capacity to several shifts.

Available Capacity Version

If a standard available capacity does not satisfy your requirements, create an available capacity version and activate it. It is then used (instead of the standard available capacity) for scheduling and capacity planning.

Shifts

The available capacity of a shift is defined by the following data:

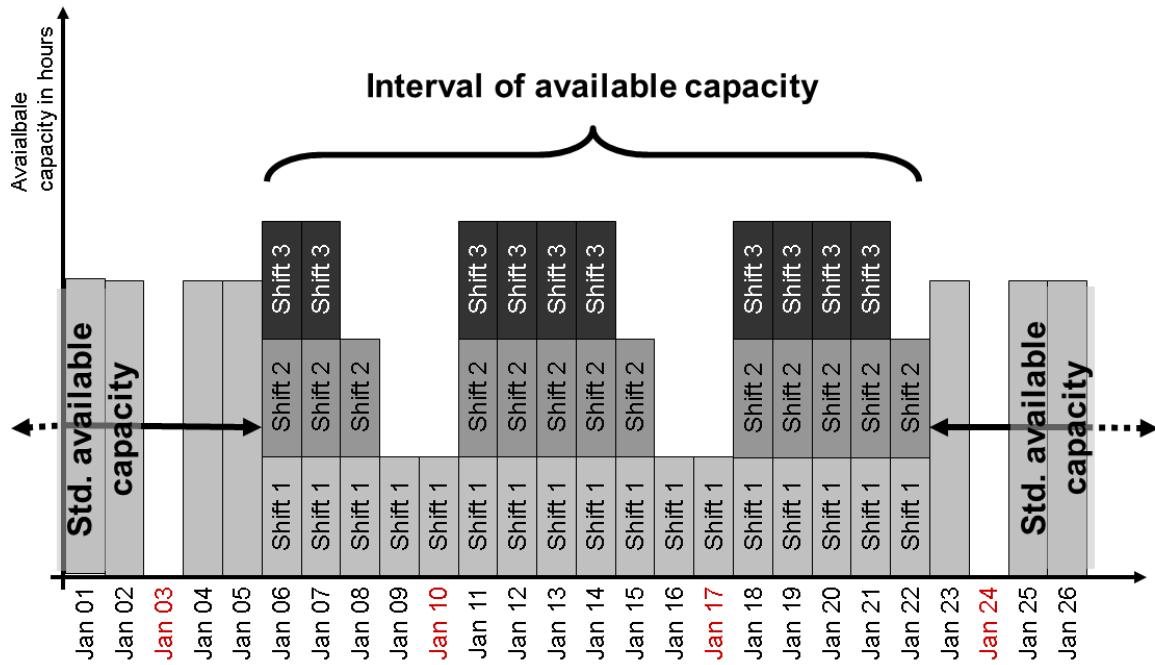
- Shift start, shift end, break times
- Capacity utilization rate
- Number of individual capacities

Shift start, shift end and break times can be manually maintained in intervals of available capacity.

Rules for shift sequences

Shift cannot be overlap

Last shift of the day must start before midnight, but it can end after midnight



Scheduling

You can enter following scheduling data in the work centre

Formula - You use formulas to calculate the execution times of operations in production orders using standard values, or to calculate the internal processing times in networks and maintenance task lists.

Interoperation time - The interoperation time is the time between leaving one work centre and beginning the operation at the next work centre. It consists of the **move time** and the **queue time** before processing starts.

Dimensions and units of measure for internal processing operations

Refer PDD -AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7

4.2.1.5 Work Centre Hierarchy

Work centre can be grouped into a work centre hierarchy. One work centre can be part of several work centre hierarchies and hierarchies can include multiple plants. Hierarchy can be used to in capacity planning to cumulate available capacity and capacity requirements. You can cumulate available capacities from subordinate work centres to a superior work centre level in order to determine total available capacity for superior work centre. EDGE can define hierarchy as per their work centre grouping.

4.2.1.6 Routing

Routings enable you to plan the production of materials (products). Therefore, routings are used as a template for production orders and run schedules as well as a basis for product costing.

In a routing you plan

The operations (work steps) to be carried out during production.

The activities to be performed in the operations as a basis for determining dates, capacity requirements, and costs.

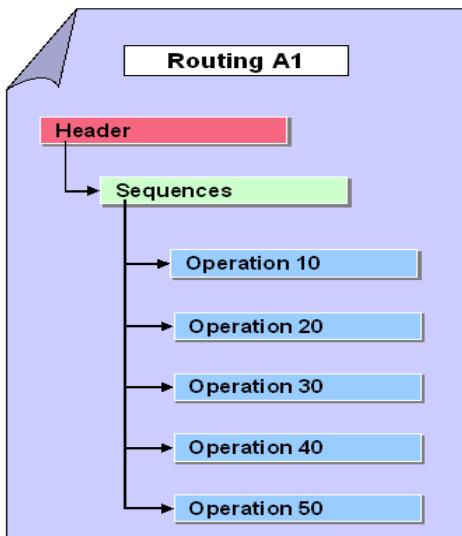
The use of materials during production

The use of work centres

The quality checks to be carried out during production.

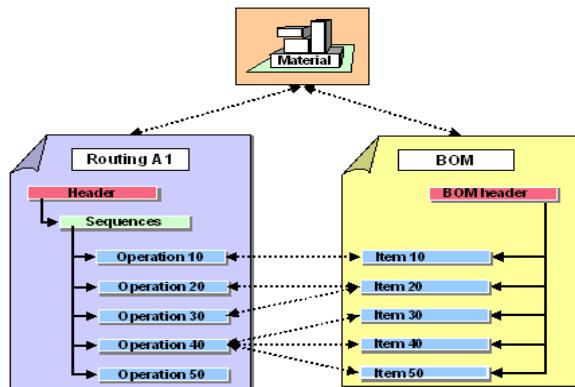
Structure

A routing is composed of a header and one or more sequences. The header contains data that is valid for the whole routing. A sequence is a series of operations. A routing is identified by its group and group counter



Assignment of material components to operations

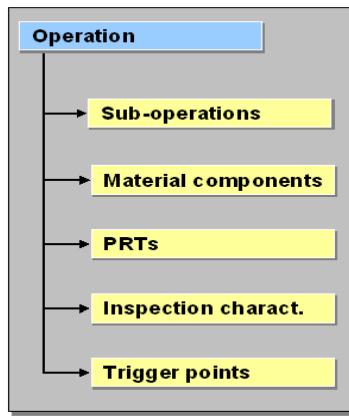
If a bill of material (BOM) has been assigned to a routing, you can assign its components to the routing operations.



Operations

Used in a routing, to describe the activity that is to be carried out during a process step. Operations are the central object in routings. The system uses operation data to determine dates, capacity requirements and costs for a production process.

Structure



Refer PDD -AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7

4.2.1.7 Production Version

A production version is a link between the bills of material (BOM) of a product and the routing. Refer P2P PDD - AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7 for further reference.

4.2.1.8 Procurement source of supply

A procurement source supply is link between material, vendor and lead time agreed between the vendors. The sourcing logic is explained in the PDD - AdvantEDGE_PDD_D2S_12.1 Demand and Resource Planning_V0.7 and more details of the procurement source of supply refer S2P PDD - ADVANTEDGE_PDD_S2P_P2_Procure to Pay_PR PO_v2.7.

4.2.1.9 PRTS

Refer P2P PDD - AdvantEDGE_PDD_P2P_081_Production Planning & Scheduling_P2_v0.7 for further reference. As part MRP system will check the availability of PRT, no ATP check will not consider the same.

KPI Reports

Equipment efficiency, maintenance effectiveness and downtime are covered in the MES PDD - AdvantEDGE_PDD_P2P_085_Manufacturing Execution System_P2_v0.8. If any additional fields or format required which need to explain clearly in the report requirement details further which can be taken for discussion with P2P. Other reports are already covered in the Fiori app section.

5. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

5.1 Role/Skill Class Inventory

Role	Skills	Knowledge
Material Planner - External Procurement	SAP-PP	An employee who is responsible for procured material, he/she should be able to execute MRP, review alerts and expedite the procurement accordingly.
Production Planner	SAP-PP	An employee who is responsible for production planning and scheduling. Production Planner will create Planned Independent Requirement and Responsible for MRP run.

5.2 Security roles as per process design

Refer attached document for proposed roles and responsibilities.



D2S MRP Job Role
03052023.xlsx

6. PROCESS FITNESS & GAP ANALYSIS

6.1 Process Variation (legal, geographical or business-led)

For the case of NIMR, planning has an exceptional case. Planning happens in Excel and results are subsequently to be updated in the SAP System. Therefore, the work center capacities cannot be mapped using Time Intervals for mapping the capacity activities as these time intervals are not available.

In order to enable the users to put in plan numbers into the system and then monitor and view the capacity loads generating per period, a solution is required for this exception where activity units can be set to fixed count units like EACH that can be updated from the EXCEL source, and this will help accumulate and check the load in each process, effectively providing a feasible production plan as per user inputs.

Since the time duration of each activity performed for building up materials in NIMR are not available, a fixed criteria like the one defined above will help the planners to view the load on the work centre in terms of the total units in production at the time of execution.

6.1.1 Sub-Process Variation

NA

6.1.1.1 Business Unit Level

All the business processes are harmonized across ADASI/AL TARIQ/HALCON/NIMR entities.

6.1.1.2 Geography/Legal Entity Led

All the business processes will be as per the requirement of AL TARIQ/ADASI/HALCON/NIMR entities. The legal entity will be as per UAE rules.

6.2 GAP Register

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req . id.
UAE	Inventory shelf life into consideration during MRP run is not supported in S/4 HANA. Tcode-MB5M give details of the stock which are getting expired. But S/4 HANA MRP planning will not consider shelf life			This functionality addressed in S/4 Production planning and detailed scheduling (PPDS) module.		
UAE	Production capacity planning			MRP will consider capacity as infinitely available during MRP and proposed the supply element. But alerts will be generated for capacity overload, planner need to		

	<p>supports the MRP planner in changing the production plan in such a way that the capacity constraints are considered while keeping the demands in time and quantity in mind</p>		<p>review the alerts and adjust order manually. Automation of capacity levelling is advanced functionality, which is available with Production planning and detailed scheduling (PPDS)</p>		
--	---	--	--	--	--

6.3 Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets

6.4 WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Use from myConcerto (New/Rework/Rep)	Ref # from WRICEF inventory	Assign system / SAP component

No WRICEF requirement currently

7. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

7.1 Integration points

Process ID (L4 process)	Type (legacy system, DT Ops, functional ..)	Related technical scope	Leading stream	Business process Integration with domain	Description	In	out

7.2 Inbound Communication

The Inbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Inbound communication includes any required emails, forms or handoffs between parties that are required to initiate the sub process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description

7.3 Outbound Communication

Outbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Outbound Communication includes any emails, forms, handoffs between parties that result from the sub process. Typically, these are output results and documentation that result from the process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description

7.4 Other Issues

Process Design Document (PDD)

PACKAGE

DEMAND TO SUPPLY
07 ORDER MANAGEMENT
7.1 CONTRACT FULFILMENT

TABLE OF CONTENT

Table of Content.....	2
1. Introduction	5
1.1 Change History	5
1.2 Approval details.....	6
1.3 Other Related Documents.....	6
2. Business Process (Level 2).....	7
2.1 To-Be Process Overview and Context	7
2.2 Key Value Drivers for the Business Process.....	9
2.3 Key Design Decisions	10
2.4 Standard KPI and reports	12
2.5 Extreme automation	13
2.6 Sales Order Variants in Contract Fulfillment.....	13
2.7 Sales Area Details	14
3. Process Design.....	15
3.1 Create Sales Order for Stock Material (ED-07_010101).....	20
3.1.1 Process Description.....	20
3.1.2 Process Diagram.....	22
3.1.3 Activity List & Automation.....	22
3.2 Create Cash Sales Order	24
3.2.1 Process Description.....	24
3.2.2 Process Diagram.....	25
3.2.3 Activity List & Automation	25
3.3 Scrap Sales Process.....	27
3.3.1 Process Description.....	27
3.3.2 Approval mechanism for Inventory Scrap Sales (DOA).....	27
3.3.3 Scrap Sales Process – Inventory Items	27
3.3.4 Process Diagram for Inventory Items:	28
3.3.5 Activity List for Inventory Items	29
3.3.6 Scrap Sales Process - Non-Inventory Items.....	29
3.3.7 Process Diagram for Non-Inventory Items.....	30
3.3.8 Activity List for Non-Inventory Items	30
3.4 Create Sales Order for Non-Stock material (ED-07_010102).....	31
3.4.1 Process Description.....	31
3.4.2 Process Diagram.....	32
3.4.3 Activity List & Automation	33
3.5 Create Sales Order with Delivery Schedule (ED-07_010103).....	35
3.5.1 Process Description.....	35
3.5.2 Process Diagram.....	35
3.5.3 Activity List & Automation	36
3.6 Create Sales Order for Service Material (ED-07_010104).....	37
3.6.1 Process Description.....	37
3.6.2 Process Diagram.....	38
3.6.3 Activity List	38
3.7 Create Sales Order for Individual Purchase Order (ED-07_010105)	39

3.7.1 Process Description.....	39
3.7.2 Process Diagram.....	40
3.7.3 Activity List.....	41
3.8 Create Sales Order for 3 rd party processing (ED-07_010106)	42
3.8.1 Process Description.....	42
3.8.2 Process Diagram.....	43
3.8.3 Activity List.....	44
3.9 Create Sales order with WBS (ED-07_010107).....	45
3.9.1 Process Description.....	45
3.9.2 Process Diagram.....	45
3.9.3 Activity List.....	46
3.10 Create Sales Order for FOC-Sales (ED-07_010108).....	47
3.10.1 Process Description.....	47
3.10.2 Process Diagram.....	48
3.10.3 Activity List & Automation	48
3.11 Manage and process customer sales orders (ED-07_010201).....	50
3.11.1 Process Description.....	50
3.11.2 Process Diagram.....	53
3.11.3 Activity List & Automation	54
3.12 Manage and Monitor Sales Delivery (ED-07_010202)	55
3.12.1 Process Description.....	55
3.12.2 Process Diagram.....	56
3.12.3 Activity List & Automation	57
3.13 Sales Order Change Process (ED-07_010203)	58
3.13.1 Pricing and Discount Change process:	58
3.13.2 Sales order Cancelation process:	58
3.14 Sell production as a Service (ED-07_010301).....	59
3.14.1 Process Description.....	59
3.14.2 Process Diagram.....	59
3.14.3 Activity List & Automation	60
3.15 KIT Sell Process – (ED-07_010302)	60
3.15.1 Process Diagram.....	63
3.15.2 Activity List	63
3.16 Advance/Down Payment Process (ED-07_010303)	65
3.17 Retention Process (ED-07_010304).....	66
3.18 Manage Sales Master Data (ED-07_010501).....	68
3.18.1 Process Description.....	68
3.19 Pricing Master Data (ED-07_010502)	70
3.19.1 Process Description.....	70
3.19.2 Process Diagram.....	71
4. Detailed Solution Design.....	72
4.1 Solution prerequisites	72
4.1.1 Process predecessor and successor	72
4.1.2 Master data prerequisites.....	72
4.1.3 Organizational structure requirements	72
4.2 Detailed solution design.....	72

4.2.1 Manage and process customer sales orders; Solution steps and elements (Level 5-6).....	72
4.2.2 Create Sales Order for Stock Material; Solution steps and elements (Level 5-6).....	73
4.2.3 Create sales order for non-stock material; Solution steps and elements (Level 5-6).....	75
4.2.4 Create sales order for Sales KIT (Sales BOM); Solution steps and elements (Level 5-6)	77
4.2.5 Create sales order with delivery schedule; Solution steps and elements (Level 5-6)	80
4.2.6 Create Sales Order for Service Material; Solution steps and elements (Level 5-6).....	82
4.2.7 Create Sales Order for Individual Purchase Order; Solution steps and elements (Level 5-6)	86
4.2.8 Create Sales Order for 3 rd Party Processing; Solution steps and elements (Level 5-6).....	88
4.2.9 Create Sales Order with WBS (Project Stock); Solution steps and elements (Level 5-6).....	90
4.2.10 Create sales order for FOC sales	93
4.2.11 Create Cash Sales order	96
4.2.12 Sell Production as Service; Solution steps and elements (Level 5-6).....	97
4.2.13 Scrap Sales Process	100
4.2.14 Advance Process; Solution steps and elements (Level 5-6).....	102
4.2.15 Retention Process; Solution steps and elements (Level 5-6).....	103
4.2.16 Manage and Monitor Sales Delivery; Solution steps and elements (Level 5-6)	104
4.2.17 Associated Fiori Apps	104
4.2.18 Pricing Procedure in SAP	106
4.2.19 Reporting Overview	107
5. Role Definition.....	110
5.1 Role/Skill Class Inventory	110
5.2 Security roles as per process design.....	110
6. Process Fitness & Gap Analysis	112
6.1 Process Variation (legal, geographical, or business-led).....	112
6.1.1 Sub-Process Variation	112
6.2 GAP Register	112
6.3 Process Fitness	113
6.4 WRICEF Register	113
7. Integration Points.....	117
7.1 Integration points	117
7.2 Inbound Communication.....	119
7.3 Outbound Communication.....	119
7.4 Other Issues.....	119

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
v0.0	3.08.2021	Template Creation	Dr. Christian König
v0.1	12.10.2021	First Version	Sagar Gurjar
V2.0	25.02.2022	Latest Version	Sagar Gurjar/Anuj Agrawal/Suman Kumar Jha/Sitanshu Deo
P2_v0.1	5.08.2022	Update into new PDD format	Moritz Waubke
P2_v0.2, v0.3, v0.4,v0.5	19.09.2022	Review	Sagar Gurjar
P2_v0.6A, v0.7A, v0.8A, v0.9A, v1.0A	21.10.2022, 24.11.2022, 13.12.2022	Business Processes, Detailed solution description section, KDDs, WRICEF and integration points	Sagar Gurjar / Rajeev Chandrankutty
Change of versioning numbering policy			
V0.7	28.02.2023	Integration of feedback	Sagar Gurjar / Rajeev Chandrankutty/ Noman Ashraf
V0.8	08.03.2023	Quality Reviewed	Dr. Piotr Rykaczewski
V0.8	08.03.2023	Incorporate feedback of quality review	Syed Kirmani /Rajeev Chandrankutty
V0.8	13.03.2023	Incorporate feedback of quality review formatting	Syed Kirmani
V0.9	17.03.2023	GPO approval (V0.8→V0.9)	
V0.9	27.03.2023	Update of SAP MDG Process	Syed Kirmani
V0.9	12.04.2023	Incorporate Pricing Cycle	Syed Kirmani / Rajeev Chandrankutty
V0.9	18.04.2023	Incorporate Sales KIT Process and flow diagram	Syed Kirmani / Rajeev Chandrankutty
V0.9	18.04.2023	Update Scrap Sales Process and flow diagram	Syed Kirmani
V0.9	15.05.2023	Fiori Apps screenshot updates in multiple process as per the DT feedback	Syed Kirmani
V0.9	23.05.2023	Incorporate Advance/Down payment process	Syed Kirmani / Rajeev Chandrankutty
V0.9	23.05.2023	Incorporate Retention Process	Syed Kirmani / Rajeev Chandrankutty
V0.9	23.05.2023	Update Sell of Production Services Process	Syed Kirmani / Rajeev Chandrankutty
V0.9	12.06.2023	Incorporate Penalty Process	Syed Kirmani/ Rajeev Chandrankutty
V0.9	25.07.2023	Incorporate Sales Area Details as per DT feedback	Syed Kirmani / Rajeev Chandrankutty
V0.9	25.07.2023	Incorporate Account Group Details as per DT feedback	Syed Kirmani / Rajeev Chandrankutty
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.2 Approval details

Task	Date	Name & Position of Approver	Signature
See coversheet			

1.3 Other Related Documents

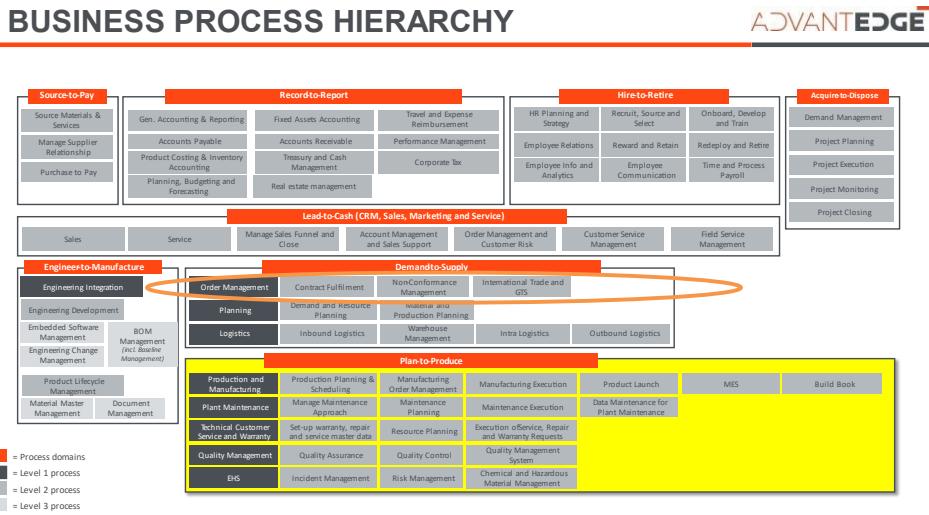
Related Document	Comment
WRICEF Creation of Sales Order from CRM to S4 HANA	FSD_Order Creation & Update from CRM to SAP
KDS_P2_D2S-Order Management.xlsx	KDS for OM field Values

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

The order management process in SAP at a high-level cover **Contract fulfillment** - Sales order management & processing, Sales Order integration with the Project System and with the other modules, billing & invoicing, and sales order monitoring & analytics. And, **Non-Conformance Management** – which includes returns management, claims and refund management. The following infographic presents the overall scope of D2S – Demand to Supply with its integral Level 2 Processes associated with handling an order.

Figure 1: EDGE Business process overview



For the most efficient usage of the order management module, four core processes have been defined and aligned over all entities in scope (HALCON, NIMR, ADASI, and AL TARIQ) during High-level and Deep-Dive Workshops.

Integration points with other streams have also been aligned and agreed upon:

- **Contract Fulfilment** covers all the processes about sales order management and processing for stock and non-stock material in SAP (MTS & MTO scenario)
- **Non-Conformance Management** describes holistically complete returns management process with four scenarios discussed during workshops – credit scenario, replacement, partial delivery, SD-PS integration with billing plan and POD variance.
- **International Trade and GTS** allows companies to support and define import and export trade processes in SAP S/4HANA. In D2S module we will focus only on Exports GTS processes, imports are covered in S2P. GTS reduces the time and costs of complying with global trade regulations and provides visibility into the supply

chain while goods are in transit, which helps to resolve issues that can impede goods from clearing customs in a timely manner.

Figure 2: Process Model of Order Management

The contract fulfilment business process majorly contains the below-mentioned sub-processes.

Manage and process customer sales orders (ED-07_010201)

Managing & processing sales orders encompasses fulfilment of contracts through processing single or multiple sales orders/scheduling agreements concerning a particular contract that is being transferred into SAP (slave system) from CRM (master system).

Create sales orders for stock & non-stock material (ED-07_010101 & ED-07_010102) and Create sales orders with delivery schedule (ED-07_010103)

Sales orders are then created in SAP and respective header and line items are filled during the process.

Availability checks are carried out here to promise customers delivery dates and quantities. The Credit Management process is also supported by SAP and can be executed here whenever needed. In the case of the MTO scenario requirements are sent to production with sales order information and confirmation is received. Goods receipt will be posted, and this will trigger the delivery process (Interface with Logistics & Warehousing).

The Goods issue will be through EWM integration. Refer to outbound logistics PDD for more details. The delivery will be processed with S4 HANA EWM solution. After goods issue, dispatched sales deliveries are monitored via the sales order fulfilment monitor Fiori app to identify the delivery issues. At last, billing is created, and payment settlement is done (integration with finance). One step process is proposed for account posting during invoice processing.

Create Sales Order for service material (ED-07_010104)

Service order is an agreement between a service provider (EDGE entities) and its customer about the execution of services at a specific time and for a specific price. In addition, the service order contains planning for personnel, spare parts, and other expenses that are necessary for providing the services. A sales order can either have both service material and stock material as part of it or only service material as part of it.

Create Sales Order with WBS (ED-07_010107)

Since the projects are created against the contract and EDGE uses the SAP project system as a cost collector, therefore, we add Work Breakdown Structure (WBS) reference in all our sales order item level. With WBS reference, all the project milestones are copied to the Sales order item under the billing plan.

Create Sales Order for Individual Purchase Order (ED-07_010105)

During sales order entry, the system automatically creates a purchase requisition item. The purchasing department creates a purchase order based on the requisition and the vendor ships the goods directly to you (unlike third party order processing, where the vendor ships directly to your customer).

Create Sales Order for 3rd party processing (ED-07_010106)

In third-party process the delivery of the goods required by the customer is not done by sales organization where customer orders. Instead, the request of the goods is forwarded to an external vendor who sends the material directly to the customer - Transportation is handled by vendor.

Sell production as a service (ED-07_010301)

The process includes the management of all available production capabilities and resources that can be offered to other EDGE entities.

The offering is processed using purchase orders and is integrated into the S/4HANA system (e.g., welding and bending capacities at AL AIN).

Manage & monitor sales delivery (ED-07_010202)

This process describes the usage of a Sales Order Fulfilment Monitor. The monitor allows identifying of issues within sales order processing.

The sales monitor allows to manage issues such as:

- Missing documents
- Unconfirmed information
- Shipment status
- etc.

2.2 Key Value Drivers for the Business Process

The new S/4HANA order management system improves the efficiency of sales order management, creation, and fulfilment by standardizing and automating the processes across the EDGE group.

The key value driver for EDGE is to develop an ability to sell and deliver to EDGE customers efficiently, cheaply, timely, and in required quality using standard and streamlined SAP processes. Order management at EDGE must have credible processes in place so that it imparts confidence in the EDGE customer's mind that their investments are secure.

Below are some tangible and intangible benefits of using SAP HANA powered order management system:

- Increase sales volume according to the terms of customer-specific agreements
- Allow the creation and processing of customer orders by referencing contracts in the Microsoft Dynamics CRM system
- Increase sales by reducing days sales outstanding and boosting overall sales effectiveness
- Enhance sales productivity with a streamlined, redefined HANA powered order management process
- Improve customer retention through a better flow of information on order status and tracking – Enhanced visibility
- Improve customer satisfaction by reducing billing errors

Improve cash flow through an automated billing and invoicing functions. Reduce sales and operations costs with real-time, enhanced insights, and greater efficiency. Improve on-time, on-budget delivery performance by accelerating operations.

2.3 Key Design Decisions

Process ID	KDD ID	Type	Description
ED-07_010201	KDD_D2S_2A_18	Foundation	<p>Sales Enterprise Structure: One Sales Organization per entity Vs Multiple Sales Organization</p> <p>There will be a single common global Sales Enterprise Structure logic applicable to all EDGE entities</p> <ul style="list-style-type: none"> • One Sales organization per Company code. • Two Distribution Channels: Customer sales and Group Company Sales. • One division for all products i.e., Concept of Common Division <p>This is aligned to leading practice, prescribed in accordance with the organization's definition for sales. One division is supported to ease the sales execution and master data maintenance.</p>
ED-07_010201	KDD_D2S_2A_17	Foundation	<p>Management of Sales Order: Unify Order type across entities vs. order type for each legal entity</p> <p>We recommended and agreed with EDGE to have one single global standard order type per nature of sales transactions e.g., Sales order (OR), Cash Sales (CS), Return Order (RE), Credit Memo request (CR), Debit Memo Request (DR), Free of Charge Delivery (SD), Contract (QC) and Scheduling Agreement (DS).</p> <p>Aligned to the leading practice of segregating sales transactions based on nature of sales, ease of reporting across entities/cluster level by nature of the transaction, and ease of application usage as business users across entities are on the common template.</p>
ED-07_010100	KDD_D2S_P2_02	Foundation	<p>Advanced ATP update on Sales Order</p> <p>EDGE will be using standard ATP. The result of the ATP check is based on the available stock and any firmed and planned supply elements such as planned order, production order, etc. The ATP function generates confirmation proposals for the requested material and plant, including confirmed quantities and dates.</p> <p>IBP planning for FG, SFG and high lead time raw material planning, will drive the planned order with possible available date at the FG level, while considering resource capacity, lead time and prioritization.</p>
ED-07_010401	KDD_D2S_2A_15	Solution	<p>Number range for business partners: Smart Numbering Vs System defined internal number</p> <p>It is recommended and agreed to go ahead with smart numbering, as it will be auto proposed by the system and standard uniformity will be maintained. The only exception is for the creation of intercompany customers and vendors as business partners wherein the number will be manually entered and will be equivalent to the company code.</p>
ED-07_010201	KDD_D2S_2A_11	Solution	<p>Master system for blocking Sales order CRM/S4HANA/GTS</p> <p>Consensus is CRM system, which will be taking input from the GTS system for customer block.</p>

ED-07_010100	KDD_D2S_2A_07	Solution	<p>Proof of Delivery governance based on incoterms</p> <p>Proof of Delivery (POD) is to be made mandatory for all the Outbound Logistic processes. POD is part of Solution design for all the Outbound Logistic Processes (Customer SO)</p> <p>In this case, Invoice management is based on delivered quantity and not dispatched quantity. This option facilitates the System based reconciliation for Inventory accounting, COGS and Revenue posting for a given sales transaction</p>
ED-07_010100	KDD_D2S_2A_06	Foundation	<p>Order Management forms (Sales order confirmation, Invoice, Credit/Debit Note)</p> <p>In Order management, during Sales processing following outputs (Forms) are required by business:</p> <ol style="list-style-type: none"> 1. Performa Foreign 2. Performa Domestic 3. Performa Commercial 4. Tax invoice Foreign 5. Tax invoice domestic 6. Debit Credit Domestic 7. Debit Credit Foreign 8. Sales Order conformation <p>Note: Form Layout is common across all the EDGE Entities.</p> <p>Separate forms are created for capturing foreign customer transactions for below documents.</p> <ul style="list-style-type: none"> • Credit/Debit • Credit/Debit (Commercial) • Tax Invoice • Proforma
ED-07_010100	KDD_D2S_2A_01	Solution	<p>Delivery Based Freight planning</p> <p>In S/4HANA, Order (SO/STO/PO) gets created and then its Outbound/ Inbound Delivery gets transferred to TM system creating Freight Units for planning purpose.</p> <p>Delivery Based Freight planning</p> <ul style="list-style-type: none"> - S/4HANA deliveries (IBD/OBD)) gets created and then its gets transferred to TM system creating Freight Units for planning purpose. - The delivery-based transportation requirement is in the planning process and at least one freight unit has been created for the transportation requirement. - When Outbound Delivery gets saved in S4 HANA system, system will automatically create a Freight Unit in TM.  <p>AdvantEDGE_KDD_D 2S_P2_05122022_Orc</p>
ED-07_010100	KDD_D2S_2A_02	Solution	<p>Proof of Delivery (POD) is to be made mandatory for all the Outbound Logistic processes. POD is part of Solution design for all the Outbound Logistic Processes (Customer SO / STO)</p>

			PROS - Align to Leading practice around Billing based on transfer of ownership as per agreed Incoterms. - System based reconciliation for Inventory accounting, Cost of goods sold, Revenue Accounting. - Invoice Management is based on Delivered Quantity and not the Dispatch Quantity. CONS - Additional step in the Outbound Logistic process chain
ED-07_010100	KDD_D2S_2A_08	Solution	Invoice numbers are unique for each EDGE entities in the system
ED-07_010201	KDD_D2S_P2_19	Solution	This interface is for automatically transferring the sales order created in CRM to S/4HANA Sales order created in CRM are moved automatically to S/4HANA Changes will be made only in SAP S/4HANA after replication from CRM. There's no interface now which will update/Sync the changes from SAP to CRM sales order.
ED-07_010100	KDD_D2S_P2_29	Solution	Number ranges are defined and assigned to all sales transactional document types based on the type of transactions. The maximum length of number range can be set for 10 characteristics, which will be set as numeric number range. Example: Separate number ranges are maintained for Sales Order Types (Standard Order, Return Order, Credit/Debit Memo Request, etc.) Delivery Document Types (Outbound Delivery for Customer, Return Delivery, etc.)

2.4 Standard KPI and reports

Following is the list of relevant KPIs about the Contract Fulfillment process based on the EDGE KPI Manual:

D2S KPI Number	KPI Name	KPI Calculation
24	Delivery Performance [%]	$(\sum_{i=1}^n \text{Customer deliveries}_i \text{ on time}) / (\sum_{i=1}^n \text{Planned customer deliveries}_i \text{ on time}) * 100\%$
25	Planned deliveries on time	$\sum_{i=1}^n \text{Planned customer deliveries}_i \text{ on time}$
26	Customer deliveries on time	(Orders shipped on time/total orders) * 100 %

n/a	Deliveries shipped but not invoiced	(Deliveries in which goods issue is posted, But not fully invoiced/Total deliveries) *100 %
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Further details regarding reports see **4.2.17 on page # 90**

2.5 Extreme automation

No use cases were identified for Extreme Automation during the Explore Phase. Identification effort will be resumed later by the Extreme Automation work stream.

2.6 Sales Order Variants in Contract Fulfillment

Variant of Sales Order	Order Type	Order Type Description	Creation	Change	Display
Sales Order - Stock Material - Non - Stock Material	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
KIT Sales Order Process	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
Sales Order with Delivery Schedule	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
Sales Order for Service Material	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
Sales Order with Individual PO	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
Sales Order with 3rd Party Processing.	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
Free Of Charge Order	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4
Cash Sales Order	ZOBV	EDGE Cash Sales	SAP S/4	SAP S/4	SAP S/4
Sell Production as Service	ZORE	EDGE Standard Order	CRM	SAP S/4	SAP S/4 & CRM
Scrap Sales Order	ZSCR	EDGE Scrap Sales	SAP S/4	SAP S/4	SAP S/4
Debit Memo Request	ZODR	EDGE Debit Memo Request	SAP S/4	SAP S/4	SAP S/4
Penalty Process (Credit Memo Request)	ZOCR	EDGE Credit Memo Request	SAP S/4	SAP S/4	SAP S/4

2.7 Sales Area Details

The following Sales Org combinations are applied to the EDGE P2 Entities:

Sales Org & Description		Distribution Channel & Description		Division & Description	
2901	ADASI Sales Org	01	Customer Sales	01	Common Division
2901	ADASI Sales Org	02	Group Company Sales	01	Common Division
3401	NIMR Sales Org	01	Customer Sales	01	Common Division
3401	NIMR Sales Org	02	Group Company Sales	01	Common Division
4301	Halcon Systems L.L.C	01	Customer Sales	01	Common Division
4301	Halcon Systems L.L.C	02	Group Company Sales	01	Common Division
4601	Barij Dynamics L.L.C	01	Customer Sales	01	Common Division
4601	Barij Dynamics L.L.C	02	Group Company Sales	01	Common Division

3. PROCESS DESIGN

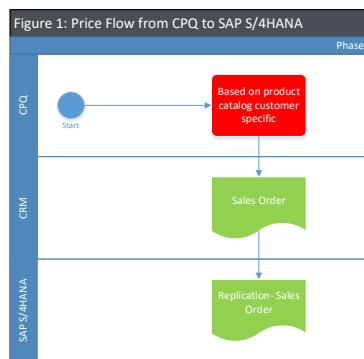
SALES MASTER DATA

To execute sales transactions, we need some important master data setup in the system. We are defining those details in a high level as mentioned below:

- **Pricing**

Pricing will come from CPQ to CRM and will not be done in SAP at the order creation level based on condition master records. Costing details of material will be provided by the R2R Finance team to the CPQ team; therefore, integration is needed between them.

CRM sales order will have the pricing from CPQ system and the same prices will be replicated to SAP S/4HANA sales order from CRM. Source of pricing will remain CPQ.



- **Material**

Material Master creation engineering E2M will be responsible, MDG team for enrichment and continuous maintenance. MM02 transaction can be used. Enter the new sales area to which the user wants to extend the material and the material will be extended to another sales area.

With SAP MDG - Mass Processing – Extend feature “_ACTION_CODE can be used for mass processing to change existing objects, but user can also “extend” existing objects. “Extend” in this context means that EDGE user can for instance open existing materials/products on new/additional plants or sales orgs. This is also possible for the Business Partner.

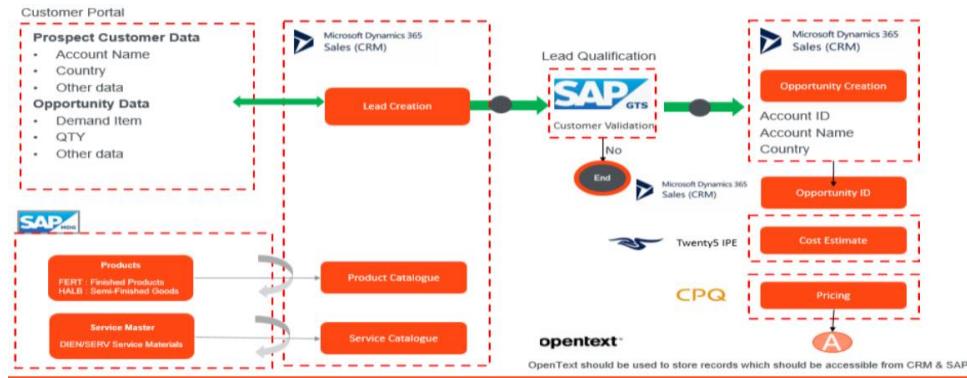
- **Customer**

Initial Customer data will be entered on Customer Portal (CRM) and by using that information CSR will be created Lead and that will move into SAP GTS for Customer Validation. Once validated opportunity will create in CRM then final proposal and quote will be submitted to the client. Once that lead convert into Quote and approved then only customer details will be sent SAP MDG at this time Business Partner will be created in SAP MDG with General Information only. Once the Contract negotiation has been finalized/signed with the Customer on MS CRM. Then on the same Business Partner Sales relevant information and company code details will be replicated into SAP MDG seamlessly. After that approval workflow will be triggered on SAP

MDG as per the defined DOA (Delegation of Authority) once all required approval is completed then only Business partner will be created into SAP S/4HANA along all General, Sales and Finance information and that will be ready to use for Sales Order processing in SAP S/4HANA.

Customer Onboarding on CRM

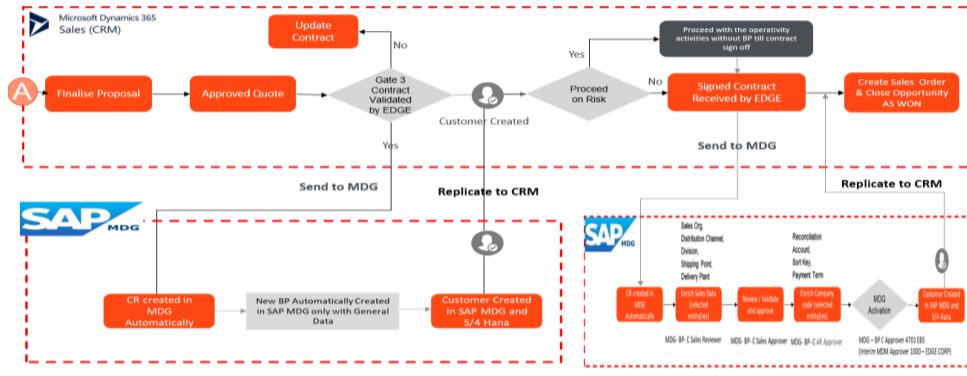
Figure 2: Customer Master Data Creation Process - CRM 1/2



Flow: Prospective customer > Lead > Validate in SAP GTS > Opportunity > Quote > Quota approval, after quotation approval from the customer, Prospective Customer will be enrolled in CRM >

Customer Creation in SAP S/4HANA:

Figure 3: Customer Master Data Creation Process - CRM - MDG 2/2



Flow: Prospective Customer > Lead > Opportunity > Final Quote > Quote approval > MS CRM Contract > Customer creation in MDG > Passed to SAP S/4.

Customer Master Block & Unblock

Figure 4: Existing Customer Master Block/Unblock (Central Level) Process

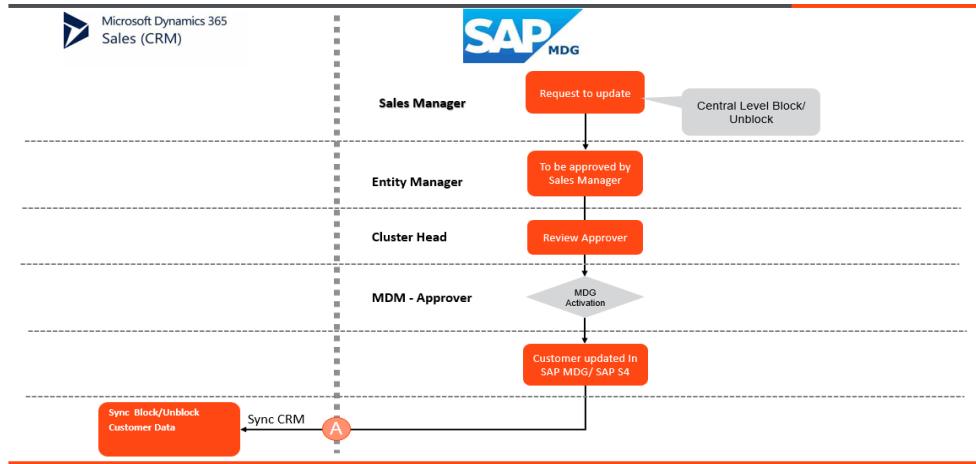
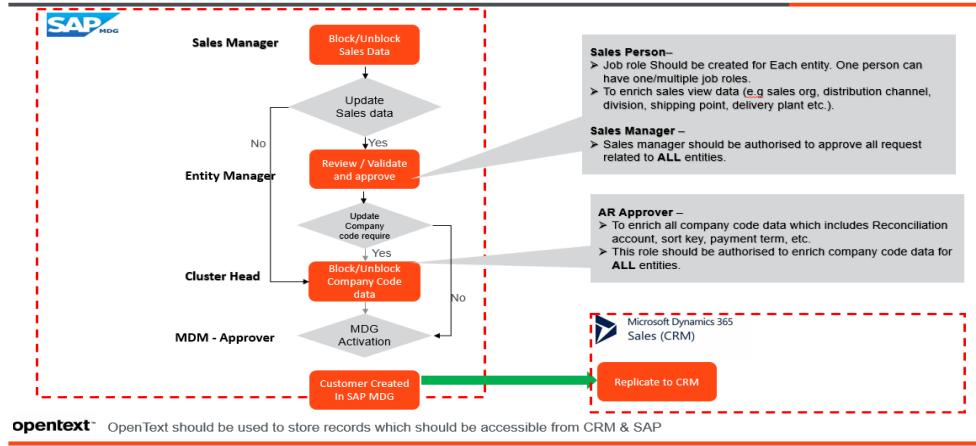


Figure 5: Existing Customer Master data Block/Unblock (Sales/Company code) process.



opentext: OpenText should be used to store records which should be accessible from CRM & SAP

Customer Master Data Mark for Deletion

Figure 6: Existing Customer MASTER Mark for Deletion (Central Level) Process

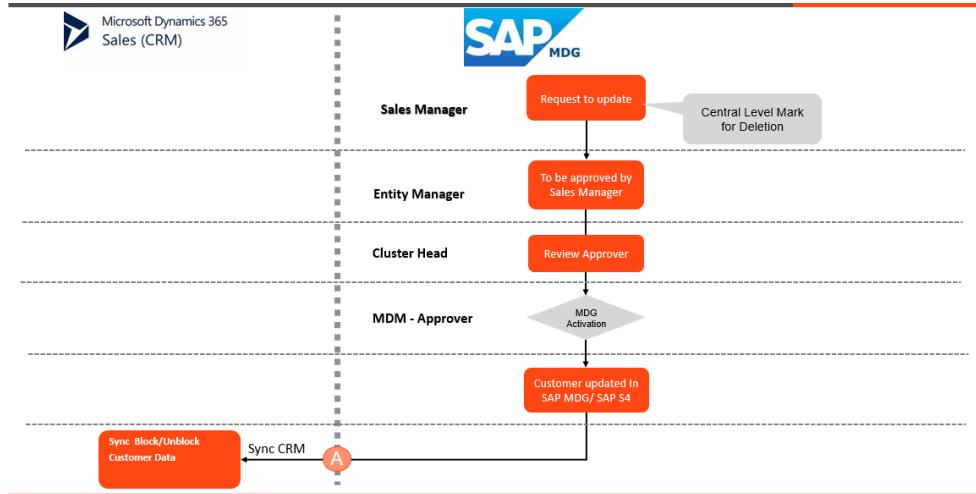
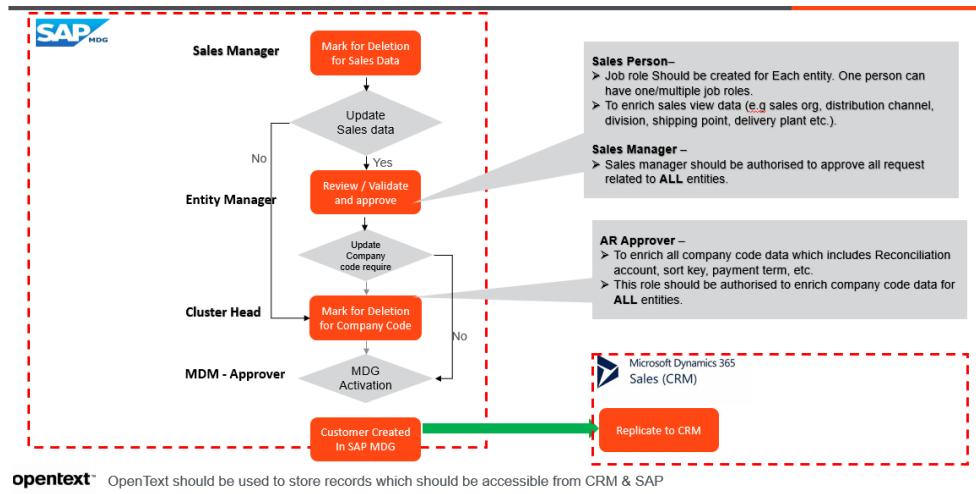


Figure 7: Existing Customer Master data Mark for deletion (Sales/Company code) process



opentext™ OpenText should be used to store records which should be accessible from CRM & SAP

Billing Plan

EDGE will be using both delivery and milestone related billing plan - Milestone billing means distributing the total amount to be billed over multiple billing dates in the billing plan. EDGE will be using a billing plan for billing a make-to-order item that is assigned to a project in the Project System. When internal sales representative enters the project-related make-to-order item in the sales order, the system proposes a billing plan based on milestones defined for networks in the project. As each milestone is successfully reached, the customer is billed either a percentage of the entire project cost or simply a pre-defined amount.

P2 entities need billing flexibility while sales order creation as follows:

- Create a Sales order with a WBS reference in the billing plan.
- In the same sales order create a milestone base billing plan; and
- In the same sales order ability to create a billing plan based on POD/delivery
- In the same Sales Order to have an adv payment billing plan, milestone billing plan and a retention billing plan for each order line.

Billing Plan will be change if partial quantity is delivered (not following the billing initial plan)

3.1 Create Sales Order for Stock Material (ED-07_010101)

3.1.1 Process Description

Reflects a Make-to-Stock process with the customer. Finished goods stock owned by EDGE is kept until the customer calls off some of the stocked goods via a Customer Purchase Order. This is the trigger to open a customer sales order in SAP for stock material.

The detailed activities performed during this business process execution are as below:

Sales Order Creation:

The process starts with the creation of a customer in the CRM system. Once the customer exists in the system, sales orders are created in the CRM system by sales representatives. These sales orders are then transferred to SAP, which leads to the creation of sales orders in SAP.

In the MTS scenario availability check (ATP) is executed to confirm the quantities and delivery dates to customers as this is a stock material.

Output: Order confirmation will be printed or sent to the customer via email if required and delivery is created.

Changes: After successfully replication of Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

Delivery Processing:

Delivery processing will be triggered with the reference of sales order. An outbound delivery is created in S/4 HANA system, picking is done in SAP EWM system, and the shipping specialist relieves the inventory by performing the Post Goods Issue. For outbound delivery processing, EDGE is going to use ASR functionality which is part of Outbound Logistics processes covered in Outbound PDD. This inventory relief is the actual recording of the physical quantity that is being shipped to the customer.

The quantity is delivered to the customer after the post goods issue is executed. The Post Good Issue is the last step in delivery processing and proof of delivery POD will be performed after the Post goods issue.

Sales Order Monitoring

An EDGE sales representative can use Fiori-based Sales Order Fulfilment Monitor to address problems that occur during the sales order fulfilment process. Business can then directly execute follow-up steps from the monitor to resolve these issues. Examples of issues are missing documents, missing or unconfirmed information, and various types of blocks as well as product and trade compliance issues.

Billing Processing:

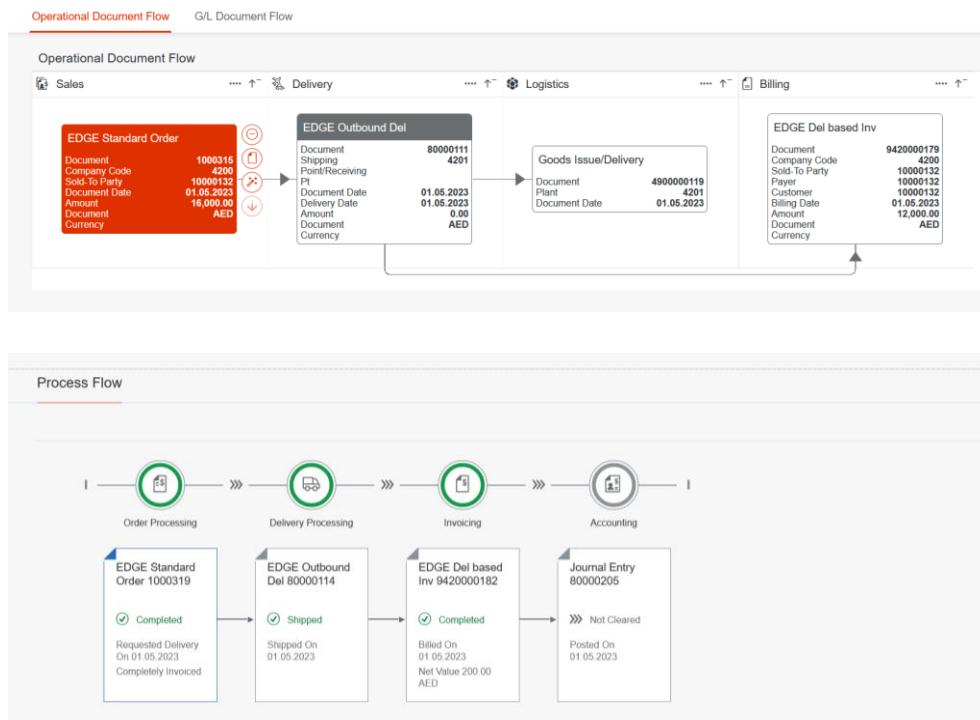
A proforma invoice can be sent to the customer before delivery if needed by the customer. Once the customer agrees a tax invoice will be created and sent to the customer for account settlement. We are using BRF+ in the TO-BE design.

The option of generating a proforma invoice is also available before final billing document creation (some EDGE entities have this requirement). With the goods issue posting revenue is recognized and the cost of goods sold is recorded in Financial Accounting. Once goods are delivered, Business can invoice the delivery.

Release to Accounting:

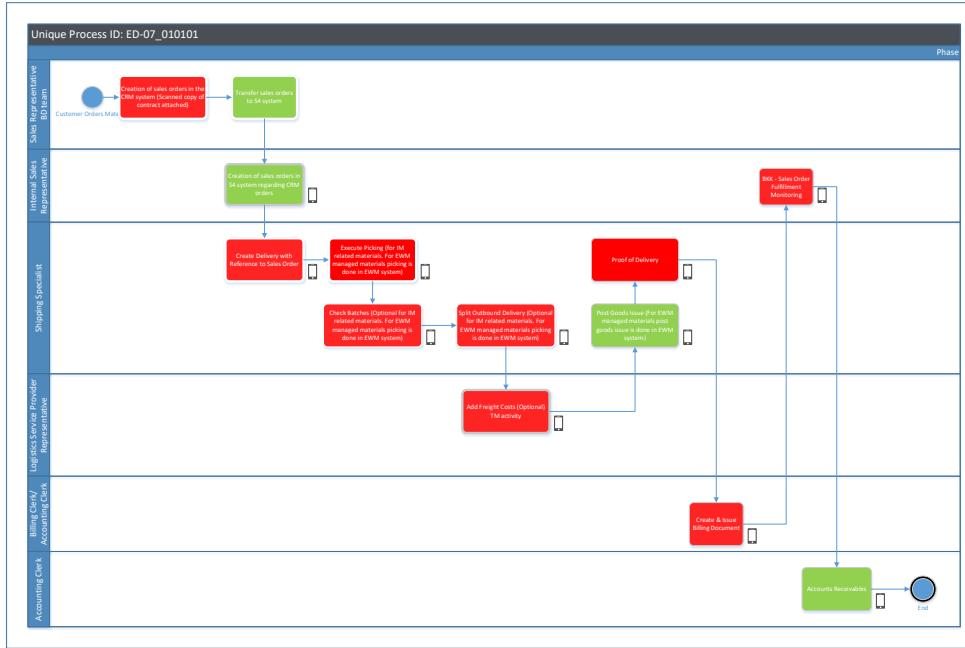
After the invoice gets created, all financial information is posted to accounting automatically. If an error occurs, then this error is to be fixed and the invoice can be released manually to accounting.

A typical process flow in SAP S/4HANA system will look like below:



(Screenshot for illustration purposes)

3.1.2 Process Diagram



3.1.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_010101	Customer Orders Material	P200	Start	Sales Representative BD team	Partially Manual	N/A
P200	ED-07_010101	Creation of sales orders in the CRM system (Scanned copy of contract attached)	P300	Process	Sales Representative BD team	Partially Manual	N/A
P300	ED-07_010101	Transfer sales orders to S4 system	P400	Process	Sales Representative BD team	Fully Automated	N/A
P400	ED-07_010101	Creation of sales orders in S4 system regarding CRM orders	P500	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P500	ED-07_010101	Create Delivery with Reference to Sales Order	P600	Process	Shipping Specialist	Partially Manual	Create Delivery with Reference to Sales Order

P600	ED-07_010101	Execute Picking (for IM related materials. For EWM managed materials picking is done in EWM system)	P700	Process	Shipping Specialist	Partially Manual	Create /Change Delivery with Reference to Sales Order
P700	ED-07_010101	Check Batches (Optional for IM related materials. For EWM managed materials picking is done in EWM system)	P800	Process	Shipping Specialist	Partially Manual	Create /Change Delivery with Reference to Sales Order
P800	ED-07_010101	Split Outbound Delivery (Optional for IM related materials. For EWM managed materials picking is done in EWM system)	P900	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P900	ED-07_010101	Add Freight Costs (Optional) TM activity	P1000	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1000	ED-07_010101	Post Goods Issue in S4 Hana (For EWM managed materials post goods issue is done in EWM system)	P1100	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1100	ED-07_010101	Proof of Delivery	P1200	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P1200	ED-07_010101	Create & Issue Billing Document	P1300	Process	Billing Clerk/ Accounting Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1300	ED-07_010101	BKK - Sales Order Fulfillment Monitoring	P1400	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1400	ED-07_010101	Accounts Receivables	P1500	Process	Accounting Clerk	Automated	Change/Display Billing Document Display Accounting Document
P1500	ED-07_010101	End		End			

3.2 Create Cash Sales Order

3.2.1 Process Description

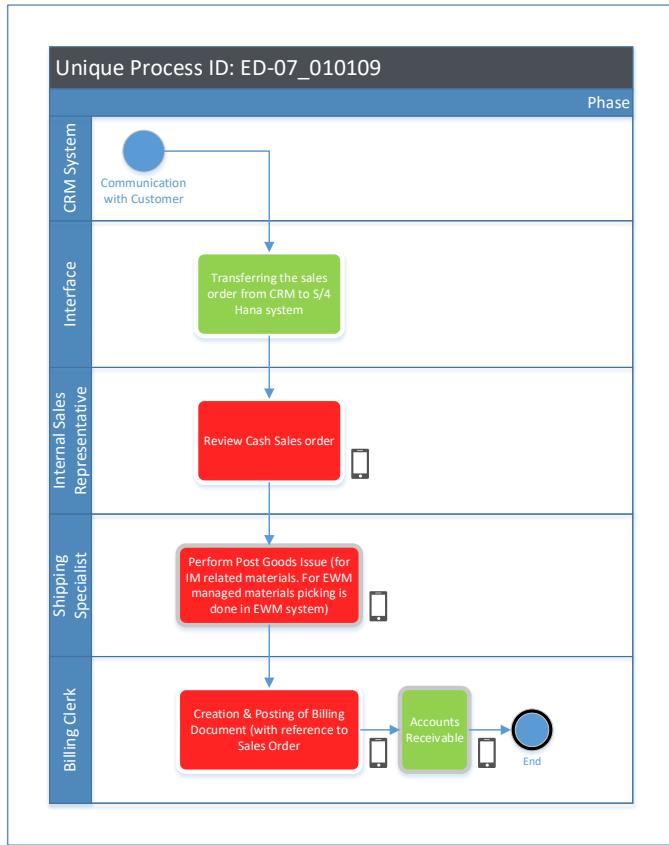
Cash sales is a process where an EDGE customer can pick a product & acquire services from the facility directly by cash payment. In this case the whole order-to-cash cycle happens in a single shot at the instance when the goods were sold. Thus, for cash sales orders, customer orders, pick the purchased goods and services, as soon as received the services and goods ready to make payment to EDGE entities.

The cash order creates subsequent documents in the same transaction.

- Delivery automatically happens when you save the sales order
- Cash sales is order related billing and doesn't have credit active
- Cash sales items are not relevant for picking during delivery processing as customer will be picking the goods on their own

Note: As confirmed by L2C team, Cash sales orders will be created in CRM and then replicated into SAP S/4HANA.

3.2.2 Process Diagram



3.2.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation *	Fiori
P100	ED-07_010109	Communication with Customer	P200	Start	CRM System	Partially Manual	N/A
P200	ED-07_010109	Transferring the sales order from CRM to S/4 HANA system	P300	Process	Interface	Fully Automated	N/A
P300	ED-07_010109	Review Cash Sales order	P400	Process	Internal Sales Representative	Partially Manual	Manage Sales Order

P400	ED-07_010109	Perform Post Goods Issue (for IM related materials. For EWM managed materials picking is done in EWM system)	P500	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order
P500	ED-07_010109	Creation & Posting of Billing Document (with reference to Sales Order)	P600	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P600	ED-07_010109	Accounts Receivable	P700	Process	Billing Clerk	Automated	Change/Display Billing Document
P700	ED-07_010109	End		End	Billing Clerk		

3.3 Scrap Sales Process

3.3.1 Process Description

PURPOSE:

This procedure describes the general process for performing the scrap sales process.

The purpose of this process is to ensure proper disposal of waste from activities conducted by business. The procedure at hand describes the general framework enabling respective departments to follow the process effectively.

SCOPE:

This process applies to all scrap disposal activities under Inventory and Non-inventory items in all EDGE entities.

- 1) Scrap Sales Process – Inventory Items
- 2) Scrap Sales Process – Non-Inventory Items

In each Scrap sales process, the Management Approvals are based on Entity specific Delegation of Authority (DoA).

3.3.2 Approval mechanism for Inventory Scrap Sales (DOA)

Warehouse Manager	Operations Director	Quality Director	CFO	Chief Executive Officer
Confirm the stock qty is correct and the material will be segregated in a specific location for scrap.	Confirm the above listed items are Obsolete/ scrap due, recommend to write-off	Confirm the above listed items are Obsolete/ scrap due, recommend to write-off	Endorsed (to Scrap the above listed items)	Approved (to Scrap the above listed items)
Approver Name:	Approver Name:	Approver Name:	Approver Name:	Approver Name:
Approver ID:	Approver ID:	Approver ID:	Approver ID:	Approver ID:
Approval Date:	Approval Date:	Approval Date:	Approval Date:	Approval Date:
Approval Time:	Approval Time:	Approval Time:	Approval Time:	Approval Time:

3.3.3 Scrap Sales Process – Inventory Items

After successful bidding process and approvals (details available in warehouse management PDD) as mentioned sales process required to be followed to sell scrap inventory.

SAP Process starts below:

1. Create Scrap Sales order:

Scrap Sales order should be created in SAP. The Order type should be different from regular sales, also should have different pricing procedure then standard order. In the Sales order, delivery date should be mentioned that is agreed with the customer. In addition, Quantity and agreed price should be maintained manually and upon saving the Sales order it should be blocked for Delivery and should go through approval process.

Changes: After successfully replication of Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

2. Prepare Delivery Note (DN)

Warehouse to prepare the DN for scrap material with reference to Sales order. No picking request is required.

3. Picking List

Picking list will be generated and based on the picking list physical stock will be picked from the storage location.

4. Post Goods Issue

Goods will be issued with reference to the Delivery. COGS financial entry will be generated.

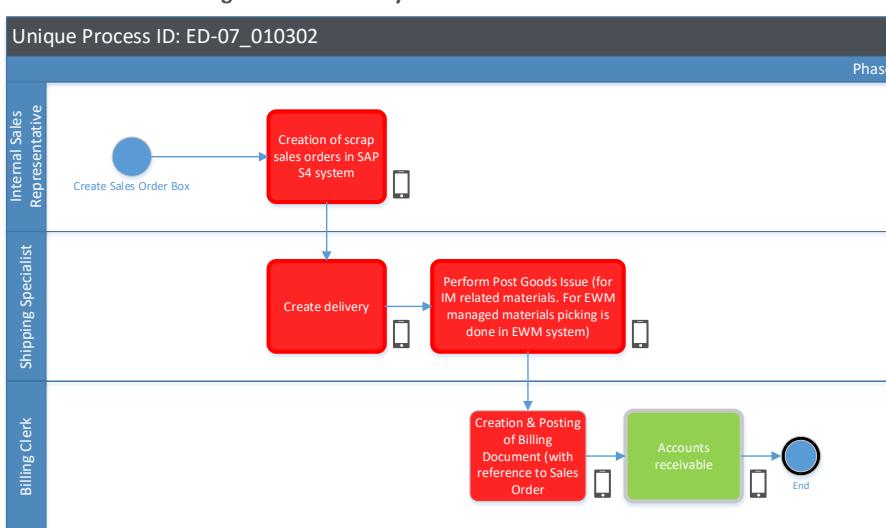
5. Proof of Delivery

Proof of delivery is required,

6. Create invoice:

Create invoice with reference to the Delivery note. For output, same invoice format to be used as standard sales process. The revenue will be posted in a separate Profit/Loss G/L account.

3.3.4 Process Diagram for Inventory Items:



3.3.5 Activity List for Inventory Items

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation*	FIORI App
P100	ED-07_010302	Create Sales Order	P200	Start	Internal Sales Representative	Partially Manual	
P200	ED-07_010302	Creation of scrap sales orders in SAP S4 system	P200	Start	Internal Sales Representative	Partially Manual	Create sales order
P300	ED-07_010302	Create delivery	P300	Process	Shipping Specialist	Partially Manual	Create delivery
P400	ED-07_010302	Perform Post Goods Issue (for IM related materials. For EWM managed materials picking is done in EWM system)	P400	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order
P500	ED-07_010302	Creation & Posting of Billing Document (with reference to Delivery Order)	P500	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P600	ED-07_010302	Accounts receivable	P600	Process	Billing Clerk	Automated	Change/Display Billing Document
P700	ED-07_010302	End		End	Billing Clerk		

3.3.6 Scrap Sales Process - Non-Inventory Items

The process describes the disposal of non-inventory items activities.

Non-Inventory Item – is a type of product that not tracked/monitored in the inventory systems. This type of items exists as a waste from Operations and yet to be disposed as a scrap parts. (i.e., metal scrap from fabrication and damage/defective part, etc.)

SAP Process starts below:

1. Create Scrap Sales order:

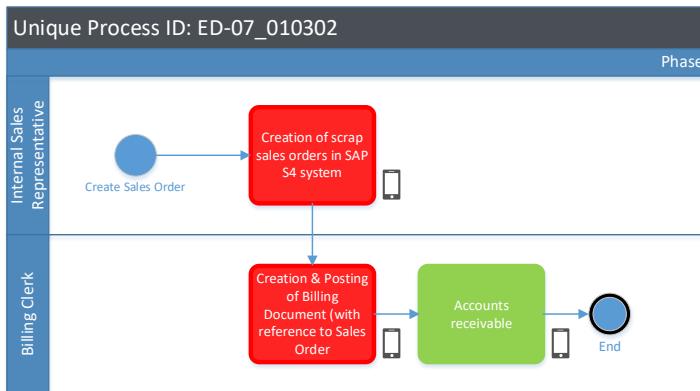
Scrap Sales order should be created in SAP, The Order type should be different from regular sales, also should have different pricing procedure than standard order. In the Sales order, Quantity and agreed price should be maintained manually and upon saving the Sales order it should have billing block and Sales order should go through approval process.

Changes: After successfully replication of Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

2. Create invoice:

As these are non-inventory item, no delivery document will be created. Directly create invoice with reference to Sales order. For output, same invoice format to be used as standard sales process. The revenue will be posted in a separate Profit/Loss G/L account.

3.3.7 Process Diagram for Non-Inventory Items



3.3.8 Activity List for Non-Inventory Items

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation*	FIORI App
P100	ED-07_010302	Create Sales Order	P200	Start	Internal Sales Representative	Partially Manual	
P200	ED-07_010302	Creation of scrap sales orders in SAP S4 system	P300	Process	Internal Sales Representative	Partially Manual	Create sales order
P300	ED-07_010302	Creation & Posting of Billing Document (with reference to Sales Order)	P400	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P400	ED-07_010302	Accounts receivable	P500	Process	Billing Clerk	Automated	Change/Display Billing Document
P500	ED-07_010302	End		End	Billing Clerk		

3.4 Create Sales Order for Non-Stock material (ED-07_010102)

3.4.1 Process Description

Non-stock items are also known as non-inventoried item. These items are usually not available in the stock only produced when received the order from the customer. In manufacturing industry this is called make to order process. In EDGE this process will be starts once the sales order is created in S/4HANA based on the information passed from MS CRM to S/4HANA system.

Make to Order scenario is used when the material those is not stocked but build exclusively on customer request. The product called-off by the customer is initially contracted and typically for EDGE, engineered based on the specific customer requirements. This process is the most common one for the EDGE entities NIMR, HALCON, ADASI, AL TARIQ.

The detailed activities performed during this business process are as follow:

Sales Order Creation:

Contracts or standalone sales orders are created in the CRM system and will be transferred to the SAP system where the system creates a sales order based on the contract and important order fields are automatically populated. The orders are created for the requested delivery date, materials, and quantity. Sales order requirements are then transferred to production to get the quantity and delivery date confirmation.

Output: Order confirmation will be printed or sent to the customer via email if required.

Changes: After successfully replication of Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

Delivery Processing:

Delivery process is initiated in S/4 HANA system once Goods receipt is done against the production order. An outbound delivery is created, and the quantity is delivered to the customer after the post goods issue is executed. If the material is EWM managed Post goods issue is performed in EWM system. Before PGI, proof of delivery is performed.

Note: Al Tariq is not using a Sales Order Confirmation.

Sales Order Monitoring

An EDGE sales representative can use Fiori-based Sales Order Fulfilment Monitor to address problems that occur during the sales order fulfilment process. Business can then directly execute follow-up steps from the monitor to resolve these issues. General examples of issues are missing documents, missing or unconfirmed information, and various types of blocks as well as product and trade compliance issues.

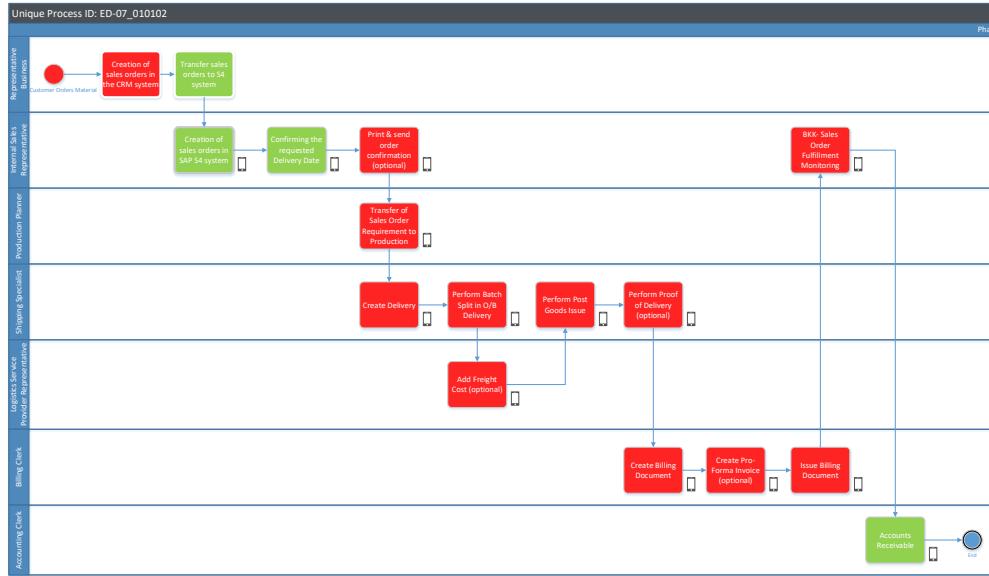
Billing Processing:

A billing document is created for a delivery document and details are copied from the reference document. A Pro-forma invoice can also be created before billing document creation as some EDGE entities have this requirement. Billing is integrated into the organizational structures. The user assigns the billing transactions to a specific sales organization, a distribution channel, and a division. Since billing has an integration to Financial Accounting, the organizational structures of the accounting department (the company codes as well as the sales organizations assigned to the company codes) are extremely important.

Release to Accounting:

After the invoice gets created, all financial information is posted to accounting automatically. If an error occurs, then this error is to be fixed and the invoice can be released manually to accounting.

3.4.2 Process Diagram



3.4.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation *	Fiori
P100	ED-07_010102	Customer Orders Material	P200	Start	Sales Representative Business Development team	Partially Manual	N/A
P200	ED-07_010102	Creation of sales orders in the CRM system (Scanned copy of contract attached)	P300	Process	Sales Representative Business Development team	Partially Manual	N/A
P300	ED-07_010102	Transfer sales orders to S4 system	P400	Process	Sales Representative Business Development team	Fully Automated	N/A
P400	ED-07_010102	Creation of sales orders in S4 system regarding CRM orders	P500	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P500	ED-07_010102	Confirming the requested Delivery Date	P600	Process	Internal Sales Representative	Automated	Manage Sales Order
P600	ED-07_010102	Print & send order confirmation (optional)	P700	Process	Internal Sales Representative	Automated	Manage Sales Order
P700	ED-07_010102	Transfer of Sales Order Requirement to Production	P800	Process	Production Planner	Partially Manual	Manage Internal Requirements
P900	ED-07_010102	Create delivery	P1000	Process	Shipping Specialist	Partially Manual	Create Delivery
P1300	ED-07_010102	Perform Batch Split in O/B Delivery (for IM related materials. For EWM managed materials picking is done in EWM system)	P1400	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1400	ED-07_010102	Add Freight Cost	P1500	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1600	ED-07_010102	Perform Post Goods Issue in S4 Hana (for IM related materials. For EWM managed materials PGI is done in EWM system and the same is reflected in S4 Hana automatically)	P1700	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order

P1500	ED-07_010102	Perform Proof of Delivery (Optional)	P1600	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P1700	ED-07_010102	Create Billing Document	P1800	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1800	ED-07_010102	Create Pro-Forma Invoice (Optional)	P1900	Process	Billing Clerk	Partially Manual	Create Billing Document
P1900	ED-07_010102	Issue Billing Document	P2000, P2100	Process	Billing Clerk	Automated	Change/Display Billing Document
P2000	ED-07_010102	BKK - Sales Order Fulfilment Monitoring	P2200	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P2100	ED-07_010102	Accounts Receivable	P2200	Process	Accounting Clerk	Automated	Change/Display Billing Document Display Accounting Document
2200	ED-07_010102	End					

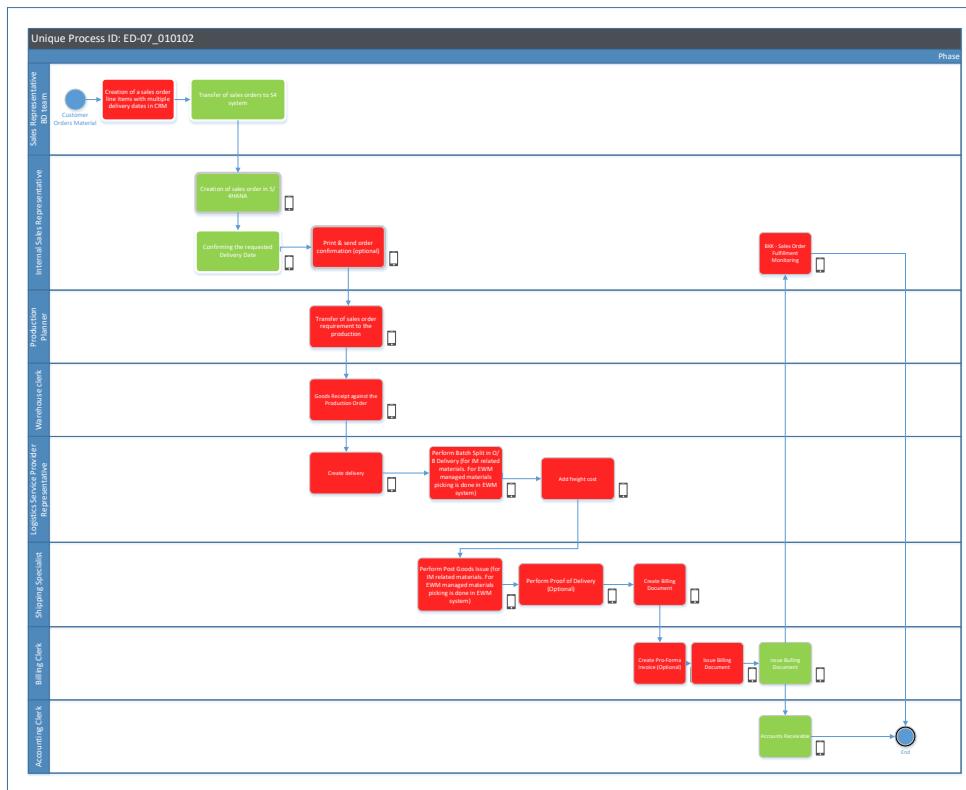
3.5 Create Sales Order with Delivery Schedule (ED-07_010103)

3.5.1 Process Description

In sales orders, delivery schedules can be specified for the requested delivery dates and quantities for the ordered items. The delivery schedule functionality allows you to define multiple delivery dates and quantities for different line items within a sales order. This feature is particularly useful when you need to deliver items in multiple batches or over a specific period. It can be maintained directly in SAP S/4 sales order OR it can come from the CRM system as multiple line items with different delivery dates and quantities.

Once you have added the delivery schedule, it will be reflected in the sales order document. The delivery schedule lines will appear alongside the corresponding line item, indicating the requested delivery dates and quantities.

3.5.2 Process Diagram



3.5.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation*	Fiori
P100	ED-07_010103	Customer Orders Material	P200	Start	Sales Representative Business Development team	Partially Manual	N/A
P200	ED-07_010103	Creation of a sales order line items with multiple delivery dates in CRM	P300	Process	Sales Representative Business Development team	Partially Manual	N/A
P300	ED-07_010103	Transfer of sales order to S4 system	P400	Process	Sales Representative Business Development team	Fully Automated	N/A
P400	ED-07_010103	Creation of sales order in S/4HANA	P500	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P500	ED-07_010103	Confirming the requested Delivery Date	P600	Process	Internal Sales Representative	Automated	Manage Sales Order
P600	ED-07_010103	Print & send order confirmation (optional)	P700	Process	Internal Sales Representative	Automated	Manage Sales Order
P700	ED-07_010103	Transfer of sales order requirement to the production	P800	Process	Production Planner	Partially Manual	Manage Internal Requirements
P800	ED-07_010103	Goods Receipt against the Production Order	P900	Process	Warehouse clerk	Partially Manual	Post Goods Receipt for Production Order
P900	ED-07_010103	Create delivery	P1000	Process	Shipping Specialist	Partially Manual	Create Delivery
P1000	ED-07_010103	Perform Batch Split in O/B Delivery (for IM related materials. For EWM managed materials picking is done in EWM system)	P1100	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1100	ED-07_010103	Add Freight Cost	P1200	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1200	ED-07_010103	Perform Post Goods Issue (for IM related materials this is manual in S4 Hana. For EWM managed materials PGI is done automatically in S4 Hana system)	P1300	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order
P1300	ED-07_010103	Perform Proof of Delivery (Optional)	P1400	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery

P1400	ED-07_010103	Create Billing Document	P1500	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1500	ED-07_010103	Create Pro-Forma Invoice (Optional)	P1600	Process	Billing Clerk	Partially Manual	Create Billing Document
P1600	ED-07_010103	Issue Billing Document	P1700, P1800	Process	Billing Clerk	Automated	Change/Display Billing Document
P1700	ED-07_010103	BKK - Sales Order Fulfilment Monitoring	P2200	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1800	ED-07_010103	Accounts Receivable	P2200	Process	Accounting Clerk	Automated	Change/Display Billing Document Display Accounting Document
P1900	ED-07_010103	End					

3.6 Create Sales Order for Service Material (ED-07_010104)

3.6.1 Process Description

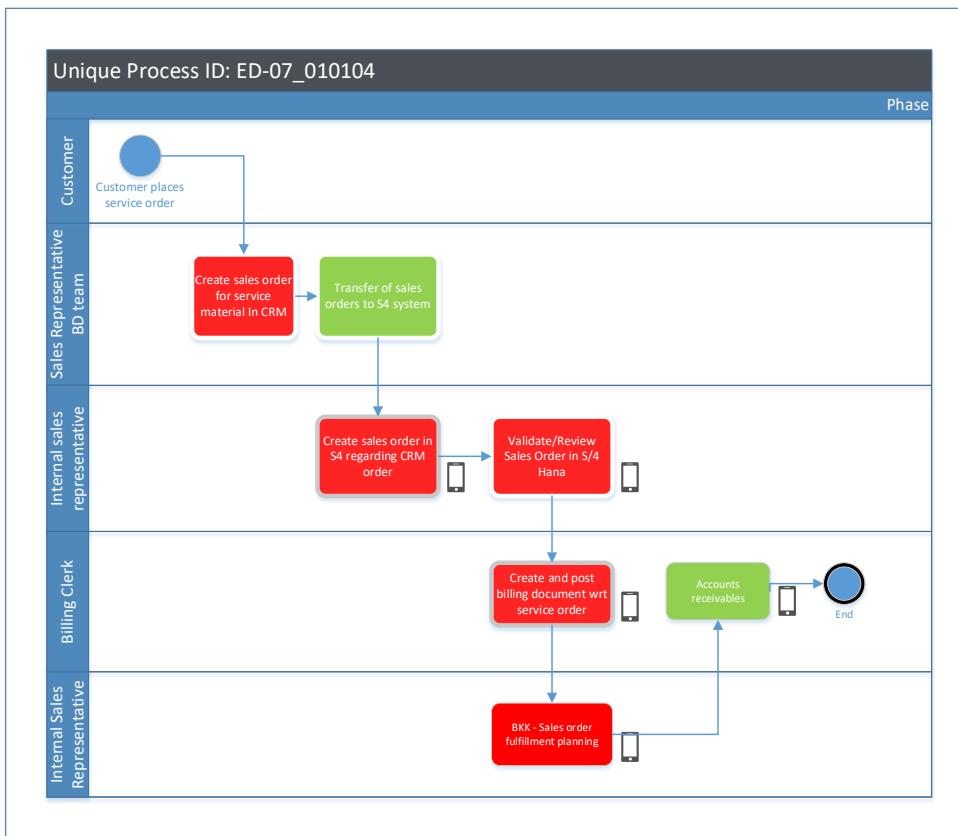
Sales Order with service material is an agreement between a service provider (EDGE entities) and its customer about the execution of services at a specific time and for a specific price. In addition, the service order contains planning for personnel, spare parts, and other expenses that are necessary for providing the services. A sales order can either

have both service material and stock material as part of it or only service material as part of it. Both the scenarios are applicable to P2 entities and are also a standard SAP functionality.

Service material sales orders will be created in the CRM system and passed onto SAP

Changes: After successfully replication of Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

3.6.2 Process Diagram



3.6.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_010104	Customer places service order	P200	Start	Customer	Partially Manual	N/A

P200	ED-07_010104	Create sales order for service material in CRM	P300	Process	Sales Representative BD team	Partially Manual	N/A
P300	ED-07_010104	Transfer of sales orders to S4 system	P400	Process	Sales Representative BD team	Fully Automated	N/A
P400	ED-07_010104	Create sales order in S4 regarding CRM order	P500	Process	Internal sales representative	Fully Automated	Manage Sales Order
P500	ED-07_010104	Validate/Review Sales Order in S/4 HANA	P600	Process	Internal sales representative	Human Triggered	Manage Sales Order
P600	ED-07_010104	Create and post billing document wrt service order	P700	Process	Billing Clerk	Partially Manual	Create Billing Document/Create Billing Due List
P700	ED-07_010104	BKK - Sales order fulfillment planning	P800	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Monitoring
P800	ED-07_010104	Accounts receivables	P900	Process	Billing Clerk	Automated	Change/Display Billing Document
P900	ED-07_010104	End		End	Billing Clerk		

3.7 Create Sales Order for Individual Purchase Order (ED-07_010105)

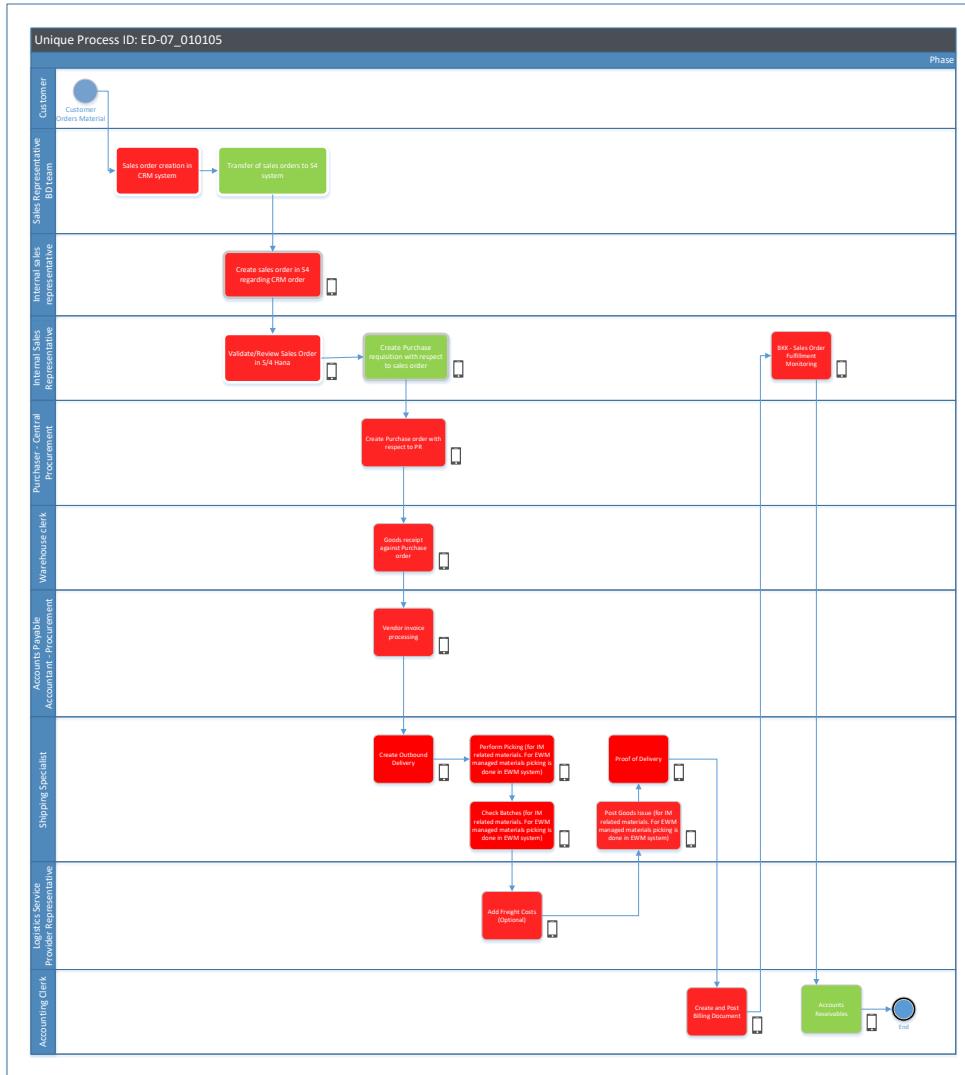
3.7.1 Process Description

This process will be used on that scenario where customer ordering those material (trading goods) which is not produced by the EDGE entities but we will buy and sell to our customers in some special cases to fulfil their requirement along normal MTO orders.

During sales order entry, the system automatically creates a purchase requisition item. The purchasing department creates a purchase order based on the requisition and the vendor ships the goods directly to you (unlike third party order processing, where the vendor ships directly to your customer). You then ship the goods to your customer. While the goods are part of your inventory, you manage them as part of the sales order stock. Sales order stock consists of stock that is assigned to specific sales orders and cannot be used for other purposes.

Tracking Costs - You can track costs and revenues for individual purchase orders in the same way as you track costs for make-to-order production.

3.7.2 Process Diagram



3.7.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_010105	Customer Orders Material	P200	Start	Customer	Partially Manual	N/A
P200	ED-07_010105	Sales order creation in CRM system	P300	Process	Sales Representative Business development team	Partially Manual	N/A
P300	ED-07_010105	Transfer of sales orders to S4 system	P400	Process	Sales Representative BD team	Fully Automated	N/A
P400	ED-07_010105	Create sales order in S4 regarding CRM order	P500	Process	Internal sales representative	Fully Automated	Manage Sales Order
P500	ED-07_010105	Validate/Review Sales Order in S/4 HANA	P600	Process	Internal Sales Representative	Human Triggered	Manage Sales Order
P600	ED-07_010105	Create Purchase requisition with respect to sales order	P700	Process	Internal Sales Representative	Automated	Manage Sales Order
P700	ED-07_010105	Create Purchase order with respect to PR	P800	Process	Purchaser - Central Procurement	Partially Manual	Create Purchase Order
P800	ED-07_010105	Goods receipt against Purchase order	P900	Process	Warehouse clerk	Partially Manual	Post Goods Receipt for Production Order
P900	ED-07_010105	Vendor invoice processing	P1000	Process	Accounts Payable Accountant - Procurement	Partially Manual	Supplier Invoice (S/4HANA)
P1000	ED-07_010105	Create Outbound Delivery	P1100	Process	Shipping Specialist	Partially Manual	Create Delivery with Reference to Sales Order
P1100	ED-07_010105	Perform Picking (for IM related materials. For EWM managed materials picking is done in EWM system)	P1200	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1200	ED-07_010105	Check Batches (for IM related materials. For EWM managed materials picking is done in EWM system)	P1300	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1300	ED-07_010105	Add Freight Costs (Optional)	P1400	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1400	ED-07_010105	Post Goods Issue (for IM related materials this is	P1500	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order

		manual. For EWM managed materials this is automatic in S4 Hana system)					
P1500	ED-07_010105	Proof of Delivery	P1600	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P1600	ED-07_010105	Create and Post Billing Document	P1700	Process	Accounting Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1700	ED-07_010105	BKK - Sales Order Fulfillment Monitoring	P1800	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1800	ED-07_010105	Accounts Receivables	P1900	Process	Accounting Clerk	Automated	Change/Display Billing Document
P1900	ED-07_010105	End		End	Accounting Clerk		

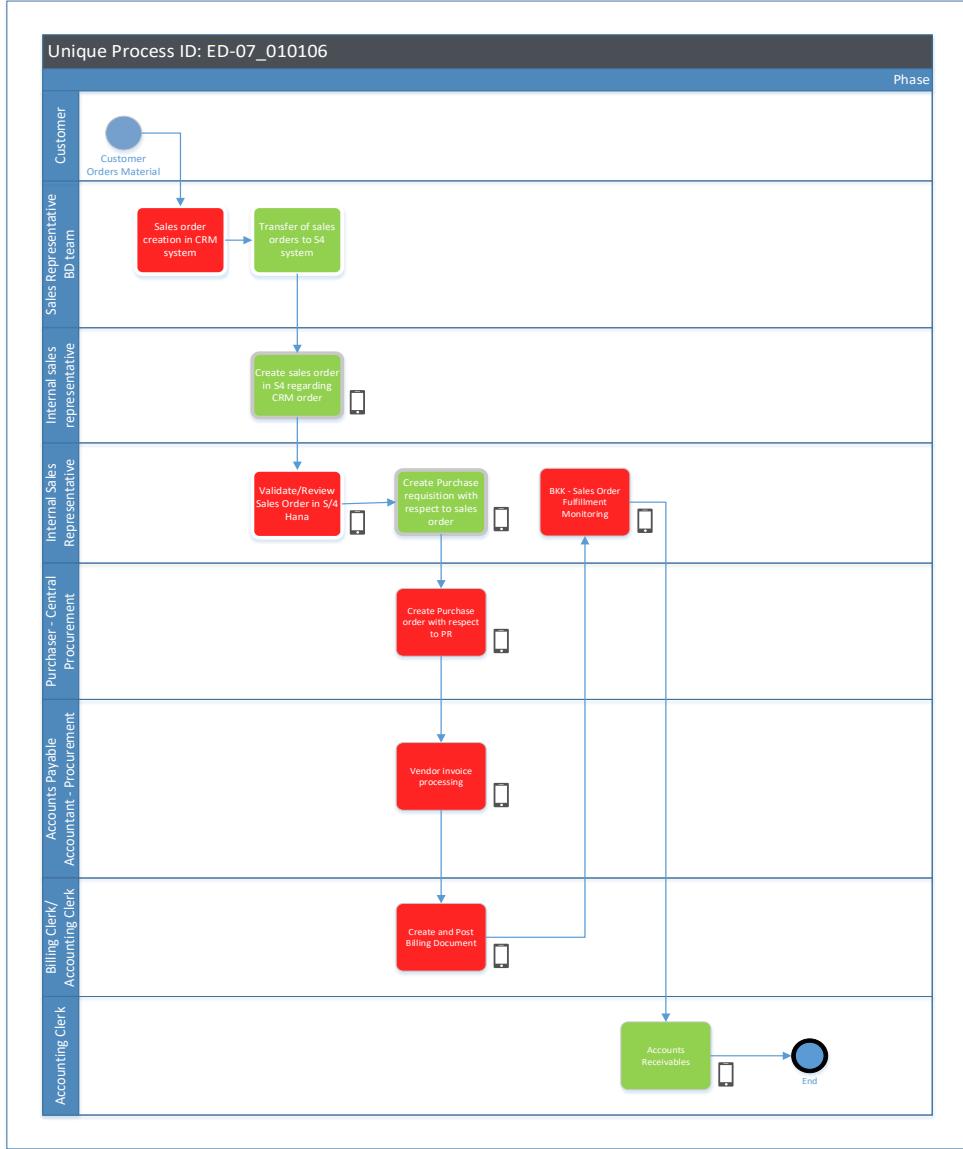
3.8 Create Sales Order for 3rd party processing (ED-07_010106)

3.8.1 Process Description

In third-party process the delivery of the goods required by the customer is not done by sales organization where customer orders. Instead, the request of the goods is forwarded to an external vendor who sends the material directly to the customer - Transportation is handled by vendor.

Changes: After successfully replication of Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

3.8.2 Process Diagram



3.8.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation *	Fiori
P100	ED-07_010106	Customer Orders Material	P200	Start	Customer	Partially Manual	N/A
P200	ED-07_010106	Sales order creation in CRM system	P300	Process	Sales Representative Business Development team	Partially Manual	N/A
P300	ED-07_010106	Transfer of sales orders to S4 system	P400	Process	Sales Representative BD team	Fully Automated	N/A
P400	ED-07_010106	Create sales order in S4 regarding CRM order	P500	Process	Internal sales representative	Fully Automated	Manage Sales Order
P500	ED-07_010106	Validate/Review Sales Order in S/4 HANA	P600	Process	Internal Sales Representative	Human Triggered	Manage Sales Order
P600	ED-07_010106	Create Purchase requisition with respect to sales order	P700	Process	Internal Sales Representative	Automated	Manage Sales Order
P700	ED-07_010106	Create Purchase order with respect to PR	P800	Process	Purchaser - Central Procurement	Partially Manual	Create Purchase Order
P800	ED-07_010106	Vendor invoice processing	P900	Process	Accounts Payable Accountant - Procurement	Partially Manual	Supplier Invoice (S/4HANA)
P900	ED-07_010106	Create and Post Billing Document	P1000	Process	Billing Clerk/ Accounting Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1000	ED-07_010106	BKK - Sales Order Fulfillment Monitoring	P1100	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1100	ED-07_010106	Accounts Receivables	P1200	Process	Accounting Clerk	Automated	Change/Display Billing Document
P1200	ED-07_010106	End		End			

3.9 Create Sales order with WBS (ED-07_010107)

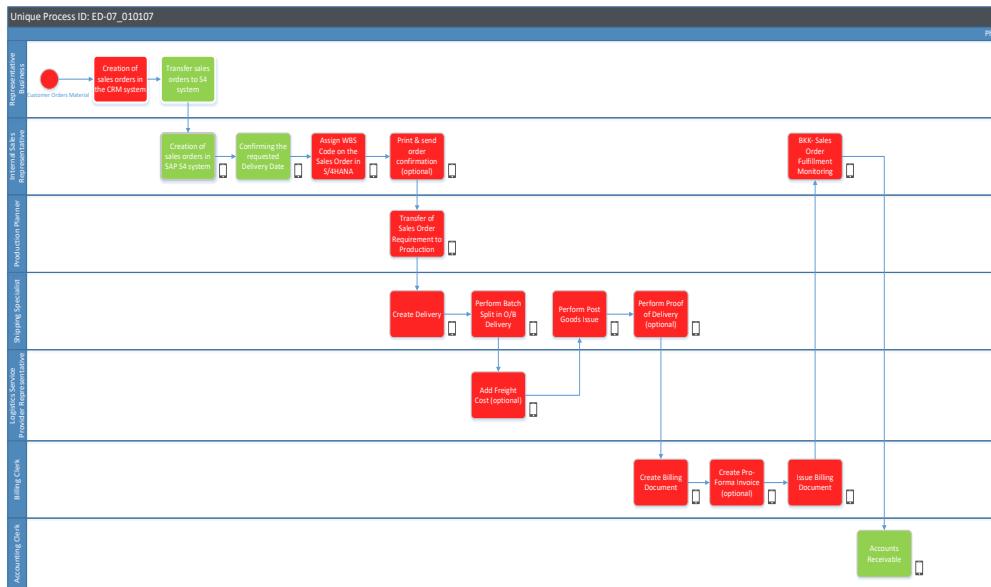
3.9.1 Process Description

Since the projects are created against the contract and EDGE uses the SAP project system as a cost collector, therefore, we add Work Breakdown Structure (WBS) reference in our sales order item level. With WBS reference, all the project milestones/delivery schedules are copied to the Sales order item under the billing plan. Billing will be released once a milestone is achieved.

WBS is selected in the SAP sales order line item for linking the sales order to the project and for capturing *planned and actual costs and revenues*.

- The system will display all the WBS in the selection list which belongs to the company. WBS can be selected in the sales order line item from the selection list. The system will select delivery/billing block automatically and send notification to the approver to validate the WBS which is selected in the sales order.
- Business cannot proceed creating subsequent transaction (delivery/ billing), till the WBS selected in the sales order is validated and approved by project manager (SAP PS system – A2D team)

3.9.2 Process Diagram



3.9.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation *	Fiori
P100	ED-07_010107	Customer Orders Material	P200	Start	Sales Representative Business Development team	Partially Manual	N/A
P200	ED-07_010107	Creation of sales orders in the CRM system (Scanned copy of contract attached)	P300	Process	Sales Representative Business Development team	Partially Manual	N/A
P300	ED-07_010107	Transfer sales orders to S4 system	P400	Process	Sales Representative Business Development team	Fully Automated	N/A
P400	ED-07_010107	Creation of sales orders in S4 system regarding CRM orders	P500	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P500	ED-07_010107	Confirming the requested Delivery Date	P550	Process	Internal Sales Representative	Automated	Manage Sales Order
P550	ED-07_010107	Assign WBS Code on the Sales Order in S/4HANA	P600	Process	Internal Sales Representative	Partially Manual	Sales Order Change
P600	ED-07_010107	Print & send order confirmation (optional)	P700	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P700	ED-07_010107	Transfer of Sales Order Requirement to Production	P800	Process	Production Planner	Partially Manual	Manage Internal Requirements
P800	ED-07_010107	Goods Receipt against the Production Order	P900	Process	Warehouse clerk	Partially Manual	Post Goods Receipt for Production Order
P900	ED-07_010107	Create delivery	P1000	Process	Shipping Specialist	Partially Manual	Create Delivery
P1000	ED-07_010107	Perform Batch Split in O/B Delivery (for IM related materials. For EWM managed materials picking is done in EWM system)	P1100	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1100	ED-07_010107	Add Freight Cost	P1200	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1200	ED-07_010107	Perform Post Goods Issue (for IM related	P1300	Process	Shipping Specialist	Partially Manual	Change Delivery with

		materials this is manual in S4 Hana. For EWM managed materials this is automatic in S4 Hana system)					Reference to Sales Order
P1300	ED-07_010107	Perform Proof of Delivery (Optional)	P1400	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P1400	ED-07_010107	Create Billing Document	P1500	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1500	ED-07_010107	Create Pro-Forma Invoice (Optional)	P1600	Process	Billing Clerk	Partially Manual	Create Billing Document
P1600	ED-07_010107	Issue Billing Document Output	P1700	Process	Billing Clerk	Automated	Change/Display Billing Document
P1700	ED-07_010107	BKK - Sales Order Fulfillment Monitoring	P1800	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1800	ED-07_010107	Accounts Receivable	P1900	Process	Accounting Clerk	Automated	Change/Display Billing Document Display Accounting Document
P1900	ED-07_010107	End		End			

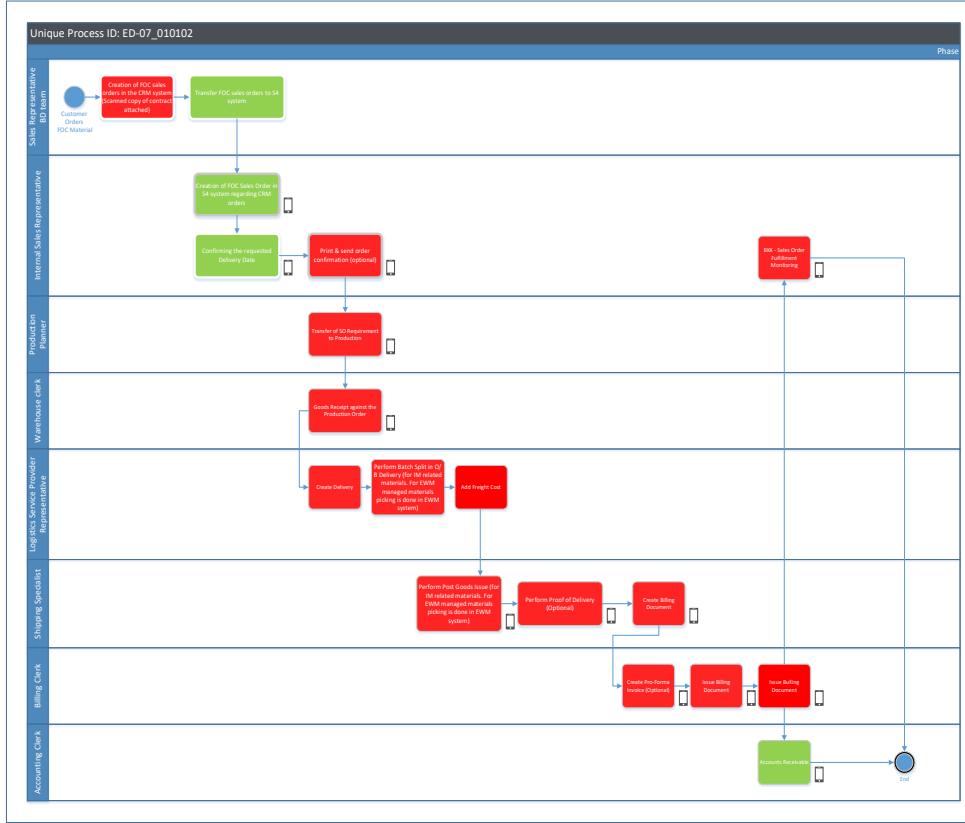
3.10 Create Sales Order for FOC-Sales (ED-07_010108)

3.10.1 Process Description

We have two very different ways of handling samples to customers. One is with a discount (might be 100% or not), the other is free. Issuing samples typically consumes a budget, so the sale needs to be posted to a particular cost centre. Standard best practice SAP approach is to price the sample but apply 100% discount (which is a pricing type on the item category) so you know the market value of the sample.

Changes: After successfully creation of FOC Sales Order in SAP S/4HANA. Changes can be made directly in SAP S/4HANA

3.10.2 Process Diagram



3.10.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_010108	Customer Orders FOC Material	P200	Start	Sales Representative Business Development team	Partially Manual	N/A
P200	ED-07_010108	Creation of FOC sales orders in the CRM system (Scanned copy of contract attached)	P300	Process	Sales Representative Business Development team	Partially Manual	N/A

P300	ED-07_010108	Transfer FOC sales orders to S4 system	P400	Process	Sales Representative Business Development team	Fully Automated	N/A
P400	ED-07_010108	Creation of FOC sales orders in S4 system regarding CRM orders	P500	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P500	ED-07_010108	Confirming the requested Delivery Date	P600	Process	Internal Sales Representative	Automated	Manage Sales Order
P600	ED-07_010108	Print & send order confirmation (optional)	P700	Process	Internal Sales Representative	Automated	Manage Sales Order
P700	ED-07_010108	Transfer of Sales Order Requirement to Production	P800	Process	Production Planner	Partially Manual	Manage Internal Requirements
P800	ED-07_010108	Goods Receipt against the Production Order	P900	Process	Warehouse clerk	Partially Manual	Post Goods Receipt for Production Order
P900	ED-07_010108	Create delivery	P1000	Process	Shipping Specialist	Partially Manual	Create Delivery
P1000	ED-07_010108	Perform Batch Split in O/B Delivery (for IM related materials. For EWM managed materials picking is done in EWM system)	P1100	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1100	ED-07_010108	Add Freight Cost	P1200	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1200	ED-07_010108	Perform Post Goods Issue (for IM related materials this is manual. For EWM managed materials this is automatic in S4 Hana system)	P1300	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order
P1300	ED-07_010108	Perform Proof of Delivery (Optional)	P1400	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P1400	ED-07_010108	Create Billing Document	P1500	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1500	ED-07_010108	Create Pro-Forma Invoice (Optional)	P1600	Process	Billing Clerk	Partially Manual	Create Billing Document
P1600	ED-07_010108	Issue Billing Document	P1700, P1800	Process	Billing Clerk	Automated	Change/Display Billing Document
P1700	ED-07_010108	BKK - Sales Order Fulfilment Monitoring	P1900	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1800	ED-07_010108	Accounts Receivable	P1900	Process	Accounting Clerk	Automated	Change/Display Billing Document

							Display Accounting Document
P1900	ED-07_010108	End		End			

3.11 Manage and process customer sales orders (ED-07_010201)

3.11.1 Process Description

For P2 entities (HALCON, NIMR, ADASI, AL TARIQ) contracts are created by the CRM team. These contracts are created in PDF format by sales personnel and based on that sales orders will be created in Microsoft Dynamics CRM system.

Mentioned sales orders are then sent to the SAP S/4HANA system for further execution. The SAP system will take these sales orders as final source of truth without worrying about under/over delivery as this will be taken care by CRM team. New Sales orders will be created in SAP based on the inputs from CRM sales orders, this will be done by interface between two systems - Interface b/w CRM and S4HANA is Web Api and objects are Jason.

Overview of the process flow:

Commercial offers > Contract (pdf format) > Sales Orders in CRM System > Sales Orders in SAP System > Execution

Note: The sales orders can also directly be created in SAP HANA system without referring to CRM system. All sales order apart from **ZORE-EDGE Standard Order**, will be created in S4 HANA system. Directly created Sales documents in SAP S/4HANA will not be replicated back to MS CRM.

Sales order management involves much more than taking an order and shipping it. Today's requirements in the volatile, uncertain, and dynamic world require sophisticated order management tools and variant pricing functionalities. The SAP Sales Order Management system allows Business to address these issues.

The Sales Order Management system also provides solutions about load, delivery, and bulk stock management to meet the specific needs of the Aerospace and Defence industries.

Generally, in SAP, the price of goods and services are determined by the pricing condition functions. But in P2, pricing will come from CPQ/CRM and will not be calculated in SAP during sales order creation based on condition records.

The Sales Order Management system covers the requirements of the EDGE group and provides many features, some highlights include:

- Available-to-promise information (MTS scenario)
- Sales order and line status tracking

Comparison between different order types in tabular format -

Process Steps	Make to Stock	Service Material order	Individual Purchase order
Sales Order Processing involves entering order data and performing functions related to material/service	Make to stock (MTS) is a traditional production strategy that is used by businesses to match the inventory with anticipated consumer demand	A service order represents a visit that a service technician makes to a customer site on a specific date.	Individual purchase orders are used when Business customer orders goods from EDGE that are not in stock and must be ordered from one or more external vendors
Sales order creation w/o reference to contract	✓	✓	✓
Create Purchase requisition with respect to sales order	X	X	✓
Create Purchase order with respect to PR	X	X	✓
Transfer of Requirements to Production	X	X	X
Goods receipt against Sales order	X	X	X
Goods receipt against Purchase order	X	X	✓
Vendor invoice processing	X	X	✓
Perform Freight unit planning	X	X	X
Create Freight order/booking	✓	X	✓
Carrier selection & assignment	✓	X	✓
Create Delivery using Freight order/booking	X	X	X
Create Outbound Delivery	✓	X	✓
Perform Batch split in outbound delivery	✓	X	✓
Perform Picking	✓	X	✓
Perform Packing	✓	X	✓
Perform Quality Inspection/Check	✓	X	✓
Perform PGI	✓	X	✓
Perform Freight execution	✓	X	✓
Calculate Freight cost	✓	X	✓
Post Freight Cost	✓	X	✓
Perform Proof of Delivery (Partial/Full)	✓	✓	✓
Invoice creation	✓	✓	✓
Accounts Receivable	✓	✓	✓

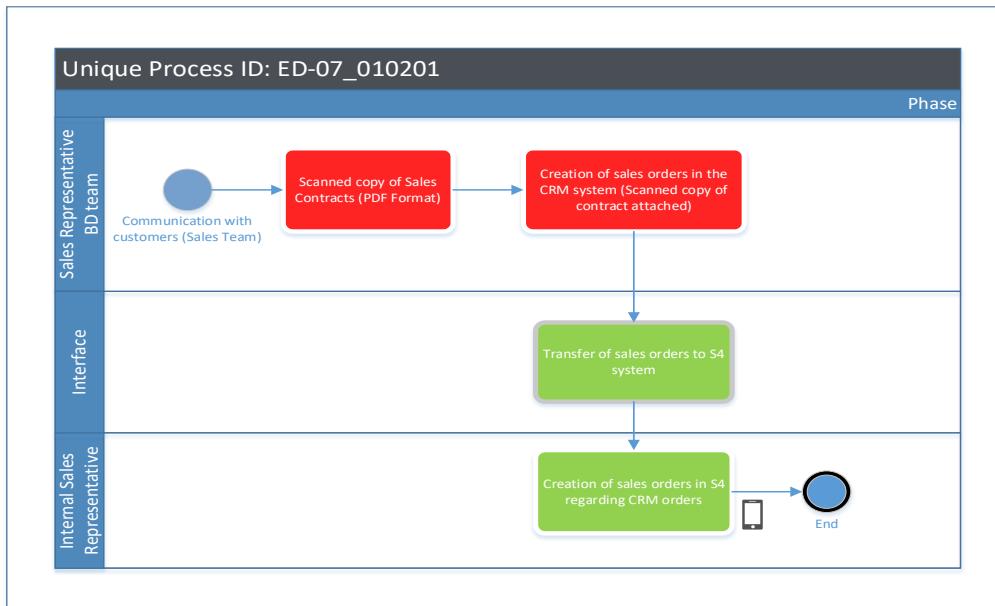
Process Steps	Make to Order	Third Party Processing with ASN	Third Party Processing w/o ASN
---------------	---------------	---------------------------------	--------------------------------

Sales Order Processing involves entering order data and performing functions related to material/service	Make to order (MTO), or made to order, is a business production strategy that typically allows consumers to purchase products that are customized to their specifications	In third-party process the delivery of the goods required by the customer is not done by sales organization where customer orders. Instead, the request of the goods is forwarded to an external vendor who sends the material directly to the customer ** Transportation is handled by vendor **	In third-party process the delivery of the goods required by the customer is not done by sales organization where customer orders. Instead, the request of the goods is forwarded to an external vendor who sends the material directly to the customer
Sales order creation w/o reference to contract	✓	✓	✓
Create Purchase requisition with respect to sales order	x	✓	✓
Create Purchase order with respect to PR	x	✓	✓
Transfer of Requirements to Production	✓	x	x
Goods receipt against Sales order	✓	x	x
Goods receipt against Purchase order	x	✓	✓
Vendor invoice processing	x	x	✓
Perform Freight unit planning	✓	x	x
Create Freight order/booking	✓	x	✓
Carrier selection & assignment	✓	x	✓
Create Delivery using Freight order/booking	x	x	x
Create Outbound Delivery	✓	x	✓
Perform Batch split in outbound delivery	✓	x	✓
Perform Picking	✓	x	✓
Perform Packing	✓	x	✓
Perform Quality Inspection/Check	✓	x	✓
Perform PGI	✓	x	✓
Perform Freight execution	✓	x	✓
Calculate Freight cost	✓	x	✓

Post Freight Cost	✓	x	✓
Perform Proof of Delivery (Partial/Full)	✓	x	✓
Invoice creation	✓	✓	✓
Accounts Receivable	✓	✓	✓

NOTE: Sales orders in S/4HANA are normally created with regards to incoming CRM sales orders.

3.11.2 Process Diagram



3.11.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_010201	Communication with customers (Sales Team)	P200	Start	Sales Representative BD team	Partially Manual	N/A
P200	ED-07_010201	Scanned copy of Sales Contracts (PDF Format)	P300	Process	Sales Representative BD team	Partially Manual	N/A
P300	ED-07_010201	Creation of sales orders in the CRM system (Scanned copy of contract attached)	P400	Process	Sales Representative BD team	Partially Manual	N/A
P400	ED-07_010201	Transfer of sales orders from MS CRM to S4 system	P500	Process	Interface	Fully Automated	N/A
P600	ED-07_010201	Creation of sales orders in S4 with reference to sales order from CRM orders	P700	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P700	ED-07_010201	End		End			

3.12 Manage and Monitor Sales Delivery (ED-07_010202)

3.12.1 Process Description

EDGE can use the Sales Order Fulfillment Monitor to address problems that occur during the sales order fulfillment process. EDGE sales representatives/order management team can then directly execute follow-up steps from the monitor to resolve these issues. Examples of issues are missing documents, missing or unconfirmed information, and various types of blocks as well as product and trade compliance issues. Business can use the application to search for specific sales orders. Business can also filter the list of issues according to the stage at which they occur (such as in order, supply, delivery, invoice, or accounting).

The order management team at EDGE can use the Sales Order Cockpit to manage mass changes of different types of sales documents on the header and item levels. Flexible filter capabilities help to prepare the list of documents and items to be changed. The change jobs can be scheduled for background processing and monitoring.

Further productivity enhancements are provided for managing duplicate sales orders. The Manage Duplicate Sales Document app can be used to analyze and clear business system of duplicate sales documents. After identifying duplicates, EDGE users can reject them to avoid the redundant processing of duplicate sales documents.

The following Fiori tiles are available for Manage and Monitor sales delivery:

Sales Order Fulfilment - Resolve Issues

This provides EDGE with the functions mentioned above for resolving issues.

Sales Order Fulfilment - Analyze Issues

This allows EDGE to display issues graphically by using charts and to access them analytically. For example, users can compare the net value of issues for different sales organizations.

Sales Order Fulfilment - Issues in Next 7 Days

This provides EDGE weekly workload, pre-configured to show all overdue issues and all issues due in the next 7 days. EDGE business can also view tiles to display and resolve specific issues. The tiles show the number of issues (Resolve Incomplete Data, Resolve Credit Block) or the top 3, for example, Resolve Delivery Block, Resolve Billing Block, etc.

Users can personalize these tiles as required. Note that EDGE personalization changes only affect the corresponding tile and not the other Sales Order Fulfillment tiles.

Resolve Incomplete Data

This title provides a list of all incomplete sales orders or deliveries, separated according to sales order or item. It displays the type of incompleteness, for example, general, delivery, invoicing, and, if the user has carried out an activity, the result of the last activity, for example, sales order rejected and the reason for it.

If a user chooses to resolve incomplete data, business navigates to the incompleteness log to edit the log directly.

Resolve Delivery Block

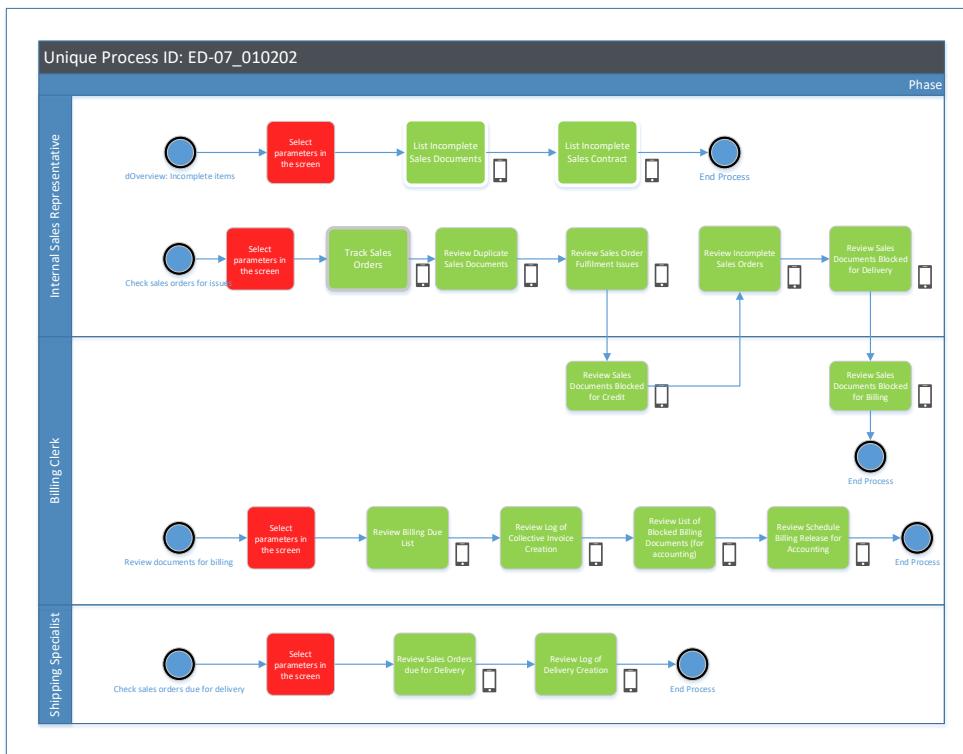
This title provides a list of all sales orders blocked for delivery, with the delivery block reason, for example, missing credit limit, delivery block on an item, and, if the user has carried out an activity, the result of the last activity, for example, sales order rejected and the reason behind it, or delivery blocked removed, etc..

Resolve Credit Block

This title provides a list of all sales orders and deliveries with a credit block, along with activities carried out by the user with descriptions, for example, credit block removed, etc.

From here, the user can re-check or display the credit decision for blocked sales orders, such as the customer's credit limit and credit exposure, and, if the credit exposure has not exceeded the credit limit, Business can release the sales order directly here.

3.12.2 Process Diagram



3.12.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_010202	Overview: Incomplete items	P100	Start	Internal Sales Representative	Automated	Yes
P200	ED-07_010202	Select parameters in the screen	P300	Process	Internal Sales Representative	Partially Manual	
P300	ED-07_010202	List Incomplete Sales Documents	P400	Process	Internal Sales Representative	Partially Manual	V.00
P400	ED-07_010202	List Incomplete Sales Contract	P500	Process	Internal Sales Representative	Partially Manual	List Incomplete Sales Contracts - V.06
P500	ED-07_010202	End	P500	End			
P600	ED-07_010202	Check Sales Orders for Issues	P700	Start	Internal Sales Representative	Human Triggered	Display Sales Order
P700	ED-07_010202	Track Sales Orders	P800	Process	Internal Sales Representative	Human Triggered	Display Sales Order
P800	ED-07_010202	Review Duplicate Sales Documents	P900	Process	Internal Sales Representative	Human Triggered	List Duplicate Sales Orders
P900	ED-07_010202	Review Sales Order Fulfilment Issues	P1000	Process	Internal Sales Representative	Human Triggered	Sales Order Fulfilment Issues
P1000	ED-07_010202	Review Sales Documents Blocked for Credit	P1100	Process	Billing Clerk	Human Triggered	Manage Credit Cases
P1100	ED-07_010202	Review Incomplete Sales Orders	P1200	Process	Internal Sales Representative	Human Triggered	List of Incomplete Documents
P1200	ED-07_010202	Review Sales Documents Blocked for Delivery	P1300	Process	Internal Sales Representative	Human Triggered	Sales Orders Blocked for Delivery
P1300	ED-07_010202	Review Sales Documents Blocked for Billing	P1400	Process	Billing Clerk	Human Triggered	Release Sales Orders - Billing
1400	ED-07_010202	End		End			
P1500	ED-07_010202	Check Sales Orders due for Delivery	P1600	Start	Shipping Specialist	Human Triggered	My Sales Orders - Due for Delivery
P1600	ED-07_010202	Select parameters in the screen	P1700	Process	Shipping Specialist	Partially Manual	
P1700	ED-07_010202	Review Sales Orders due for Delivery	P1800	Process	Shipping Specialist	Human Triggered	Reverse GI - Outbound Delivery, Reverse Goods Receipt - Inbound Delivery
P1800	ED-07_010202	Review Log of Delivery Creation	P1900	Process	Shipping Specialist	Human Triggered	My Sales Orders - Due for Delivery
1900	ED-07_010202	End		End			
P2000	ED-07_010202	Review Documents for Billing	P2100	Start	Billing Clerk	Human Triggered	Create Billing Due List
P2100	ED-07_010202	Select parameters from the screen	P2200	Process	Billing Clerk	Partially Manual	
P2200	ED-07_010202	Review Billing Due List	P2300	Process	Billing Clerk	Human Triggered	Create Billing Due List

P2300	ED-07_010202	Review Log of Collective Invoice Creation	P2400	Process	Billing Clerk	Human Triggered	Create Billing Due List
P2400	ED-07_010202	Review List of Blocked Billing Documents (for accounting)	P2500	Process	Billing Clerk	Human Triggered	List Blocked Billing Documents
P2500	ED-07_010202	Review Schedule Billing Release for Accounting	P2600	Process	Billing Clerk	Human Triggered	List Blocked Billing Documents
P2600	ED-07_010202	End		End			

3.13 Sales Order Change Process (ED-07_010203)

In CRM after approval and verification process the Sales order will be submitted to SAP S/4HANA via an interface. CRM does not have the functionality to initiate any change on the Sales order.

Only below mentioned changes can be done on the Sales order, but the change process has to be done manually in SAP S/4HANA by the authorized user (PMO team).

1. Decrease in Quantities
2. Deletion for SAP Existing Sales Order line items
3. Cancellation of any specific line item or complete Sales Order.

Above changes in SAP Sales order will trigger the approval workflow in SAP S/4HANA based on business DOA.

3.13.1 Pricing and Discount Change process:

Pricing and discount will not be accessible in SAP S/4HANA

Increase in Quantity or change in price (also discount), will be treated as a new lead in CRM and will result in a separate new Sales order from CRM to SAP, because the pricing is driven from the CPQ to CRM Contract and then in SAP S/4HANA

3.13.2 Sales order Cancelation process:

Sales order cancelation will also happen manually in SAP and CRM separately as there is no interface for Sales order cancelation process.

Please Note: There is NO interface from SAP to CRM (other than Sales order status updates), so the **PMO team** is required to update CRM sales order (if required) to keep both CRM & SAP Sales Order sync.

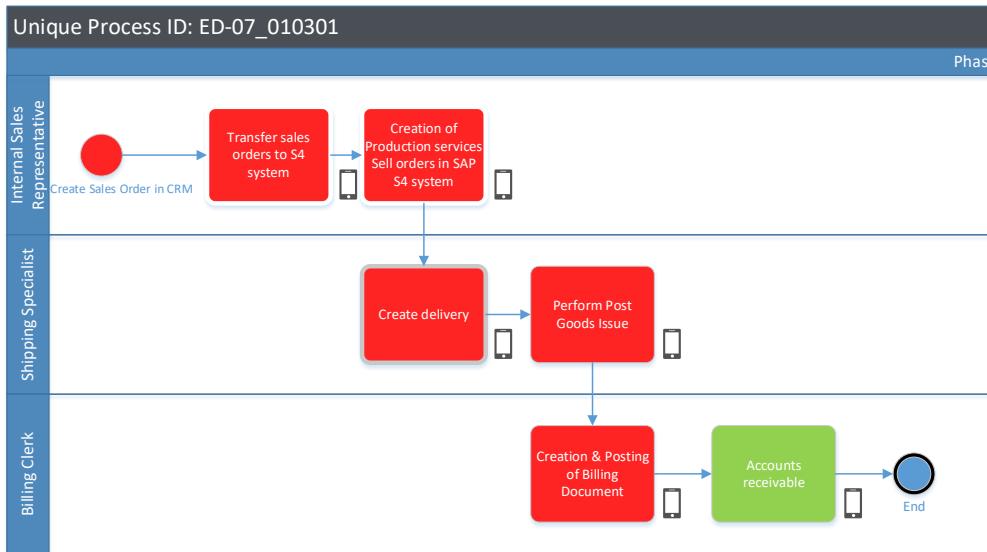
3.14 Sell production as a Service (ED-07_010301)

3.14.1 Process Description

To perform any operational activity from Production plant using EDGE entity facility Customer will send the stock to entity warehouse. To Sell this Production facility as a service below process will be followed

- 1) Order Creation in CRM: Sales Order will be created like MTO Sales Order in CRM which will be replicated into SAP system. The required services can involve various activities depending on the nature of the services requirement, such as assembly, packaging, labeling, quality control checks, customization, or any other value-added processes will be completed with reference of that sales order in Production department.
- 2) Delivery & Shipment: Once the required services are completed, the stock will be moved from Production to Warehouse to send out to Customer. Regular Outbound delivery process will be followed here (explained in 13.4 Outbound logistics PDD. Goods issue to the customer).
- 3) Billing: Generate an itemized invoice that clearly outlines the services provided by the Production plant, along with the corresponding charges. Include any applicable taxes or fees and provide payment instructions and terms. Share the invoice with the client promptly, ensuring that it includes all the necessary details for accurate processing.

3.14.2 Process Diagram



3.14.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation*	FIORI App
P100	ED-07_010301	Create Sales Order in CRM	P200	Start	Internal Sales Representative	Partially Manual	
P200	ED-07_010301	Transfer sales orders to S4 system	P300	Process	Transfer sales orders to S4 system	Fully Automated	Transfer sales orders to S4 system
P300	ED-07_010301	Creation of Production services Sell orders in SAP S4 system	P400	Process	Internal Sales Representative	Fully Automated	Create sales order
P400	ED-07_010301	Create delivery	P500	Process	Shipping Specialist	Partially Manual	Create delivery
P500	ED-07_010301	Perform Post Goods Issue (for IM related materials. For EWM managed materials picking is done in EWM system)	P600	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order
P600	ED-07_010301	Creation & Posting of Billing Document (with reference to Delivery Order)	P700	Process	Billing Clerk	Partially Manual	Create Billing Document/Create Billing Due List
P700	ED-07_010301	Accounts receivable	P800	Process	Billing Clerk	Automated	Change/Display Billing Document
P800	ED-07_010301	End		End	Billing Clerk		

3.15 KIT Sell Process – (ED-07_010302)

Sale Order:

Sales KIT: Sales KIT is nothing but a combination of Main Material with the child items. Sales KIT selling process is quite similar to MTO & Project Sales Order process, but its execution is different from other MTO sales process at the time of order creation in SAP System because it has further dependent materials & components relationship.

Various part of the Vehicle for example: Engine related items together; Chassis Related items and configurations related items together and make them as KITS. Split of these items is done by planning team based on Engineering of BOM. 1 BOM have several KITs inside and every KIT has its own components.

Process starts with the finalized contract on CRM with the client by commercial team. Then the requirement replicated from CRM to SAP S/4HANA as Sales Order. The WBS project code will be assigned manually in SAP after the replication of Sales Order from CRM on main product level.

The selling prices will be determined by the logic of bottom to top approach. Finance team based on the cost of each component add profit, hence the combination of component inside the KIT will determine KIT selling price and then combination of all KITs in that particular Main Product will lead to the main product selling price.

Illustrative purposes only:

Main Product (Mother Item)	KITs (Child Items)	KITs components
Super vehicle		
		Trunk
		Doors
		Body structure
		Bonnet
		Cylinder block
		Combustion chamber
		Crankshaft
		Pistons
		Cylinder head
	Shock and Struts	Comp 1
		Comp 2
		Comp 3
	Steering Parts	Comp 4
		Comp 5
		Comp 6

Packing:

For example:

Chassis (200+ items) packed together as KIT1

Engine (several items) packed together as KIT2

Configuration (several items) packed together as KIT3

While packing these items together, NIMR team will put the stickers on the package with Package KIT number which is same as Station Number in NIMR Algeria.

Delivery processing:

Entity sells complete vehicles on contract, with reference to customer order/contract there can be multiple deliveries. But delivery will be formed, and goods are sent to customer location based on the availability of the Sales KITs and their components. (*One vehicle will be set of multiple Kits*). The regular outbound delivery document will be used for dispatch.

Billing processing:

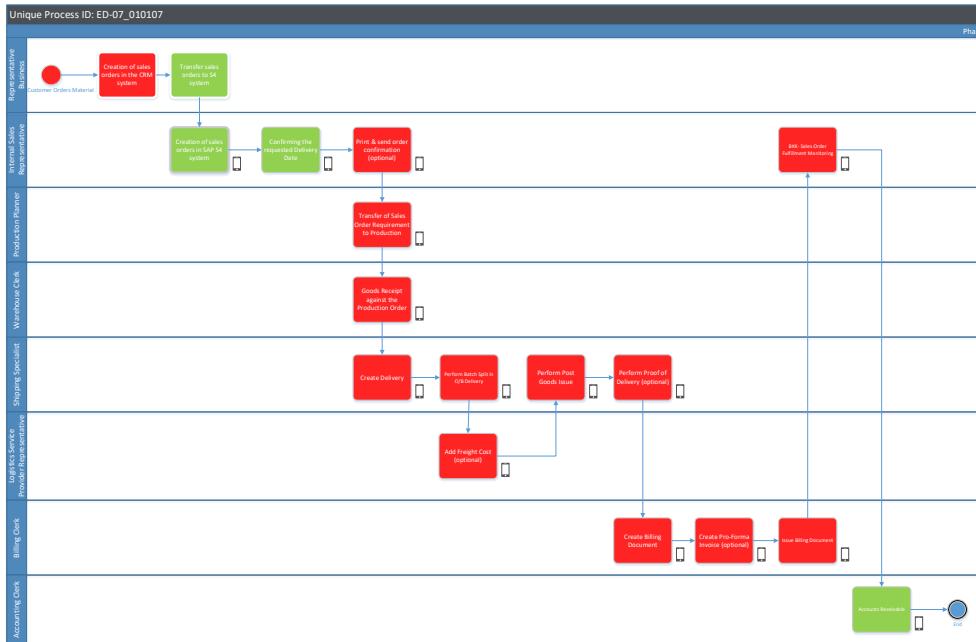
The billing will be made either as per the milestone billing plan and delivery related billing, in case of milestone billing it is required to be assigned on Sales Order level OR Delivery related billing will be created based on the delivered complete KIT.

For example: If out of 10 KITs, 4 KITs have been delivered to the customer, so invoice is required to be created for four KITs.

Release to Accounting:

After the invoice gets created, all financial information is posted to accounting automatically. If an error occurs, then this error is to be fixed and the invoice can be released manually to accounting.

3.15.1 Process Diagram



3.15.2 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation *	Fiori
P100	ED-07_010107	Customer Orders Material	P200	Start	Sales Representative Business Development team	Partially Manual	N/A
P200	ED-07_010107	Creation of sales orders in the CRM system	P300	Process	Sales Representative Business Development team	Partially Manual	N/A
P300	ED-07_010107	Transfer sales orders to S4 system	P400	Process	Sales Representative Business	Fully Automated	N/A

					Development team		
P400	ED-07_010107	Creation of sales orders in SAP S4 system	P500	Process	Internal Sales Representative	Fully Automated	Manage Sales Order
P500	ED-07_010107	Confirming the requested Delivery Date	P600	Process	Internal Sales Representative	Automated	Manage Sales Order
P600	ED-07_010107	Print & send order confirmation (optional)	P700	Process	Internal Sales Representative	Automated	Manage Sales Order
P700	ED-07_010107	Transfer of Sales Order Requirement to Production	P800	Process	Production Planner	Partially Manual	Manage Internal Requirements
P800	ED-07_010107	Goods Receipt against the Production Order	P900	Process	Warehouse clerk	Partially Manual	Post Goods Receipt for Production Order
P900	ED-07_010107	Create delivery	P1000	Process	Shipping Specialist	Partially Manual	Create Delivery
P1000	ED-07_010107	Perform Batch Split in O/B Delivery (for IM related materials. For EWM managed materials picking is done in EWM system)	P1100	Process	Shipping Specialist	Partially Manual	Create/Change Delivery with Reference to Sales Order
P1100	ED-07_010107	Add Freight Cost (Optional)	P1200	Process	Logistics Service Provider Representative	Partially Manual	Confirm Freight Orders
P1200	ED-07_010107	Perform Post Goods Issue (for IM related materials this is manual in S4 Hana. For EWM managed materials this is automatic in S4 Hana system)	P1300	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order

P1300	ED-07_010107	Perform Proof of Delivery (Optional)	P1400	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P1400	ED-07_010107	Create Billing Document	P1500	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P1500	ED-07_010107	Create Pro-Forma Invoice (Optional)	P1600	Process	Billing Clerk	Partially Manual	Create Billing Document
P1600	ED-07_010107	Issue Billing Document	P1700	Process	Billing Clerk	Automated	Change/Display Billing Document
P1700	ED-07_010107	BKK - Sales Order Fulfillment Monitoring	P1800	Process	Internal Sales Representative	Automated	Sales Order Fulfillment Issues
P1800	ED-07_010107	Accounts Receivable	P1900	Process	Accounting Clerk	Automated	Change/Display Billing Document Display Accounting Document
P1900	ED-07_010107	End		End			

3.16 Advance/Down Payment Process (ED-07_010303)

The Advance and Down Payment process based on SAP best practices, will be available for the P2 Entities(HALCON, AL TARIQ, NIMR & ADASI) to be used as per their requirements. We can divide into two high level scenarios, which are mentioned below in detail with the example.

Scenario-1

Advanced/down payment with the reference of SAP Sales Order (without the billing plan)

In this process, it's required to record Advance against the particular SAP Sales Order, so that amount will be received with the reference of SAP Sales Order (Instalment payment term shall be selected as per agreed term with the customer during order creation), it will be reflected in the system automatically at the time of billing for that SO.

For Example:

Sales Order Created: **20022**, Total Value: 10,000 USD

Advance received with the reference of SAP Sales Order: **20022** let say 15% are 1500 USD.

Sales Order Value	10,000
Advance 15%	1,500

	Fully Delivered 100%	Partial Delivered 60%
Delivery Value	10,000	6,000
Adjustment of Advance	1,500	900
Net A/R Amount	8,500	5,100

Please note:

- Instalment payment term shall be used in above scenario. E.g. (15% advance & 85% delivery)
- Based on the delivery quantity, proportionate advance amount will be adjusted at the time of billing.

Scenario-2

Advance receipt without reference of SAP Sales Order, but directly in customer account

In this process advance can be received with special GL indicator A into customer ledger without any reference of sales order. After billing to the customer finance can adjust this advance against the customer invoices as per the agreed term and condition.

Until adjustment by the Finance department it will remain UN-earn revenue (advance).

3.17 Retention Process (ED-07_010304)

Retention is the process in which company agree with the Customer in their contract to hold some amount as retention until agreed Deficit Liability completion (DLP).

Retention will be used with the billing plan as one of the milestone type, such as Advance & Factory Acceptance.

Upon completion of Retention milestone, Manager will remove billing block from the SAP Sales Order. Then it can be invoice to the customer.

Billing Plan can be used with the WBS and without WBS, but it is required to assign on SAP sales order.

In addition, user will have the option to define retention type on Sales Order header level and on the line item level as per the requirement

High Level Scenario's for understanding are:

Scenario-1		Order Value \$ 10,000.00		
Billing Plan with full Delivered Qty		Qty	Del Qty	Accounting Doc Values
1. Advance		10%		\$ 1,000.00
2. Factory Acceptance		20%		\$ 2,000.00
3. Delivery of Goods		45%	100	\$ 4,500.00
4. On-Site Testing/Commissioning		20%		\$ 2,000.00
5. Retention		5%		\$ 500.00
TOTAL		100%		\$ 10,000.00

Scenario-2		Order Value \$ 10,000.00		
Billing Plan with different Delivered Qty		Qty	Del Qty	Accounting Doc Values
1. Advance		10%		\$ 1,000.00
2. Factory Acceptance		20%		\$ 2,000.00
3. Delivery of Goods (Del-1)		45%	100	\$ 3,600.00
4. Delivery of Goods (Del-2)			20	\$ 900.00
5. On-Site Testing/Commissioning		20%		\$ 2,000.00
6. Retention		5%		\$ 500.00
TOTAL		100%		\$ 10,000.00

Please Note:

- The above listed type will be available to use as per the entities requirement in the **Billing Plan**
- Delivery milestone is directly proportional with the actual **Delivered Quantity** for invoicing
- Accounting entries** will be validate during the Scenario Testing/UAT phases

Tax Calculation on Retention Scenario:

Retention Period	Without Retention	With Retention
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Scenario: -	Total Invoice – 1000 AED Retention Amt – 0 AED Total – 1000 AED Tax 5% = 50 AED Receivable → 1050 AED	Total Invoice – 1000 AED Retention Amt – 100 AED Total – 900 AED Tax - 5% = 45 AED Receivable → 945 AED Retention Amount invoice: Total Invoice = 100 AED Tax 5% VAT = 5 AED Receivable = 105 AED 945 105 = 1050 AED
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3.18 Manage Sales Master Data (ED-07_010501)

3.18.1 Process Description

Master Data	Application	Primary	Secondary
Business Partner	CRM/S4	CRM	SAP MDG
Product Master data	CRM/S4	SAP E2M	SAP MDG
Pricing Master data	CRM/S4	CRM/CPQ	S/4
Tax codes	CRM/S4	S/4	CRM
Payment Terms	CRM/S4	S/4	CRM
Output Condition Records	CRM/S4	S/4	N/A
Material Groups	CRM/S4	S/4	CRM
GL Account	CRM/S4	S/4	N/A
Cost Centre	CRM/S4	S/4	CRM

Business Partner

Business Partner is a person, organization, group of persons, or group of organizations as per the types / mode of business of the company. This business object is used for a variety of business transactions. Most notably it is used in order processing. As per EDGE requirement, business can create and manage business partners centrally for different business transactions and assigned different partner functions they play, such as sold-to party and ship-to party etc. Business partner can also be assigned to different roles, for example General, Finance, Sales, Credit Management & many more. As per EDGE entities the primary source for business partner creation is CRM system, it will create customer with basic high-level info such as name & address. Afterwards, the MDG system will be responsible for its enrichment and maintenance. The fine-tuned data will then be transferred to SAP S/4 system for order processing.

Product Master Data

The product master data is used to support planning, logistics, modeling, forecasting, and reporting. Product (or Material) is the very basic master data element. A product is the selling unit which must be assigned to models and planning versions, and later to transportation lanes and other transactions. The attribute value is used to define characteristics of the product. SAP supports the following type of products, i.e., Service, Warranty, Material, Finance etc. E2M Engineer to Manufacture will be responsible for new material creation. Once it has been created and comes into existence, the MDG system will be responsible for its governance & maintenance. The material master then be transferred to SAP for planning & order processing.

Tax Code

The Tax Code represents a tax category which must be taken into consideration when making a tax return to the tax authorities. Tax codes are unique per country. The tax rate calculation rules and further features are stored in a table for each tax code. For tax-exempt or non-taxable transactions, business should use tax codes with a zero-percentage rate if the corresponding transactions are to be displayed in the tax returns. Business must define new tax codes if tax rates are changed by the state. The old codes with the old tax rates must remain in the system until no more open items which use this tax code exist. Tax code is a two-digit code that represents the specifications used for calculating and displaying tax. The specifications defined under the tax code are - Tax rate, type of tax (input tax or output tax) and calculation method (percentage included/ excluded), etc.

Payment Terms

Payment terms composed of cash discount percentages and payment periods. It is used in sales orders, purchase orders, and invoices. Terms of payment provide information for cash management, dunning procedures, and payment transactions. When a system enters a business transaction, the application will use the key specified in its area of the master record. Business can specify different terms of payment keys in each of these areas. In the system, business defines payment terms as rules. This enables the system to automatically determine the appropriate payment terms. Once the system defines them, business can assign these terms to vendor/customer master.

Output Condition Record - BRF Plus

SAP S/4HANA approaches a new Output Management as BRF plus. The configuration is based on BRF+ logical table. In SAP S/4HANA, the target architecture is based on Adobe Document Server and Adobe Forms only. For the form determination rules (along with other output parameters) BRF+ functionality is used.

Material Groups

Material group is a wider range of material types. Material groups enable the business to classify and structure the entire product/material at multiple levels. Every material is assigned uniquely to one material group across the whole corporate group. Materials with some common attributes are taken together and they are assigned to material group. For Example: Suppose we have some materials which need packaging, so those material types can be electrical or food products, but we can group these material types and put them in packaged material group.

GL Account

SAP S/4HANA has integrated financial and controlling reporting into virtually all its modules. When a user performs a transaction in SAP, there is a good chance that the transaction is creating a debit or credit against one of the GL Accounts. GL stands for General Ledger. This is the most fundamental structure for collecting financial information about a business. A General Ledger account is an item within the General Ledger. Here, Business records the different types of financial transactions and their values. When a company writes a financial report (such as a Profit/Loss report), much of the data is derived from the General Ledger.

Cost Centre

A Cost Center is defined as a component in an organization that adds to the cost and indirectly adds to the profit of the organization. Examples include Marketing and Customer Service. Cost Center Accounting for controlling purposes within Business organization. The costs incurred by the organization should be transparent. This enables us to check the profitability of each functional area and provide decision-making data for management. This requires that all costs be assigned according to their source. However, source-related assignment is especially difficult for overhead costs. Cost Center Accounting lets business analyze the overhead costs according to where they were incurred within the organization.

3.19 Pricing Master Data (ED-07_010502)

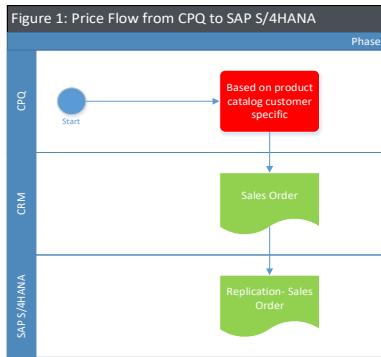
3.19.1 Process Description

Sales pricing data and discount master source will be only CPQ pricing engine. Prices will be flown from Ms-CRM to SAP S/4HANA and it won't be accessible into SAP S/4HANA. Only in Special Sales Process manual pricing conditions will be used directly in SAP S/4HANA like Cash Sales & Scrap Sales.

- CRM sales order will have received the pricing from CPQ system based on product catalogue and the same prices will be replicated to SAP S/4HANA sales order from CRM. Source of pricing will remain CPQ.
- Only Tax condition records will be maintained and determined in SAP S/4HANA based on tax conditions.

- Pricing will come from CPQ to CRM and then replicate to SAP S/4HANA during the order creation level in their respective type of pricing and discount conditions. Costing details of material will be provided by the R2R Finance team to the CPQ team; therefore, integration is also needed between them.

3.19.2 Process Diagram



NOTE – Sales Prices will come from CPQ to CRM and SAP Sales order will be remaining as receiver of pricing information from CRM system.

4. DETAILED SOLUTION DESIGN

4.1 Solution prerequisites

Sales Organizations, Distribution channels, Divisions are required. Relevant document types to be configured in system for processing any sales transaction.

Interface between MS CRM and SAP S/4 HANA system needs to be set up for transferring the data between both the systems.

4.1.1 Process predecessor and successor

Predecessor Process:

MS CRM will capture all sales information related to customer, material, quantity, delivery schedules, etc in MS CRM sales order. Once the sales order is saved in MS CRM and sent to S/4 HANA the same data is replicated in S/4 HANA.

Successor Process:

MRP Run, Delivery Creation, Freight Unit Creation and Tax Invoice

Once the sales order is replicated to S/4 HANA system, subsequent processes are triggered based on the type of sales order, sales item categories. Sales Item categories will help to identify the type of subsequent activities which need to be performed for completing the sales order.

4.1.2 Master data prerequisites

- Customer Master
- Material Master
- Pricing Master
- Sales BOM

4.1.3 Organizational structure requirements

- Company Code
- Sales Organization
- Distribution Channel
- Division
- Shipping Point

4.2 Detailed solution design

4.2.1 Manage and process customer sales orders; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System

Manage Sales Order	The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer, Material, Quantity and requested delivery details. All customer and material master details are automatically populated in S/4 Hana sales order.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
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4.2.2 Create Sales Order for Stock Material; Solution steps and elements (Level 5-6)

Make to Stock Sales Orders are where the stock is not produced and stored against any sales orders. System will allow business user to create delivery based on the available free stock quantity. The stock is reserved as confirmed stock in the sales based on sales order creation sequence.

System will identify the material as make to stock order based on the item category selected in the sales order.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information. Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing. Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	If stock does not exist, system will include this sales order quantity details in the next MRP run. Based on the standard Available To Promise setting system will propose the delivery dates. System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number. The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available) If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.	Desktop / Tablet	Shipping Specialist	S/4 HANA

	<p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check.</p> <p>Details are mentioned in the GTS PDD.</p>			
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business user can take invoice printout manually and can send the invoice copy details to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: By default, there is no material created as MTS material. As per business process, user can change the item category manually. This might be applicable for component sales (Spare parts sold to customer using standard sales process, involving sales order, delivery and billing).

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

4.2.3 Create sales order for non-stock material; Solution steps and elements (Level 5-6)

Make to Order Sales Orders are where the stock is produced and stored against sales orders. System will allow business user to create delivery based on the stock quantity booked against the respective sales order.

System will identify the material as make to order, based on the item category selected in the sales order.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information.</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel</p> <p>Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.</p> <p>If the material is maintained as make to order (MTO)material, system will automatically include the sales order details to MRP.</p> <p>If material is not maintained as MTO material, then user need to change the item category (Z---) manually in the sales order using the change option in manage sales order FIORI app.</p> <p>This process needs to be performed at each line-item level.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	<p>System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items.</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	<p>Production system will consider the sales order requirement as the demand and will initiate the subsequent process. Sales order is linked to production order throughout the production cycle.</p> <p>While performing MRP run, user can view the sales order number along with the order quantity details.</p>	Desktop / Tablet	Production Planner	S/4 HANA

	Detailed Production run is captured in Production planning PDD.			
Post Goods Receipt for Production Order	<p>After production cycle is completed, the stock is received at the finished goods storage location against the sales order number. This stock lies in the storage location as sales order stock.</p> <p>User can see the sales order against which the stock is reserved by using the stock details FIORI app.</p>	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	<p>Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number.</p> <p>The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available)</p> <p>If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: By default, there is no material created as MTO material. As per business process, user can change the item category manually.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

4.2.4 Create sales order for Sales KIT (Sales BOM); Solution steps and elements (Level 5-6)

Master Data:

Material Master: In SAP S4 Hana system the Vehicle will be created as a material master (Main material). The main material code needs to be available in MS CRM system. The items which are involved for assembling a vehicle will be created sub items in material master. The component items are available in S4 Hana system. In the reference example provided in Process, Engine, Chasis, etc will be created as components.

Sales BOM Master: In S4 Hana system sales BOM master needs to be created. As per the example provided in the process area, user needs to maintain main material as Vehicle. The Engine, Chassis, etc will be considered as component material in sales BOM. The sales BOM is applicable only in S4 Hana and this data is not available in MS CRM nor transaction data information is not send back to MS CRM sales order.

Price: The base price, discounts (if applicable as % and value) and Tax will be maintained in MS CRM sales order. The same price is passed to S4 Hana sales order. The tax condition record is maintained in S4 Hana system. Tax value is not passed to S4 Hana system through interface rather it is determined directly in S4 Hana system. The price is maintained only for main material in MS CRM. There is no component level pricing in MS CRM and in S4 Hana.

Business will create the sales order by selecting the main material code and other master data details in MS CRM system. Once the sales document is saved in MS CRM system, the data is passed to S4 Hana system through the interface and will save the document. Once the document is saved in MS CRM system the same header and item data will flow to S4 Hana system through the custom interface mapped between both the systems.

Once the data has reached to S4 Hana system, the sales BOM will explode and the component item codes along with the main material code will display in the S4 Hana sales order based on the sales BOM master which is set up in S4 Hana.

The component material details will not be sent back to MS CRM system.

The delivery will be created in S4 Hana system as per the delivery dates mentioned in the sales order or as per the availability of the stock. Business will send partial quantities of each KIT as per the availability. The invoicing will happen once the complete KITS (required for assembling a complete vehicle) has been delivered to customer. Multiple deliveries can be combined for creating a single invoice.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which are created in MS CRM system with main line-item detail. Once the sales order is saved in MS CRM system, the below details are passed to S/4HANA system.</p> <p>Sales organization, Distribution channel, Division, Customer code, main material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Once the sales order reach S4 Hana system, based on the material master set up of the main item, the subitems are determined automatically in S4 Hana system. The sub items will be only available in S4 Hana.</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel</p> <p>If the ordered item is relevant for project (determined using WBS), user needs to select the WBS code manually against the line items in S4 Hana.</p> <p>Material master need to be setup with right item category group in order to explode the sales BOM and to display the subitems. If normal item (MTS/MTO) need to be treated as Sales BOM, business user needs to select the item category (Z--) manually using the change mode of Mange sales order FIORI app.</p> <p>In sales KIT process, the stock movement and inventory update will happen only for sub items.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order- Change/Display Sales Order	<p>If stock does not exists system will include this sales order quantity details in the next MRP run.</p> <p>Based on the standard Available To Promise setting system will propose the delivery dates.</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order- Change/Display Sales Order	Business user can review the sales order using sales order change app or display sales. Business can take sales order confirmation printout in change or display mode of sales order.	Desktop / Tablet	Internal Sales Representative	S/4 HANA

Manage Internal Requirements	<p>Production system will consider the sales order requirement as the demand and will initiate the subsequent process. Sales order is linked to production order throughout the production cycle.</p> <p>While performing MRP run, user can view the sales order number along with the order quantity details.</p> <p>Detailed Production run is captured in Production planning PDD.</p>	Desktop / Tablet	Production Planner	S/4 HANA
Post Goods Receipt for Production Order	<p>After production is completed, the stock received at the finished goods storage location booked against the sales order.</p> <p>If the item is produced/procured against a project code the production stock/procured stock is reserved against the WBS code (created as per the project details)</p>	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	<p>Once the sub items stock is confirmed in the sales order, user can create the delivery by passing the sales order number.</p> <p>The confirmed quantity of the subitems from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available)</p> <p>If the subitems are kept in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	<p>If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.</p> <p>Stock/ Inventory is maintained against sub items and not for main items.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>In delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, business user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

	Tax Payable Cr.			
Change/Display Billing Document	Business can take invoice printout manually and send to customer. Business can validate the accounting document using change or display billing applications.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption:

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

4.2.5 Create sales order with delivery schedule; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which is created in MS CRM system are passed to S/4HANA system with Customer and Material information.</p> <p>In order to capture the different requested delivery dates by customer, business user will split the same line item and order quantity to Multiple line items and split the order quantity as per the requested delivery date by customer in CRM sales Order. The split wise line-item details are passed to S4 Hana system.</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel</p> <p>Division, Customer code, Material Code (multiple line items as per the requested delivery dates) , Order Quantity, etc.</p> <p>Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.</p> <p>If the material is maintained as make to order (MTO)material, system will automatically include the sales order details to MRP.</p> <p>If material is not maintained as MTO material, then user need to change the item category (Z---) manually in the sales order using the change option in manage sales order FIORI app.</p> <p>This process needs to be performed at each line-item level.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA

Manage Sales Order	<p>System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items.</p> <p>System will block the sales order details as part of the GTS check.</p> <p>Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	<p>Business can review the sales order using sales order change.</p> <p>Business can take sales order confirmation printout.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	<p>Production system will consider the sales order requirement as the demand and will initiate the subsequent process. Sales order is linked to production order throughout the production cycle.</p> <p>While performing MRP run, user can view the sales order number along with the order quantity details.</p> <p>As per the requested delivery dates (based on line items), system, will display the entries in MRP run. As per the requested delivery date, production team can plan the production.</p> <p>Detailed Production run is captured in Production planning PDD.</p>	Desktop / Tablet	Production Planner	S/4 HANA
Post Goods Receipt for Production Order	<p>After production cycle is completed, the stock is received at the finished goods storage location against the sales order number. This stock lies in the storage location as sales order stock.</p> <p>User can see the sales order against which the stock is reserved by using the stock details FIORI app.</p>	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	<p>Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number.</p> <p>The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available)</p> <p>If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>As per different requested delivery business user can create multiple deliveries with reference to the same sales order.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA

	Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD. System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.			
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity. Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls. Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: The sales order which is being send from MS CRM will have split wise line items as per the delivery requirement from customer. Based on the type of material (MTS/MTO), user will change the sales order item category manually against each line items.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

4.2.6 Create Sales Order for Service Material; Solution steps and elements (Level 5-6)

Service sales order in S4 Hana is used for capturing service activities provided against a customer. There is no stock movement of any items for service sales orders.

Master Data: Item codes need to be created as service items (without delivery). As per the different types of services, user need to create the item codes.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and service Material information.</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Tax is determined in S4 Hana system. For this, condition record needs to be maintained against condition type MWST.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>In order-based billing user can select the sales order document as reference for generating the billing document. The quantity maintained in the sales order is copied to billing document.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer. Business can validate the accounting document using change or display billing applications.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: The material will be created as Service materials without delivery.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Billing Type	ZEF1 Order related Billing (Billing Document Number Range is maintained as entity specific).

Sales order with both Material & Service Sales

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information (both service material and stock item)</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel</p> <p>Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.</p> <p>Business user need to change the item category manually for all stock items (Z--) for making the system to understand how the subsequent process needs to be carried out (whether its MTS, MTO or project driven).</p> <p>This process needs to be performed at each line-item level.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	<p>Process for Stock Item</p> <p>System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items. (ATP is performed only for stock item).</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	<p>Process for Stock Item</p> <p>Business can review the sales order using sales order change. Business can take sales order confirmation printout.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	<p>Process for Stock Item</p> <p>Production system will consider the sales order requirement as the demand and will initiate the subsequent process. Sales order is linked to production order throughout the production cycle.</p> <p>While performing MRP run, user can view the sales order number along with the order quantity details.</p> <p>Detailed Production run is captured in Production planning PDD.</p>	Desktop / Tablet	Production Planner	S/4 HANA
Post Goods Receipt for	Process for Stock Item	Desktop / Tablet	Warehouse clerk	S/4 HANA

Production Order	After production cycle is completed, the stock is received at the finished goods storage location against the sales order number. This stock lies in the storage location as sales order stock. User can see the sales order against which the stock is reserved by using the stock details FIORI app.			
Create Delivery with Reference to Sales Order	<p>Process for Stock Item Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number.</p> <p>The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available)</p> <p>If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	<p>Process for Stock Item If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For stock item user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>For service item user can select the order number for generating the billing document.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

	Tax Payable Cr. Separate billing document needs to be generated if the sales order contains both service and stock item.			
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: Single invoice is not created by clubbing service item and stock item.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 Delivery related billing ZEF1 Order related Billing (Billing Document Number Range is maintained as entity specific).

4.2.7 Create Sales Order for Individual Purchase Order; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and process steps	Device to be used	Role	System
Manage Sales Order	The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information. Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing. Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST. If the material is maintained as Individual Purchase order (IPO) in material master, system will automatically check the setting for creating subsequent transactions (creation of automatic PR)	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA

	If material is not maintained as IPO material, then user need to change the item category (Z---) manually in the S4 Hana sales order using the change option in manage sales order FIORI app. This needs to be performed at each line-item level.			
Manage Sales Order	System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items. System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	System will create Purchase Requestion automatically once the sales order is saved in S/4 HANA system.	Desktop / Tablet	Purchaser - Central Procurement	S/4 HANA
Post Goods Receipt Purchase Order	Business can perform Goods Receipt against the purchase order. The stock is reserved against the sales order number.	Desktop / Tablet	Warehouse clerk	S/4 HANA
Supplier Invoice (S/4HANA)	Once the stock is received in respective plant, business user can create vendor invoice verification document for doing vendor payment.	Desktop / Tablet	Accounts Payable Accountant - Procurement	S/4 HANA
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number. The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available) If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana. Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system. Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD. System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA

Create Billing Document/ Create Billing Due List	<p>For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: If the material needs to be considered as IPO item in sales order level, user will change the item category manually in the sales order. If the material is maintained as IPO item in material master, by default the sales order will be treated as IPO sales order.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 Delivery related billing (Billing Document Number Range is maintained as entity specific).

4.2.8 Create Sales Order for 3rd Party Processing; Solution steps and elements (Level 5-6)

In third-party process the goods ordered by customer is directly delivered by vendor directly to customer. In this process the material will be externally procured.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and process steps	Device to be used	Role	System
Manage Sales Order	The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information. Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA

	<p>Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.</p> <p>If the material is maintained as third party material, (IPO) in material master, system will automatically check the setting for creating subsequent transactions (creation of automatic PR)</p> <p>If material is not maintained as third party material, then user need to change the item category (Z--) manually in the S4 Hana sales order using the change option in manage sales order FIORI app.</p> <p>This needs to be performed at each line-item level.</p>			
Manage Sales Order	System will create Purchase Request automatically once the sales order is saved in S/4 HANA system, for the ordered quantity.	Desktop / Tablet	Purchaser - Central Procurement	S/4 HANA
Supplier Invoice (S/4HANA)	Once vendor delivers the material to customer and confirms the stock is delivered to customer, Business user can create invoice verification document with reference to the purchase order. Business user can change the actual delivery quantity sent by vendor to customer. For this delivery quantity, user can create the invoice verification document.	Desktop / Tablet	Accounts Payable Accountant - Procurement	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries:</p> <p>Customer A/C Dr</p> <p>Revenue A/C Cr.</p> <p>Tax Payable Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: If the material needs to be considered as third-party item in sales order level, user will change the item category manually in the sales order. If the material is maintained as third party item in material master, by default the sales order will be treated as third party sales order.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999

Billing Type	ZEF1 Order related billing (Billing Document Number Range is maintained as entity specific).
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4.2.9 Create Sales Order with WBS (Project Stock); Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information.</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel</p> <p>Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.</p> <p>If the material is maintained as project stock material, system will automatically include the project code (WBS code) assigned in the sales order to MRP.</p> <p>If material is not maintained as project stock material, then user need to change the item category (ZPRJ) manually in the sales order using the change option in manage sales order FIORI app.</p> <p>This needs to be performed at each line-item level.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	<p>System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items.</p> <p>System will block the sales order details as part of the GTS check.</p> <p>Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	Production planning team will consider the project stock requirement as the demand and will initiate the subsequent process. Project code (WBS) selected in the sales order is linked to production order throughout the production cycle.	Desktop / Tablet	Production Planner	S/4 HANA

	While performing MRP run, user can view the Project code (WBS) selected in the sales order along with the order quantity details. Detailed Production run is captured in Production planning PDD.			
Post Goods Receipt for Production Order	<p>After production is completed, the stock received at the finished goods storage location booked against WBS (Project Stock).</p> <p>After production cycle is completed, the stock is received at the finished goods storage location against WBS (Project Stock). This stock lies in the storage location as WBS stock.</p> <p>User can see the WBS code (assigned in the sales order) against which the stock is reserved by using the stock details FIORI app.</p>	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	<p>Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number.</p> <p>The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available)</p> <p>If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Shipping Specialist	S/4 HANA	
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

	Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.			
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: The sales order which come from MS CRM system will be treated as project-based sales order. Hence, by default the sales order item category will be maintained as project stock item category. WBS is created by A2D stream. User will select the WBS manually against each line item in the sales order.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

Sales order with Milestones from WBS

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and process steps	Device to be used	Role	System
Manage Sales Order	<p>The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information.</p> <p>Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, system will automatically update the customer address details, material details and pricing (structure only the values are copied from CRM system).</p> <p>Tax is determined in S4 Hana system. For this condition record needs to be maintained for condition type MWST.</p> <p>Item is created as service item.</p> <p>Once the sales order is replicated in S4 Hana system, user need to select and update the WBS code manually against the line item. Once the WBS is selected user can select the Generate milestone button to copy all milestones to sales order. (Item category ZTAO) using the change option in manage sales order FIORI app.</p>	Desktop / Tablet	Internal Sales Representative 9	CRM & S/4 HANA

	Based on milestone % system will automatically distribute the value against each milestone activate.			
Manage Sales Order	Business user can validate the milestones generated in the line item. Business user can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Billing Document/ Create Billing Due List	If milestone is used in sales order, system will allow user to generate sales order-based invoices. In Order-based billing, user can select the documenter document number as reference for generating the billing document. Based on the milestones completed system will allow to generate the billing document. Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls. Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: WBS is created by A2D stream. User will select the WBS manually against each line item in the sales order.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Billing Type	ZEF1 Order based billing (Billing Document Number Range is maintained as entity specific).

4.2.10 Create sales order for FOC sales

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage Sales Order	FoC sales Order is created in MS CRM system using standard order type and is passed to S/4HANA system with Customer and Material information. Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically	Desktop / Tablet	Internal Sales Representative	S/4 HANA

	<p>update the customer address details, material details and pricing (structure only, the values are copied from CRM system).</p> <p>Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.</p> <p>Once the sales order line items are replicated in S4 Hana, business user need to change the item category (ZTNN) at each line-item level. This will update the pricing and enables 100 % discount condition at each item level. This condition type and value will not update back to CRM.</p> <p>*There will be price difference in MS CRM sales Order and S4 Hana sales order.</p>			
Manage Sales Order	<p>System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items.</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	<p>If the stock is not available, production planning team will consider the sales order requirement as the demand and will initiate the subsequent process. Sales order is linked to production order throughout the production cycle.</p> <p>While performing MRP run, user can view the sales order number along with the order quantity details.</p> <p>Detailed Production run is captured in Production planning PDD.</p>	Desktop / Tablet	Production Planner	S/4 HANA
Post Goods Receipt for Production Order	<p>After production cycle is completed, the stock is received at the finished goods storage location against the sales order number. This stock lies in the storage location as sales order stock (For MTO material).</p> <p>User can see the sales order against which the stock is reserved by using the stock details FIORI app.</p>	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	<p>Once the Stock is confirmed in the sales order, user can create the delivery by passing the sales order number.</p> <p>The confirmed quantity from the sales order is copied as the delivery quantity in delivery document. User need to select the respective storage location manually (if multiple storage locations are available)</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA

	If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana. Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system. Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD. System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.			
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity. Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls. Accounting Entries: Customer A/C Dr Revenue A/C Cr. Tax Payable Cr.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: The sales order MS CRM system with normal items, In order to system identify this as FOC item, user will change the sales item category manually. This will be done for all items which need to be send as FOC item.

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

4.2.11 Create Cash Sales order

Cash sales in S4 Hana is used for capturing the sales transactions where customer will come to any of the entity will select the items, will do the payment and take the delivery themselves.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Sales Order	<p>Cash Sales Orders are created in S/4HANA system. Different Order type is created for capturing cash sales orders.</p> <p>Business user need to select Sales organization, Distribution channel, Division, Customer code, Material Code, Order Quantity, etc. while creating the cash sales order. In pricing business user needs to enter the net price, discount (if applicable), etc. manually.</p> <p>Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.</p> <p>Once cash sales order is saved, S4 Hana system will automatically create delivery document with all delivery required details.</p> <p>If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can take print out of Cash sales order using change sales order app.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>In Cash sales process, system will take sales order as reference for generating billing document. The order quantity will copy to billing document.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Customer A/C Dr Revenue A/C Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

	Tax Payable Cr..			
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change Delivery with Reference to Sales Order	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA

Sales Order Type & Description	ZOBV- EDGE Cash Sale
Number Range	10000000 to 19999999
Delivery Type	ZEBV- EDGE Cash Sale
Billing Type	ZEBV-EDGE Cash Sale (Billing Document Number Range is maintained as entity specific).

4.2.12 Sell Production as Service; Solution steps and elements (Level 5-6)

In this scenario one entity will perform some extra works in which stock is consumed. One entity will charge another entity for the material which was consumed for completing the activity.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Sales Order	Sales Order for capturing the sales of production as service is created in S/4HANA system. The same order type as normal sales is used for capturing this. This sales document will flow from MS CRM. Business user need to select the order type, sales area (Sales Organization, Distribution Channel and Division), sold to party (customer) Customer Reference (PO Number), Material code (used for capturing the add on for modifying the material), quantity, price, etc. In pricing business user needs to enter the net price, discount (if applicable), etc. manually. Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Considering the items are available in stock, ATP check is not required to be performed.	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA

	System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.			
Manage Sales Order	Business can see the order details using this application, if user has required authorization	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Delivery with reference to Order	If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana. Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system. Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD. System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD. If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	Business user can perform the post goods issue manually in S4 HANA system. Once Post Goods issue is done the scrap item inventory will get reduced from system.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity. Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls. Accounting Entries: Cash A/C Dr Scrap Revenue A/C Cr. Tax Payable Cr.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

In this scenario one entity will perform some service activities for some material using their production facility. For the service which they provided one entity will charge other entity.

Fiori App / Transaction /Handheld application/ WRICEF				
Manage Sales Order	<p>Sales Order is created in S/4HANA system. Different Order type is created for capturing scrap sales order.</p> <p>Business user need to select the scrap order type, sales area (Sales Organization, Distribution Channel and Division), sold to party (customer) Customer Reference (PO Number), Material code (scrap item created as service item), quantity, price, etc.</p> <p>In pricing business user needs to enter the net price, discount (if applicable), etc. manually.</p> <p>Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can see the order details using this application, if user has required authorization	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can see the order details using this application, if user has required authorization	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For non-inventory scrap order user can select the sales order document as reference for generating the billing document. The order quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries:</p> <ul style="list-style-type: none"> Cash A/C Dr Scrap Revenue A/C Cr. Tax Payable Cr. 	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

4.2.13 Scrap Sales Process

Scrap sales orders are created directly in S4 HANA system. Separate order type is defined for capturing scrap sales orders. Two types of scrap sales are identified.

Scrap sales for inventory item

Scrap sale of non-inventory item

Scrap Sales for Inventory Item

This is used for delivering the scrap items which is having inventory details updated in S4 HANA system.

The materials which are identified for scrap sales will be moved to respective scrap storage location. The scrap storage location is not part of any MRP run. While creating outbound delivery of scrap items, system will use the scrap storage location as default location for delivering the goods.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Sales Order	<p>Scrap Sales Order is created in S/4HANA system. Different Order type is created for capturing scrap sales order.</p> <p>Business user need to select the scrap order type, sales area (Sales Organization, Distribution Channel and Division), sold to party (customer) Customer Reference (PO Number), Scrap Material code, quantity, price, etc.</p> <p>In pricing business user needs to enter the net price, discount (if applicable), etc. manually.</p> <p>Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	<p>Considering scrap items are available in stock, ATP check is not required to be performed.</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can see the order details using this application, if user has required authorization	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Delivery with reference to Order	<p>If the material is maintained in EWM managed storage location, the delivery document is passed to EWM automatically once user save the delivery document in S4 Hana.</p> <p>Once the delivery document is passed to EWM, system will not allow user to modify any changes in delivery document in S4 Hana system.</p> <p>Details of picking, packing, batch selections in EWM system is mentioned in EWM PDD.</p> <p>System will block the delivery details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Shipping Specialist	S/4 HANA

	If the item is kept in IM managed storage location, user need to perform, picking and batch selection in S4 Hana system. Once this done user need to perform Post Goods Issue manually.			
Change Delivery with Reference to Sales Order	Business user can perform the post goods issue manually in S4 HANA system. Once Post Goods issue is done the scrap item inventory will get reduced from system.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For delivery-based billing user can select the delivery document as reference for generating the billing document. The delivered quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries: Cash A/C Dr Scrap Revenue A/C Cr. Tax Payable Cr.</p>	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Assumption: This is similar as standard order process. Manual pricing is used and user will enter the value manually. This can use EWM managed or IM managed storage location.

Sales Order Type & Description	ZSCR EDGE Scrap Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

Scrap Sales for Non-Inventory Item

This process is used for delivering the scrap items for which stock is not maintained in S4 HANA system.

The stock of the materials which are identified as scrap items are removed from S4HANA system using special movement types. This will help to nullify the inventory in system.

In order to capture the revenue of these types of materials, business can create the billing document in S4 HANA system.

In this process the material is created as service material. There is no outbound delivery involved in S4 HANA system for this process.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Sales Order	<p>Scrap Sales Order is created in S/4HANA system. Different Order type is created for capturing scrap sales order.</p> <p>Business user need to select the scrap order type, sales area (Sales Organization, Distribution Channel and Division), sold to party (customer) Customer Reference (PO Number), Scrap Material code (scrap item created as service item), quantity, price, etc.</p> <p>In pricing business user needs to enter the net price, discount (if applicable), etc. manually.</p> <p>Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.</p> <p>System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.</p>	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can see the order details using this application, if user has required authorization	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage Sales Order	Business can see the order details using this application, if user has required authorization	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Billing Document/ Create Billing Due List	<p>For non-inventory scrap order user can select the sales order document as reference for generating the billing document. The order quantity is copied to billing quantity.</p> <p>Before saving the billing document, user can verify the price details, billing date, etc. Once billing document is saved, system will automatically post the amount details to G/Ls.</p> <p>Accounting Entries:</p> <ul style="list-style-type: none"> Cash A/C Dr Scrap Revenue A/C Cr. Tax Payable Cr. 	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

4.2.14 Advance Process; Solution steps and elements (Level 5-6)

Scenario 1: Advanced/down payment with the reference of SAP Sales Order (without the billing plan)

In this scenario user will create downpayment request by selecting the downpayment request condition type available in the sales order pricing. User needs to enter the downpayment request amount (value) manually in the sales order. Once the down payment amount is entered in the sales order user can save it. Now user (Finance transaction) will create downpayment request by selecting the respective sales order number (integration in R2R).

Once this is completed the delivery process needs to be executed as normal sales order delivery. After completing the delivery user can create billing document with reference to the delivery document.

In the invoice document system will automatically calculate the downpayment amount proportionally as per the delivery quantity and will adjust it based on the delivery quantity.

Scenario 2: This is direct Finance transaction. Needs to be covered by R2R.

4.2.15 Retention Process; Solution steps and elements (Level 5-6)

Scenario 1: Billing Plan with Full delivered quantity

As per the process described in scenario 1, retention will be part of milestone. User will select the WBS number in S4 Hana using change mode of sales order. The retention % will be updated as part of the milestone. As per the % defined in the milestone, the retention % will be calculated on the total value of the sales order value.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities and Process step	Device to be used	Role	System
Manage sales order	The Sales Orders which are created in MS CRM system are passed to S/4HANA system with Customer and Material information. Below field details are copied from CRM to S/4 HANA system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing (structure only, the values are copied from CRM system). Tax is determined in S4 Hana system. For this, condition record needs to be maintained for condition type MWST.	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Manage sales order	System will perform the ATP check based on the standard ATP configuration settings. System will perform the ATP check and will propose the confirmed stock availability dates of the items. System will block the sales order details as part of the GTS check. Details are mentioned in the GTS PDD.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage sales order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	System will pass the requirement details from sales order details to production planning using MRP run.	Desktop / Tablet	Production Planner	S/4 HANA

Post Goods Receipt for Production Order	After production is completed, the stock received at the finished goods storage location is reserved against sales order number.	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, with reference to the quantity confirmed sales order delivery document can be created.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is managed using IM, business need to perform, Post Goods Issue manually. User needs to select the batches manually in S4 HANA system If the material is managed using EMW, business will perform this in EWM system	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	Create Billing Document with reference to the delivery document number. Once billing document is saved, system will automatically post the amount details to G/Ls.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

Sales Order Type & Description	ZORE- EDGE Standard Order
Number Range	10000000 to 19999999
Delivery Type	ZELF
Billing Type	ZEF2 (Billing Document Number Range is maintained as entity specific).

4.2.16 Manage and Monitor Sales Delivery; Solution steps and elements (Level 5-6)

NA

4.2.17 Associated Fiori Apps

Fiori App Name	App Description	App Type	Device Type
Sales Order Fulfillment Issues	This app allows EDGE Shipping Specialist to analyze and resolve issues that impede sales orders from being fulfilled	Transactional, Analytical	Desktop, Tablet
Outbound Delivery (S/4HANA)	Business can access this app from the Enterprise Search for outbound deliveries search results	Analytical	Desktop, Smartphone, Tablet
Returns Delivery	EDGE users can access this app from the Enterprise Search for returns deliveries search results	Analytical	Desktop, Smartphone, Tablet
Manage Billing Documents	This app can be used to manage invoices, invoice cancellations, credit memos, and other billing documents	Transactional	Desktop, Tablet
Create Billing Documents		Transactional	Desktop, Tablet

	With this app ADASI, AL TARIQ, HALCON & NIMR entities can create billing documents (for example, invoices and credit memos) from items in the billing due list		
Outbound Deliveries	With this app business can see a list of all business outbound deliveries	Transactional	Desktop, Tablet
Manage Outbound Deliveries	With this app business can see a list of all Business outbound deliveries. Business can click on each delivery to see its details	Transactional	Desktop, Smartphone, Tablet
Pick Outbound Delivery	With this app shipping specialist at EDGE can enter the results of the picking process for a particular delivery	Transactional	Desktop, Tablet
Analyse Delivery Logs	This app is to check system messages that have been logged during the collective creation run of deliveries, regardless of whether business started the creation run online or in the background	Transactional	Desktop, Smartphone, Tablet
Schedule Billing Output	This app can be used by business to schedule billing document output	Transactional	Desktop, Tablet
Schedule Billing Creation	With this app business can schedule jobs for the creation of billing documents	Transactional	Desktop, Tablet
Credit Memo Request	With this app EDGE sales representatives can display all the details relevant for a credit memo request in one place	Analytical	Desktop, Smartphone, Tablet
Debit Memo Request	With this app business can display all the details relevant for a debit memo request in one place	Analytical	Desktop, Smartphone, Tablet
Manage Sales Contracts	With this app EDGE sales representatives can search for sales contracts according to business filter criteria and display them in a list	Transactional	Desktop, Tablet
Manage Sales Quotations	This app can be used by business to search for sales quotations according to Business filter criteria and display them in a list	Transactional	Desktop, Tablet
Manage Sales Orders	With the Manage Sales Orders app, business can search for sales orders according to filter criteria and display them in a list	Transactional	Desktop, Tablet
Sales Contract Fulfillment Rates	This analytical app displays sales contract fulfillment rate, which indicates the percentage of the target value that has been released in a sale contract	Analytical	Desktop, Tablet
Manage Debit Memo Requests	With this app business can search for debit memo requests according to Business filter criteria and display them in a list	Transactional	Desktop, Tablet
Manage Credit Memo Requests	With this app Edge sales representatives can search for credit memo requests according to business filter criteria and display them in a list	Transactional	Desktop, Tablet
Customer - 360° View	With this app business can get an overview of one specific customer by reviewing aggregated sales data from the past and the present.	Analytical	Desktop, Smartphone, Tablet
My Sales Overview	With this app, EDGE can display and create sales data using actionable cards that are grouped together in a dashboard format	Analytical	Desktop, Tablet

Sales Volume - Detailed Analysis	With this app, sales manager at EDGE can drill down into business sales volume from different perspectives	Analytical	Desktop, Tablet
Billing Document Request	This object page, can be used to display the details of billing document requests (BDRs)	Analytical	Desktop, Smartphone, Tablet
List Incomplete Sales Documents	With this app, HALCON, NIMR, ADASI, AL TARIQ entities can search for incomplete sales documents according to business filter criteria and display them in a list	Transactional	Desktop, Tablet
Analyse Confirmations of Sales Orders	EDGE sales managers here can use various Fiori tiles to view details of sales orders	Analytical	Desktop, Tablet
Track Sales Orders (S/4HANA)	This app can be used to check whether the delivery of a sales order is on track regarding its fulfilment	Transactional	Desktop, Tablet
Sales Management Overview	Sales managers at EDGE here can get a graphical overview of business various sales data on cards. Using this app, business can gain comprehensive insights into business current sales situation and respond quickly	Analytical	Desktop, Tablet
Manage Invoice Lists	With this app business can display, filter, sort, and group all invoice lists in the system	Transactional	Desktop, Tablet
Sales Performance - Plan/Actual	With this app EDGE can compare planned and actual sales data on different dimensions, such as sales organization, customer, and product	Analytical	Desktop, Tablet
Manage Sales Scheduling Agreements	This app can be used to search for and display a list of all sales scheduling agreements in the system	Transactional	Desktop, Tablet
My Inbox - Approve Sales Orders	With the transactional app My Inbox, EDGE users can make important decisions via mobile or desktop devices anywhere and anytime.	Transactional	Desktop, Smartphone, Tablet

4.2.18 Pricing Procedure in SAP

The below are the condition types identified as per EDGE business requirement. The values against each condition types are expected to flow from CRM system (for the SO which are created in CRM system). There is no condition record maintained in SAP S/4HANA for any of the condition types excluding MWST.

Condition Type	Description
ZPRO	Base Price
ZR10	100% discount
ZDSP	Percentage Discount
ZDSV	Discount (Value)
MWST	Output Tax
R100	100 % discount in FOC

ZPRO condition type will be used for capturing the base sales price of a material.

ZR10 condition type will be used for selling an item as Free of Charge (FOC) item. System will calculate 100 % discount in the transaction. This is –ve condition.

ZDSP will be used for capturing the discount in %. This is applicable for each line items. The value will flow from CRM system. This is –ve condition. The value maintained against this condition in transaction will deduct from the base price value.

ZDSV will be used for capturing the discount in value. This is applicable for each line items. The value will flow from CRM system. This is –ve condition. The value maintained against this condition in transaction will deduct from the base price value.

R100 will be used for updating 100% discount in FOC sales orders.

MWST will be used for capturing the tax %. Condition record will be maintained in S4 Hana for this condition type based on the departure country and receiving country. This tax % will calculate on net value.

Once we receive the existing pricing set up from all four entities, we need to include the S4 HANA pricing calculation.

Pricing Schema Determination:

Based on Sales Area, Document pricing procedure and Customer pricing procedure system will determine the right pricing procedure in S4 HANA system.

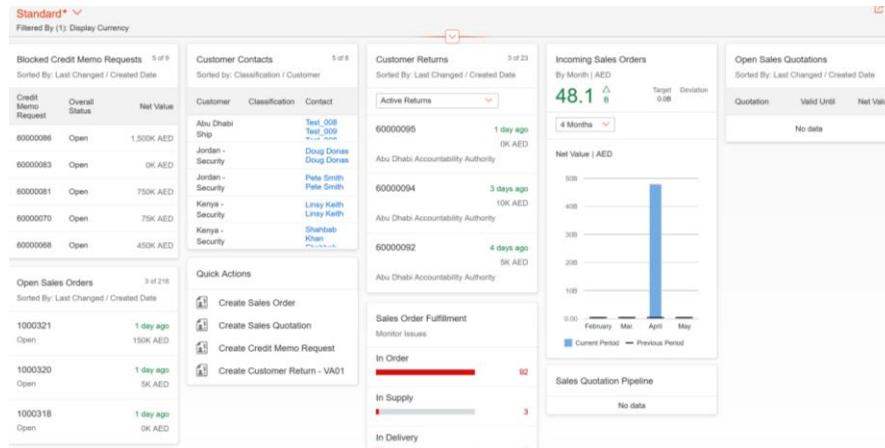
ZPRO	100	A
ZDSV	-5	B
Price after Discount	ZPRO-ZDSV	C
Tax %	MWST	D
Net Value	D*C	

Assumption: Pricing defined based on standard concept considering the elements used in entities. There is no discount %, Freight in sales order,etc.

4.2.19 Reporting Overview

Below is the list of standard SAP reports in Fiori Launchpad. The main objective to integrate reports in SAP Fiori is to improve the user experience and work seamlessly across devices like smartphones, tablets, and desktops.

- **My Sales Overview Report** - Cards included in this app provide information on sales data, including open sales quotations and sales orders, blocked credit memo requests, customer returns, and customer information. An internal sales representative at EDGE can use the app to search for, create, modify, or view sales information to improve reaction time and allows the user to act on the most important issues first

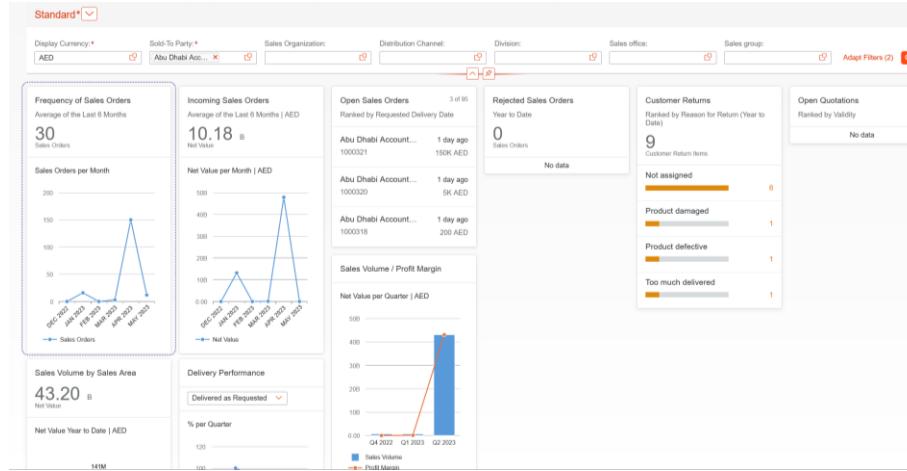


- Sales Management Overview Report** - Sales managers at EDGE can get a graphical overview of various sales data on analytical cards. Using this app, comprehensive insights can be obtained by EDGE into business current sales situation to respond quickly.

Key features of this report are:-

- Each sales topic is represented by a card. On the cards, business can view relevant sales KPIs
- Sales data is visualized in charts and lists
- Business can filter results by various criteria, such as sold-to party and sales organization
- Business can specify a preferred currency for displaying the results

- Customers Overview Report** - This report displays the average number of sales orders per month for the last 6 months, it also displays the average net value of sales orders per month for the last 6 months



- **Order-To-Cash Performance - Overview Report** - This enables sales managers and process owners to get a quick overview of issues and the current and past performance of the order-to-cash process without having to open many different reports and transactions. All relevant information is shown on a single page in an attractive and efficient way
- **Sales Volume Check open sales Report** – This report can be used to check sales volume in comparison with previous months, with the additional insight into open orders and open deliveries for the current month, in comparison with previous months. The app enables EDGE to see briefly how the current month's sales volume relates to the previous month and helps business to identify where they can act to increase business sales volume.

Below are additional transaction code reports which can be used in FIORI

Reports Transaction Code /FIORI App ID	Description for Report
VVA05	List of Sales Orders
V.01	Incomplete Orders
VA14L	Sales Documents Blocked for Delivery
V.23	Sales Documents Blocked for Billing
VL06O	Outbound Delivery Monitor
VF05N	List of Billing Documents
F1609	Business Process Activities
F1810	Aggregated Business Process Activities
F2005	Order-to-Cash Performance
F2006	Order-to-Cash Performance Monitor - Time Series
F2242	Order-to-Cash Performance - Overview
F1249	Incoming Sales Orders - Flexible Analysis
F1250	Sales Volume - Flexible Analysis
F2235	Sales Volume - Detailed Analysis
F2270	Sales Volume - Check Open Sales
F2271	Sales Volume - Profit Margin
F2458	Sales Order - Demand Fulfilment
F2601	Sales Management Overview
F2783	Delivery Performance - Delivered as Requested
F3408	Predicted Delivery Delay

5. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

5.1 Role/Skill Class Inventory

Role	Skills	Knowledge
Internal sales representative	SAP – OTC	Create standard order, able to track the sales order
Sales Manager	SAP – OTC	Modify & approve sales orders, remove order blocks
Purchaser - Central Procurement	SAP-S2P	Create Purchase Order
Shipping specialist	SAP – OTC	Create deliveries, perform post goods issue, capture proof of deliveries
Accounts Payable Accountant – Procurement	SAP-RTR	Create Vendor Invoice
Logistics Service Provider Representative	SAP-TM	Freight Planning and costing
Warehouse clerk	SAP – OTC	Perform warehouse activities
Billing Clerk	SAP – RTR	Create invoices and handling billing documents
Accounting Clerk	SAP – RTR	Handling account posting entries

5.2 Security roles as per process design

Stream	Sub-Module	Master Role	Master Role Description	Internal Sales Representative	Sales Manager	Billing Clerk	Shipping specialist	Purchaser - Central Procurement	Logistics Service Provider Representative	Accounts Payable Accountant – Procurement
D2S	SD	D2S:OM: Change Sales Order	OM: Change Sales Order	X	X					
D2S	SD	D2S:OM: Display Sales Order	OM: Display Sales Order	X	X					
D2S	SD	D2S:OM: Create Billing & Invoice	OM: Create Billing & Invoice			X				
D2S	SD	D2S:OM: Change Billing & Invoice	OM: Change Billing & Invoice			X				
D2S	SD	D2S:OM: Display Billing & Invoice	OM: Display Billing & Invoice			X				
D2S	SD	D2S:OM: Manage Invoice	OM: Manage Invoice		X	X				

D2S	SD	D2S:OM: Sales Analytical Reports	OM: Sales Analytical Reports	X	X						
D2S	SD	D2S:OM: Sales Operational Reports	OM: Sales Operational Reports		X						
D2S	SD	D2S:OM: Order Fulfilment	OM: Order Fulfilment		X						
D2S	SD	D2S:OM: Confirm Proof of Delivery	OM: Confirm Proof of Delivery			X					
D2S	SD	D2S:OM: Create Outbound Delivery	OM: Create Outbound Delivery			X					
D2S	SD	D2S:OM: Change Outbound Delivery	OM: Change Outbound Delivery			X					
D2S	SD	D2S:OM: Display Outbound Delivery	OM: Display Outbound Delivery			X					
D2S	SD	D2S-MM-Create Purchase Order	MM-Create Purchase Order			X					
D2S	SD	D2S-TM-Freight Planning and costing	TM-Freight Planning and costing				X				
D2S	SD	D2S-OM-Create Vendor Invoice	OM-Create Vendor Invoice						X		

6. PROCESS FITNESS & GAP ANALYSIS

6.1 Process Variation (legal, geographical, or business-led)

NA

6.1.1 Sub-Process Variation

NA

6.1.1.1 Business Unit Level

All the business processes are harmonized across ADASI/AL TARIQ/HALCON/NIMR entities.

6.1.1.2 Geography/Legal Entity Led

All the business processes will be as per the requirement of ADASI/AL TARIQ/HALCON/NIMR entities. The legal entity will be as per UAE rules.

6.2 GAP Register

Country / Region/ Business Impacte d	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req. id.
UAE	Automate the quantity determination for a new sales order due to non-conformance/POD variance. Difference between the dispatch quantity and quantity confirmed by customer end.	N/A	M	Manual		GAP_D2S_P2_001
UAE	POD Governance based on Incoterm. (Billing Date)	Y	H	Enhancement		GAP_D2S_P2_002
UAE	POD Governance based on Incoterm. (Billing Date)	Y	H	Enhancement		GAP_D2S_P2_003
UAE	FOC (Delivery Free of Charge) based on specific order reasons. (It can be managed by standard)	N/A	M	Solution 1		N/A
UAE	Order Confirmation	Y	H		WRICEF_D2S_2A_25	GAP_D2S_P2_035
UAE	Tax Invoice (Domestic)	Y	H		WRICEF_D2S_2A_21	GAP_D2S_P2_035
UAE	Tax Invoice (Foreign)	Y	H		WRICEF_D2S_2A_24	GAP_D2S_P2_035
UAE	Pro forma Invoice	Y	H		WRICEF_D2S_2A_26	GAP_D2S_P2_035

Commented [A1]: GAP belong to non-confirmation

Commented [A2]: Belong to Non confirmation GAP

Commented [A3]: GAP belong to non-confirmation

UAE	Credit/ Debit Note	Y	H		WRICEF_D2S_2A_19	GAP_D2S_P 2_035
UAE	Credit/ Debit Note (Commercial)	Y	H		WRICEF_D2S_2A_19A	GAP_D2S_P 2_035
UAE	Credit/ Debit Note (Foreign)	Y	H		WRICEF_D2S_2A_20	GAP_D2S_P 2_035
UAE	Pro forma Invoice (Foreign)	Y	H		WRICEF_D2S_2A_26A	GAP_D2S_P 2_035
UAE	BP Interface for passing basic information of customer from MS CRM to S4	Y	H		WRICEF_D2S_2A_09	GAP_D2S_P 2_036
UAE	Update the BP Master data from S4 to CRM Hana	Y	H		WRICEF_D2S_2A_10	GAP_D2S_P 2_037
UAE	Replication of sales order data from MS CRM to S4 Hana	Y	H		WRICEF_D2S_2A_17	GAP_D2S_P 2_038

6.3 Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets
1	Auto-population of non-conformance quantity	Automate the quantity determination for a new sales order due to non-conformance/POD variance. Difference between the dispatch quantity and quantity confirmed by the customer end	New	N/A
2	POD Governance	Billing date determination based on POD date using Incoterm.	New	N/A
3	Order Reason based FOC	FOC (Delivery Free of Charge) based on specific order reason.	New	N/A

6.4 WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Ref # from WRICEF inventory	Assign system / SAP component
1	Form	Quantity/Value Contract Printout Template - English & Arabic	Low	N/A (Sales Contract is Not applicable)	N/A	
2	Form	Sales Order Confirmation	Low		WRICEF_D2S_2A_25	
3	Form	Customer Proforma Invoice Printout template with regards to Sales order - F5	Low		WRICEF_D2S_2A_26 WRICEF_D2S_2A_26A	

4	Form	Delivery Note Printout Template	Low	In EWM	N/A	
5	Form	Customer Tax Invoice Printout Template	Low		WRICEF_D2S_2A_21 WRICEF_D2S_2A_24	
6	Form	Credit Note / Debit Note Template	Low		WRICEF_D2S_2A_19 WRICEF_D2S_2A_19A WRICEF_D2S_2A_20	
7	Interface	Create BP Master Data Interface from CRM to S/4HANA	Low		WRICEF_D2S_2A_09	
8	Interface	Updating BP Master Data Interface from CRM to S/4HANA	Low		WRICEF_D2S_2A_10	
9	Interface	Create BP Master Data Interface (EDI, IDoc) from S/4 to CRM	Low	N/A		
10	Interface	Updating BP Master Data Interface (EDI, IDoc) from S/4 to CRM	Low	N/A		
11	Interface	Create Contract Data via Interface (EDI, IDoc) from CRM to S/4HANA	Low	N/A		
12	Interface	Updating Contract Data via Interface (EDI, IDoc) from CRM to S/4HANA	Low	N/A		
13	Interface	Create Contract Data via Interface from S/4HANA to CRM	Low	N/A		
14	Interface	Updating Contract Data via Interface from S/4HANA to CRM	Low	N/A		
15	Interface	Create Sales order data via Interface from CRM to S/4HANA	Low		WRICEF_D2S_2A_17	
16	Interface	Updating Sales order data via Interface from CRM to S/4HANA	Low	N/A	WRICEF_D2S_2A_18 -Not in current scope	
17	Interface	Create Sales order data via Interface from S/4HANA to CRM	Low	N/A		
18	Interface	Updating Sales order data via Interface from S/4HANA to CRM	Low	N/A		
19	Interface	Create Pricing/Condition Master Data Interface from S/4HANA to CRM	Low	N/A		

20	Interface	Updating Pricing/Condition Master Data Interface from S/4HANA to CRM	Low	N/A		
21	Interface	Create Pricing/Condition Master Data Interface from CRM to S/4HANA	Low	N/A		
22	Interface	Updating Pricing/Condition Master Data Interface from CRM to S/4HANA	Low	N/A		
23	Interface	Create Product Master Data Interface from S/4HANA to CRM	Low	E2M to MM		
24	Interface	Updating Product Master Data Interface from S/4HANA to CRM	Low	E2M to MM		
25	Interface	Create Product Master Data Interface from CRM to S/4HANA	Low	E2M to MM		
26	Interface	Updating Product Master Data Interface from CRM to S/4HANA	Low	E2M to MM		
27	Interface	Updating Intercompany Sales data from one company code to another company code	Low	N/A		
28	Interface	Advance Shipping Notification Updating shipping notification data for STD process from vendor	Low	N/A		
29	Conversion	Uploading BP Master data from CRM to S/4HANA	Low	N/A		
30	Conversion	Uploading Credit Master data from CRM to S/4HANA	Low	N/A		
31	Conversion	Uploading Pricing/Condition Master data from CRM to S/4HANA	Low	N/A		
32	Conversion	Uploading Open Sales Orders data from CRM to S/4HANA	Low	N/A		
33	Conversion	Uploading Open Sales Contracts data from CRM to S/4HANA	Low	N/A		
34	Conversion	Uploading Open Scheduling Agreements data from CRM to S/4HANA	Low	N/A		
35	Conversion	Uploading Output condition Master data from CRM to S/4HANA	Low	N/A		
36	Conversion	Uploading Material Master data from CRM to S/4HANA	Low	N/A		

37	Conversion	Uploading Rebate Agreement Master Data from CRM to S/4HANA	Low	N/A		
38	Enhancement	POD Governance based on Incoterm (Billing Date as per POD)	Low		WRICEF_D2S_2A_67	
39	Form	Sales output for Edge entities - Invoice - Foreign	high		WRICEF_D2S_2A_24	
40	Form	Sales output for Edge entities - Credit/Debit Note - Foreign	high		WRICEF_D2S_2A_20	
41	Enhancement	Invoice Number range for Edge entities (Separate as per entity)	medium		WRICEF_D2S_2A_22	

7. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

7.1 Integration points

Process ID (L4 process)	Type (legacy system, DT Ops, functional integration)	Related technical scope item (if required)	Leading stream	Business process Integration with domain	Description	In	out
ED-07_020100			D2S	L2C	<p>Master Data between CRM and S/4</p> <ul style="list-style-type: none"> - Business Partner - Price Master - Product Master 	<p>MD synchronization is as follows:</p> <ul style="list-style-type: none"> - Business Partner: Create / Update in CRM reflect in S/4 (Real-time Synchronization). Only Firm Parties are created as BP in MDG - Price: Create/Update in S/4 reflect in CRM (CPQ) (Real-time Synchronization) - Product Master: Create/Update in S/4 reflect in CRM (Real-time Synchronization) - Required for evaluating SO/Invoice Doc level profitability view. 	
ED-07_020100			D2S	L2C	<p>Transaction Data Synchronization Between S/4HANA & CRM</p> <ul style="list-style-type: none"> - Point / Document of a handshake between CRM & S/4 - Opportunity Dashboard reflect S/4 updates - Communication to the customer with opportunity updates 	<p>Transaction data synchronization is as follows:</p> <ul style="list-style-type: none"> - Initiation of Sales Doc in CRM and replication in S/4. Either SO / Scheduling Agreement - Status update from S/4 to CRM for Dashboard Reporting in CRM - Credit / Debit Note request processing is limited to S/4 Only - Delivery and Invoice management is in S/4 only 	
ED-07_020101			D2S	R2R	<p>Tax Accounting</p> <p>For sales in UAE the tax is 5% and for all export sales tax is 0%.</p>	<p>Tax Accounting</p> <p>For sales in UAE the tax is 5% and for all export sales tax is 0%.</p>	

				<p>Tax Accounting in case of FoC (Free on Charge)</p> <p>2. Tax Doc Number Ranges</p> <ul style="list-style-type: none"> i) Basis of Doc NR segregation (Entity or Product or Universal) 	<p>2. FOC Accounting (FOC Process)</p> <ul style="list-style-type: none"> i) Billing document created with the sales price. The sales price is nullified by discount value (Expense account) (100 % Discount) ii) Tax calculation is based on the sales price. Illustration for Business reference <p>Base Price = 1000 USD (Revenue Account) Discount = 1000 USD (sales deduction - Expense account) Tax amount= 50 USD (@5% for UAE as example) Expense Account = 50 USD (To offset tax amount recovery??)</p>	
ED-07_020101		D2S	R2R	<p>Inventory Accounting</p> <p>1. Introduction of POD results in two Step reconciliation for inventory to COGS accounting.</p> <p>2. Loss in transit during shipment results in the following;</p> <ul style="list-style-type: none"> i) COGS update for total quantity dispatched ii) Billing quantity is as per quantity received (POD) <p>3. Introduction of POD as Billing Date and not the Goods Issues (Dispatch Date) as Billing Date</p> <p>4. POD based on Incoterm</p>	<p>1. POD accounting with steps</p> <ul style="list-style-type: none"> i) Delivery quantity = 100 PC Inventory Acc. CR (1000 based on the unit cost of 10USD/PC) Stock in transit DR (1000 based on the unit cost of 10USD/PC) ii) POD Quantity = 80 PC Stock in transit CR ((1000 based on the unit cost of 10USD/PC)) COGS DR ((1000 based on the unit cost of 10USD/PC)) iii) Billing Quantity = 80 PC Summary: COGS / Inventory posted for 100 PC and revenue posted for 80 PC. This is standard SAP functionality. <p>2. Scenario 1: Incoterm EXW</p> <p>Delivery Date: Sep 12, 2021</p> <p>Arrival at Customer: Sep 28, 2021</p> <p>Billing Date: Sep 12, 2021</p>	

					Scenario 2: Incoterm DDP Delivery Date: Sep 12, 2021 Arrival at Customer: Sep 28, 2021 Billing Date: Sep 28, 2021	
--	--	--	--	--	--	--

7.2 Inbound Communication

Activity	Type	Automatic/Manual	Source	Destination	Description

7.3 Outbound Communication

Activity	Type	Automatic/Manual	Source	Destination	Description

7.4 Other Issues

Not Applicable.

Process Design Document (PDD)

PACKAGE 2
07 ORDER MANAGEMENT
7.3 INTERNATIONAL TRADE AND GTS

1. LEAD TO CASH – L2C:

- 1.1. EXECUTE SCREENING SIMULATIONS PROSPECT CUSTOMERS
- 1.2. MANAGE CUSTOMER CREATION AND VALIDATION AND INCLUDE THE GTS

2. DEMAND TO SUPPLY – D2S:

- 2.1. MANAGE EMBARGO BLOCK DOCUMENTS (EMBARGO SCREENING) (ED-07_030101)
- 2.2. MANAGE EXPORT TRADE (CUSTOMS) COMPLIANCE DOCUMENTATION (ED-07_030102)
- 2.3. EXECUTE SPL SCREENING (ED-07_030103)
- 2.4. MANAGE PRODUCT CLASSIFICATION FOR LEGAL CONTROL (ED-07_030201)
- 2.5. MANAGE PRODUCT CLASSIFICATION FOR CUSTOMS PROCESSING (ED-07_030202)

3. SOURCE TO PAY – S2P:

- 3.1. ADD/ VALIDATE AND CERTIFY SUPPLIER (FOR NEW)
- 3.2. MANAGE BLOCKED DOCUMENTS IN PURCHASING
- 3.3. MANAGE IMPORT -TRADE COMPLIANCE DOCUMENTATION

TABLE OF CONTENTS

1	Introduction	6
1.1.	Change History for GTS - L2C.....	6
1.2.	Change History for GTS - D2S.....	6
1.3.	Change History for GTS - S2P	7
1.4.	Approval Details	7
1.5.	Other Related Documents (L2C).....	7
2	Business Process (Level 2) gts	8
2.1.	Process Overview and Context.....	8
2.2.	SAP GTS – L2C.....	8
2.3.	Key Value Drivers for the Business Process	9
2.4.	Key Design Decisions.....	9
2.5.	KPI and custom reports	10
3.	BUSINESS Process design	11
3.1.	Execute screening simulations prospect customers	11
3.1.1.	Business Description.....	11
	Scenario 1: Screening for Sanctioned Party (Name & Country) in GTS with information from CRM system	11
	Scenario 2: Screening for sanctioned country in GTS with information from CRM system:	11
3.2.	Process diagram	12
3.3.	Activity List	12
3.4.	Manage Customer Creation and Validation and include the GTS.....	13
3.4.1.	Business Description.....	13
3.5.	Solution pre-requisites	13
3.6.	SPL screening for Business Partners process steps with integration of S/4HANA:.....	13
3.6.1.	Scenario1: Synchronous screening.....	14
3.6.2.	Scenario2: Periodic screening	14
3.6.3.	Scenario3: SPL screening after changes to Sanctioned Party List	14
3.6.4.	Comparison procedure for Address comparison:	14
3.6.5.	Comparison procedure for SAP HANA search:.....	15
	Process diagram	18
3.7.	Activity List	18
3.8.	Inbound Communication.....	20
3.9.	Outbound Communication.....	20
3.10.	Process predecessor and successor	21
3.10.1.	Master data pre-requisites.....	21
3.10.2.	Organizational Structure Requirements.....	21
3.10.2.1.	GTS Organization Structure for P2 Entities	21
4.	Detailed solution design.....	22
4.1.	Solution Pre-requisites	22
4.2.	Manage customer creation and validation" and include the GTS; Solution steps and elements (Level 5-6).....	23
4.3.	Execute screening simulations prospect customers; Solution steps and elements (Level 5-6).....	23
4.4.	Role Definition.....	24
4.5.	Role/Skill Class Inventory	24
5.	Process Fitness & Gap Analysis	25
5.1.	Process Fitness	25

5.2. Gap Analysis	25
5.3. WRICEF Register	25
5.4. Integration Points.....	26
5.5. Other issues.....	26
6. Business Process (Level 2) – GTS – Demand to Supply (D2S).....	28
6.1. Key Value Drivers for the Business Process	30
6.2. Key Design Decisions	31
6.3. Standard KPI and Reports.....	34
6.4. Extreme Automation	35
6.5. Key Design Decisions	36
6.6. Standard KPI and reports	40
6.7. Extreme automation.....	41
7. Process Design	42
7.1. Manage embargo block documents (Embargo Screening) (ED-07_030101)	42
7.1.1. Embargo Exports	42
7.1.2. License Management – Exports	42
7.2. Process Diagram	45
7.2.1. Embargo Exports	45
7.2.2. License Management – Exports	46
7.2.3. Activity List & Automation	48
7.3. Manage Exports – Trade Compliance Documentation (ED-07_030102)	50
7.3.1. Process Description.....	50
7.3.2. Process Diagram	51
7.3.3. Activity List & Automation.....	51
7.4. Manage Product Classification for Legal Control (ED-07_030201).....	52
7.4.1. Process Description.....	52
7.4.2. Process Diagram	53
7.4.3. Activity List & Automation	53
7.5. Execute SPL Screening (ED-07_030103).....	55
7.5.1. Process Description.....	55
7.5.2. Process Diagram	57
7.5.3. Activity List & Automation	58
7.6. Manage product HS code classification for customs processing (ED-07_030202)	60
7.6.1. Process Description.....	60
7.6.2. Process Diagram	60
7.6.3. Activity List & Automation	61
7.6.3.1. Classification of Products:	61
7.6.3.2. Re-Classification of Products:.....	61
8. Detailed Solution Design	63
8.1. Solution Prerequisites	63
8.1.1. Company Code and plant relevant for SAP GTS	63
8.1.2. Document Types and item Categories relevant for SAP GTS	63
8.1.3. Mapping of Doc Types & Item Cat from S/4HANA to SAP GTS	63

8.2. SPL, Embargo and Legal Control Screening	64
8.3. License Checks.....	64
8.3.1. License Determination are:	65
8.4. Partner Groups for GTS Compliance and Customs Checks	65
8.4.1. Process predecessor and successor	66
8.4.2. Master data prerequisites	66
8.4.2.1. Define Foreign Trade Organization	66
8.4.2.2. Define Legal Units.....	66
8.4.2.3. Business Partners	66
8.4.2.4. Products.....	66
8.4.2.5. Content Provider files.....	66
8.4.3. Organizational structure requirements	67
8.4.3.1. GTS Organization Structure for P2 Entities	67
8.5. Detailed Solution Design	68
8.5.1. Manage embargo block documents (Embargo Screening); Solution steps and elements (Level 5-6).....	68
9. Manage exports – trade compliance documentation	69
9.1.1. Solution steps and elements (Level 5-6).....	69
9.1.2. Execute SPL Screening; Solution steps and elements (Level 5-6).....	69
9.1.3. Manage product export classification for legal control; Solution steps and elements (Level 5-6) ..	70
9.1.4. Manage product HS code classification for customs processing; Solution steps and elements (Level 5-6)	70
10. Role Definition.....	72
10.1. Role/Skill Class Inventory	72
10.2. Security roles as per process design.....	74
11. Process Fitness & Gap Analysis	77
11.1. Process Variation (legal, geographical or business-led)	77
11.1.1. Sub-Process Variation.....	77
11.2. GAP Register	77
11.3. Process Fitness	78
11.4. WRICEF Register	78
12. Integration Points.....	80
12.1. Integration points.....	80
12.2. Inbound Communication.....	80
12.3. Outbound Communication.....	81
12.4. Other Issues.....	81
13. source to pay (S2P – SAP GTS)	83
13.1. Other Related Documents (S2P).....	83
14. Business Process (Level 2).....	84
14.1. Process Overview and Context.....	84
14.2. Key Value Drivers for the Business Process.....	84
14.3. Key Design Decisions	85
14.4. KPI and custom reports	87
15. Business Process Descriptions	88
15.1. Add/Validate and certify supplier (for new).....	88
15.1.1. Business Description.....	88

15.1.2.	Process Diagram	92
15.1.3.	Activity List	92
15.2.	Manage blocked documents in purchasing.....	94
15.2.1.	Business Description.....	94
15.2.2.	Process Diagram	94
15.2.3.	Activity List	94
15.3.	Manage Import – Trade compliance documentation	94
15.3.1.	Business Description.....	94
15.3.2.	Process Diagram	96
15.3.3.	Activity List	96
15.4.	Inbound Communication.....	97
15.5.	Outbound Communication.....	97
16.	Detailed Solution Design	98
16.1.	Solution prerequisites	98
16.1.1.	Company Code and plant relevant for SAP GTS	98
16.1.2.	Document Types and item Categories relevant for SAP GTS	98
16.2.	SPL Screening.....	98
16.2.1.	Process predecessor and successor	98
16.2.2.	Master data prerequisites	98
16.2.3.	Organizational Structure Requirements:.....	99
16.2.3.1.	GTS Organization Structure for P2 Entities	99
1.1.	Detailed Solution Design	100
1.1.1.	Add/Validate and certify supplier (for new); Solution steps & elements (Level 5-6).....	100
1.1.2.	Manage Blocked Document in Purchasing; Solution steps and elements (Level 5-6).....	101
1.1.3.	Manage Import -Trade Compliance Documentation; Solution steps & elements (Level 5-6)	102
2.	Role Definition.....	103
2.1.	Role/Skill Class Inventory	103
3.	Process Fitness & Gap Analysis	104
3.1.	Process Fitness	104
3.2.	Gap Analysis	104
4.	WRICEF Register	105
5.	Integration Points.....	106
5.1.	Other issues.....	106

1 INTRODUCTION

1.1. Change History for GTS - I2C

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	29.09.2021	First version	Abir Banerjee
V0.3	11.11.2021	Second version	Muralidharan Seetharam Sharma
V1.0	17.11.2021	Final version	Muralidharan Seetharam Sharma
V2.0	15.02.2022	1) Removed 'Opportunity accounts' from the document 2) Added KDS references to the processes	Muralidharan Seetharam Sharma
Change of versioning numbering policy			
V0.7	15.02.2022	1) Removed 'Opportunity accounts' from the document 2) Added KDS references to the processes	Muralidharan Seetharam Sharma
V0.8	16.03.2023	Quality review	Dr. Piotr Rykaczewski/Zakia El Houary

1.2. Change History for GTS - D2S

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	28.09.2021	First Version	Abir Banerjee
V0.3	10.11.2021	Second draft	Muralidharan Seetharam Sharma/ Rakesh Kumar Singh
V0.4	11.11.2021	Revised draft	Sascha Paxian
V1.0	16.11.2021	Final version	Muralidharan Seetharam Sharma/ Rakesh Kumar Singh / Abir Banerjee
V1.1	02.12.2021	Resolution of feedback from DT/Business	Muralidharan Seetharam Sharma
P2_v0.1	8.08.2022	Update into new PDD format	Moritz Waubke
P2_v0.2 and v0.3	01.11.2022	Content check, process structure update based on new BPH	Sagar Gurjar / Vinod
Change of versioning numbering policy			
V0.7	22.02.2023	Comments of DT Incorporated E.g., Determination Order Type Roles	Noman Ashraf / Vinod
V0.8	16.03.2023	Quality review	Dr. Piotr Rykaczewski
V0.9	17.03.2023	GPO approval (V0.8→V0.9)	
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.3. Change History for GTS - S2P

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	29.09.2021	First Version	Abir Banerjee
V0.3	18.11.2021	Second Version	Muralidharan Seetharam Sharma / Rakesh Kumar Singh
V1.0	29.11.2021	Final Version	Muralidharan Seetharam Sharma/Rakesh Kumar Singh
V1.1	17.12.2021	Updated the document as per the feedback from Sreekumar	Muralidharan Seetharam Sharma / Rakesh Kumar Singh
V1.2	16.03.2022	Updated the document as per decisions made in the KDD walkthrough sessions	Muralidharan Seetharam Sharma
Change of versioning numbering policy			
V0.7	22.02.2023	1. Removed the part of Screening process of Vendor during onboarding of New Vendor/Supplier on MDG.	Vinod Khadilkar
V0.8	16.03.2023	Quality review	Dr. Piotr Rykaczewski

Note: Previously these were three different PDD's, we merged into one.

1.4. Approval Details

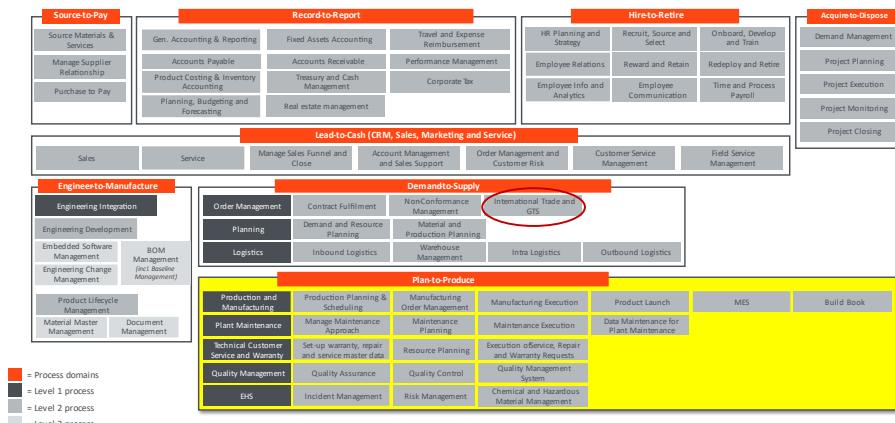
Task	Date	Name & Position of Approver	Signature
See coversheet			

1.5. Other Related Documents (L2C)

Related Document	Comment
N/A	N/A

2 BUSINESS PROCESS (LEVEL 2) GTS

BUSINESS PROCESS HIERARCHY



2.1. Process Overview and Context

EDGE is undergoing a digital transformation program with the move to SAP S/4HANA and identified SAP GTS Edition for HANA as a global trade system which will be integrated with SAP S/4HANA to run international trade processes, thus fulfilling their trade compliance needs.

Orientation within the business process hierarchy:

Demand to supply → 7 Order Management → 7.3 International Trade and GTS

2.2. SAP GTS – L2C

SAP GTS is supporting the Lead to Cash process, starting from enrolment of the customer onto CRM during onboarding and afterwards helping in detailed validation – once master data setup is completed in the SAP S/4HANA system.

The SAP GTS business process steps for L2C are included and mentioned in the documentation of the following sub-processes:

- 4.5.1 EXECUTE SCREENING SIMULATIONS PROSPECT CUSTOMERS [ED-04_050100]**

The simulation functionality allows screening against only one business partner master data or one document. This scenario can be used for testing purposes to check if the address will be blocked in a real screening scenario.

- **4.5.3 MANAGE CUSTOMER CREATION AND VALIDATION AND INCLUDE THE GTS [ED-04_050300]**

This process enables to perform Sanctioned Party List screening for every business partner. It provides features to block, maintain in positive list or negative list, and release the business partners from SAP S/4HANA.

2.3. Key Value Drivers for the Business Process

The new GTSE4HANA system improves the efficiency as a central system to manage and monitor global trade processes across multiple geographical and functional areas. It shall support EDGE in being compliant, fulfil the standard requirements, and help automate the processes across the EDGE group.

Below are some tangible and intangible benefits of using SAP HANA powered order management system:

- SAP GTS is an enterprise trade management platform that automates, centralizes, and manages trade compliance requirements
- By implementing SAP GTS, EDGE has the potential to avoid costly fines and penalties by screening their business partners and trade documents
- EDGE can gain visibility into each export and import transaction and reduce the delivery time thanks to automated trade compliance processes
- GTSE4HANA fulfils the complex documentation requirements through electronic data interchange with brokers and partners (freight forwarders)
- Increase process efficiency through tight integration with inbound and outbound processes in SAP S/4HANA

2.4. Key Design Decisions

Process ID	KDD ID	Type	Description
[ED-04_050100]	ADVNG-8239	Solution	<p>Execute screening simulations for Prospects Customer Leads & Customer Accounts data are received from the CRM system and screened against the denied party list in the GTS system. The output results are sent back to the CRM system for further processing</p> <p>Option 2 – receive and process the screening of customers synchronously</p> <p>For EDGE business, the requirement is to screen the Leads and Customer accounts maintained in the CRM system. These master data to be sent to GTS system for screening and GTS to send back the screening results</p> <p>The data transfer and screening process will be automated using Webservice available in SAP GTS</p> <p>In this option,</p> <ol style="list-style-type: none">1. CRM system can call the Sync webservice URL with Customer data and receive the screening result immediately2. PO middleware can be used to send/receive data in required format <p>Pros:</p> <ul style="list-style-type: none">• Synchronous screening can be done• Lead time is less for sending and receiving data

			<p>Cons:</p> <ul style="list-style-type: none">• Development and testing effort for the end-to-end solution. <p>Cost impact:</p> <ul style="list-style-type: none">• Additional effort towards modification of Webservice with 1 high complexity
--	--	--	--

2.5. KPI and custom reports

Following reports are available out of GTS which addresses the reporting requirement.

1. **Blocked Partners:** Provides list of partners blocked for SPL check
2. **Audit Trails:** Shows the list of blocked and released partners with the reason for release

3. BUSINESS PROCESS DESIGN

3.1. Execute screening simulations prospect customers

3.1.1. Business Description

EDGE business is required to screen its prospect customers during the lead process with the help of CRM and SAP GTS integration systems, that shall be capable to satisfy requirements mentioned below:

Scenario 1: Screening for Sanctioned Party (Name & Country) in GTS with information from CRM system

Master data for Leads and Customer accounts are first created in Microsoft CRM system. The firm parties i.e., customer accounts in CRM are transferred to S/4HANA which will be used for Sales processes.

EDGE must comply with the Denied Party list issued by various authorities like FBI, etc. and avoid business transactions with them, as it can lead to compliance issues and possible penalties.

EDGE must screen their Business Partners like Leads and Customer accounts against the denied party list details provided by the data provider to identify the sanctioned party.

SAP GTS will be updated with the denied party list provided by the data provider, therefore the CRM system can send the Name and Address of the Leads and Customer accounts to the SAP GTS system to check whether the partner is blocked or released.

The partner is blocked when the data is matching with the denied party list, which will be based on the SPL settings maintained in the SAP GTS system

Business partners can also be screened in a simulation mode (which means, Business Partner record need not be created in SAP S/4HANA to be transferred to GTS for SPL screening). Logs will be saved for simulation screening.

Custom webservice are to be used for the integration.

CRM system will use this webservice to send **NAME1** and **COUNTRY** to GTS and receive whether the partner is blocked or not, which will be a binary output.

Commented [A1]: Are NAME1 and COUNTRY standard fields?

Please refer, GTS_L2C-KDS for the list of configuration element required for the process:

Define Comparison Procedure for Address Comparison
Define Comparison Procedure for SAP HANA Search
Control Settings for Sanctioned Party List Screening

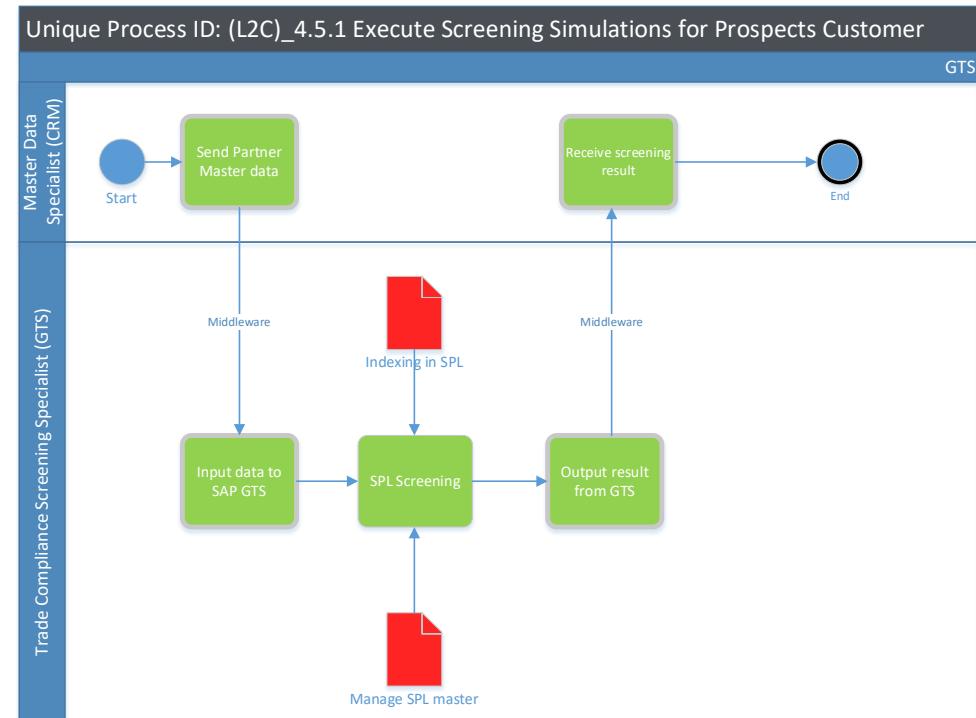
Scenario 2: Screening for sanctioned country in GTS with information from CRM system:

Country specific block for the Partner cannot be performed in GTS as part of the integration, as **Embargo** situations are maintained in GTS in the following combinations only:

- Country/Country group of Departure
- Country/Country group of Destination
- Validity start date
- Validity end date
- Situation active

This information can be only determined at the transaction level like Sales Order/ Outbound delivery and not at the Customer account level

3.2. Process diagram



3.3. Activity List

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Tcode	Fiori
P100	ED-04_050100	Start	Master Data Specialist (CRM)			
P200	ED-04_050100	Send Partner Master data	Master Data Specialist (CRM)	Automated		
P300	ED-04_050100	Input data to SAP GTS	Trade Compliance Screening Specialist (GTS)	Automated		
P400	ED-04_050100	SPL Screening	Trade Compliance Screening Specialist (GTS)	Automated		

Commented [A2]: Missing

P500	ED-04_050100	Manage SPL master	Trade Compliance Screening Specialist (GTS)	Fully Automated		Yes
P600	ED-04_050100	Indexing in SPL	Trade Compliance Screening Specialist (GTS)	Fully Automated		Yes
P700	ED-04_050100	Output result from GTS	Trade Compliance Screening Specialist (GTS)	Automated		
P800	ED-04_050100	Receive screening result	Master Data Specialist (CRM)	Automated		
P900	ED-04_050100	End	Master Data Specialist (CRM)			

3.4. Manage Customer Creation and Validation and include the GTS

3.4.1. Business Description

EDGE must comply with the denied party list issued by various authorities like FBI, etc. and avoid business transactions with them to avoid compliance issues and possible penalties.

EDGE must screen their Business Partners (e.g. Customer accounts) against the denied party list details, coming from the data provider in order to identify the sanctioned party.

SAP GTS will be updated with the denied party list made available by the data provider. Therefore, the Customer Business partner replicated from the S/4HANA system will be screened and identified as blocked or released.

The partner is blocked when the data is found matching with the Denied Party list, which will be based on the SPL settings maintained in the SAP GTS system.

In EDGE, the Business Partners can be screened in different cases: creation of new Business partner, change in SPL data, and periodical screening of existing Business partners.

For Wave 2A Build in EDGE, the following scenario is included in the implementation of the Sanction party list screening.

3.5. Solution pre-requisites

- Basic Configuration setup should be in place in the GTS System
- RFC connection established between S/4HANA and GTS system
- Upload denied party lists in the GTS system

3.6. SPL screening for Business Partners process steps with integration of S/4HANA:

1. Upload denied party lists in the GTS system
2. Customer data will be replicated from the CRM system as a Business Partner master data into the SAP S/4HANA system (Sold-to-party, Ship-to-party, Bill-to-party and Payer)
3. S/4HANA is the feeder system for SAP GTS where all the Customer related information are transferred from S/4HANA to SAP GTS
4. All transferred Master Record from S/4HANA is replicated in SAP GTS as Business Partner master records
5. Newly created Master Records and/or changes made to existing master records are written to change pointer tables in S/4HANA

6. All changes from the change pointer table ADRC are picked up by a scheduled batch job and transferred from feeder system (S/4HANA) to SAP GTS.

3.6.1. Scenario1: Synchronous screening

Newly created/changed business partners are screened synchronously against Sanctioned Party Lists and SPL screening status is updated in the Business Partner master record.

3.6.2. Scenario2: Periodic screening

Screen Business Partner address (Batch) will be done. This program selects all Business Partner records (blocked and released) in the system and screens them against the entire SPL master. This should be done at regular intervals to ensure the SPL statuses of BPs are correct.

3.6.3. Scenario3: SPL screening after changes to Sanctioned Party List

1. The screening will be performed on a business partner if the SPL master data is updated. i.e., due to additions or changes to SPL. Only Business Partners that are currently released in the system will be selected by this program
2. If GTS system finds a match of Business Partner against the SPL list, then the Business Partner is marked as blocked.
3. Trade Compliance specialist will monitor all screened Business Partners and can decide the following
4. Release blocked partners with incorporating the reasons for release
5. Check for false positives and move them to Positive list
6. Identify Business partners and move them to Negative list
7. Confirm the block
8. All Partners are screened for Name and address fields by the defined screening algorithm
9. Standard Reports to be checked to view Blocked Business partners, Positive and Negative Lists or existing Business partners
10. Audit reports are available to check all changes made for each business partner from the time it is created and record the reasons for the change with time and date stamp.
11. Further archiving activity to be taken up post Go-live

3.6.4. Comparison procedure for Address comparison:

Language: Specify the language in which the addresses are to be compared

The language will be English

Search Algorithm for Sanctioned-Party Lists: Activate the search algorithm to be used during sanctioned-party list screening.

The SAP HANA Search algorithms will be activated.

Assignment of Address Comparison Objects: Assign the address comparison objects to a comparison procedure.

The following address objects will be used for address comparison

1. CITY1
2. COUNTRY
3. NAME1
4. NAME2
5. NAME3
6. NAME4
7. STREET

NAME1 and COUNTRY are mandatory fields for screening.

3.6.5. Comparison procedure for SAP HANA search:

1. Screening pattern: Screen Name, Country, City and Street Address

Defines which address elements the SAP HANA Search includes in the comparison.

These are the system's reactions to the individual screening patterns:

2. Screen Name and Country

To get a hit, both the name and country in the addresses must match the respective elements in the sanctioned-party lists.

3. Screen Name Only

To get a hit, only the name in the addresses must match the respective element in the sanctioned-party lists.

4. Screen Name, Country, and Street Address

To get a hit, the name, the country and the street address must match the respective elements in the sanctioned-party lists.

5. Screen Name, Country, City, and Street Address

To get a hit, the name, the country, the city and the street address in the addresses must match the respective elements in the sanctioned-party lists.

6. Screen Name or the Address Elements Street, City and Country

To get a hit, either the name or the address elements street, city and country in the business partner or document partner addresses must match the sanctioned-party lists.

7. Exactness: Value to be decided based on the quality of the customer data. Optimal value can be decided after testing in SIT/UAT. Recommended value for exactness is >= '90'

A percentage between 0 and 100 that specifies how exact two words must match to be considered as equal. User can use this parameter to make the screening tolerant towards typos, name variations, accents, umlauts, and so on. The lower the value, the more tolerant the system is.

Example:

- An exactness of 70% will match "Jose" to "Jase".
- An exactness of 90% will not match "Jose" to "Jase".

8. **Minimum Score:** Value to be decided based on the quality of the customer data. Optimal value can be decided after testing in SIT/UAT. Recommended value is between '75' and '80'

A minimum score is a number between 0 and 100 that specifies how precise two names, or two addresses must match to be considered as a hit.

The user can use this parameter to reduce low-quality hits produced when the "Exactness" parameter is set too low. Use this search parameter to cut off the long tail of low-quality hits produced by hits due to stop words or exclusion terms.

In contrast to "Exactness", this parameter affects the names and addresses as a whole, not the single words therein. The lower the value, the more two names or addresses can differ and still be a hit.

Example:

A minimum score of 50% will produce "Tomas Meyer" as a hit for "Thomas Mayer".

A minimum score of 100% will not produce a hit.

9. **Percentage Rate of Matching Words:** Click here to enter text. Value to be decided based on the quality of the customer data. Optimal value can be decided after testing in SIT/UAT. Recommended value is between '75' and '80'

A number between 0 and 100 that specifies the minimum percentage of words within a full name or a full address that need to match.

This parameter to fine-tune the balance between false positives and real hits. The lower the value, the more reactive the screening is towards single words.

Example:

- A percentage of matching words of 66% will produce "Jose Maria Sison" as a hit for "Jose Maria".
- A percentage of matching words of 80% will not return a hit.

10. **Symmetric Search:** With the symmetric search enabled the false positive hits will be high.

Example below

During the screening of sanctioned-party lists, the system calculates the number of matching words for all screened names and compares that number with the matching percentage rate threshold defined in Customizing.

If the computed percentage is greater than the specified threshold, the name is treated as a hit and the respective business partner or document is blocked.

By default, the system uses the number of words in the business partners to calculate the matching percentage rate.

By selecting this checkbox, the symmetric search is activated, and the system uses the number of words in the sanctioned-party list entry to compute the matching percentage rate. If the percentage rate for any of these calculation types exceeds the threshold value, the name is treated as a hit.

Example:

System Behaviour in Symmetric Searches

You want to check whether a business partner with the name "Jose Maria Sison" is listed in the sanctioned-party list. The sanctioned-party list contains an entry for "Jose Maria" and 70% has been defined in Customizing as the matching percentage rate threshold.

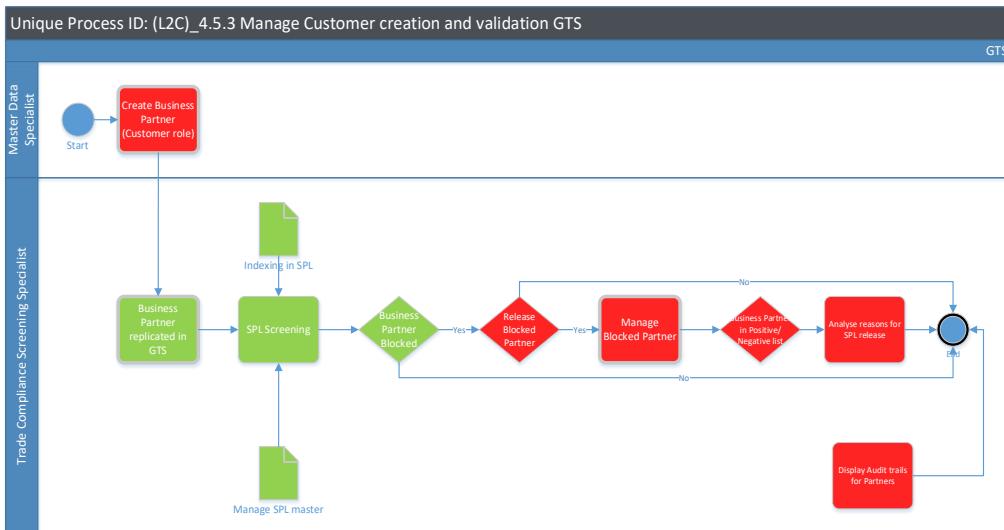
- If you have not selected the Symmetric Search check box, the system only uses the number of business partner words to calculate the matching percentage rate. In this case, the matching percentage rate is calculated as follows: 2 divided by 3 = 66.67%. Hence, the name is not treated as a hit.
- If you select the checkbox, the system will use both the business partner words as well as the sanctioned-party list words when calculating the matching percentage rate.
- In this case, the matching percentage rate for the sanctioned-party list is calculated as follows:
 - 2 divided by 2 = 100%. Hence, the name is treated as a hit.

Please refer to GTS _L2C-KDS for the list of configuration element:

• Number Range for Business Partners
• Define Legal Regulation
• Define Determination Procedure for Active Legal Regulations
• Assign Determination Procedure for Active Legal Regulations
• Activate Legal Regulations
• Define Reasons for Releasing Blocked Documents and Business Partners

- Activate Business Partner at Business Partner Function Level
- Define Comparison Procedure for Address Comparison
- Define Comparison Procedure for SAP HANA Search
- Control Settings for Sanctioned Party List Screening

Process diagram



3.7. Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Connector Label	Shape Type	Owner	Automation	Tcode	Fiori
P100	ED-04_050300	Start	P200		Start	Master Data Specialist			
	ED-04_050300	Create Business Partner (Customer role)	P300		Process	Master Data Specialist	Partially Manual	BP	Yes
P200	ED-04_050300	Business Partner replicated in GTS	P400		Process	Trade Compliance Screening Specialist	Automated		
	ED-04_050300	SPL Screening	P700		Process	Trade Compliance Screening Specialist	Automated		
P500	ED-04_050300	Manage SPL master	P400		Data	Trade Compliance Screening Specialist	Automated		Yes
P600	ED-04_050300	Indexing in SPL	P400		Data	Trade Compliance			

Commented [A3]: Missing

						Screening Specialist	Automated		
P700	ED-04_050300	Business Partner Blocked	P1300, P800	No, Yes	Decision	Trade Compliance Screening Specialist	Automated		
P800	ED-04_050300	Release Blocked Partner	P900, P1300	No, Yes	Decision	Trade Compliance Screening Specialist	Human Triggered		Yes
P900	ED-04_050300	Manage Blocked Partner	P1000		Process	Trade Compliance Screening Specialist	Partially Manual		Yes
P1000	ED-04_050300	Business Partner in Positive/Negative list	P1200		Decision	Trade Compliance Screening Specialist	Human Triggered		Yes
P1100	ED-04_050300	Display Audit trails for Partners	P1300		Process	Trade Compliance Screening Specialist	Partially Manual		Yes
P1200	ED-04_050300	Analyse reasons for SPL release	P1300		Process	Trade Compliance Screening Specialist	Partially Manual		Yes
P1300	ED-04_050300	End			End	Trade Compliance Screening Specialist			

3.8. Inbound Communication

Activity	Type (email, form, handoff, etc)	Automatic/Manual	Source	Description
Receive customer data from CRM system for screening	Webservice	Automatic	CRM system	Receive Lead and Customer accounts in GTS, screen them and send back the results to the CRM system
Master data between S/4HANA and GTS	RFC	Automatic	S/4HANA	Created/Changed - Business Partner (Customer) in S/4HANA are transferred to GTS system

3.9. Outbound Communication

Activity	Type (email, form, handoff, etc)	Automatic/Manual	Source	Description
Send screening results to CRM	Webservice	Automatic	GTS	Send back the screened results to the CRM system

3.10. Process predecessor and successor

Need to upload all relevant SPL master data should be uploaded into GTS system.

3.10.1. Master data pre-requisites

- Content Provider files

All the SPL files are required to upload to the system which we are getting from the content provider
E.g.: SPL file.

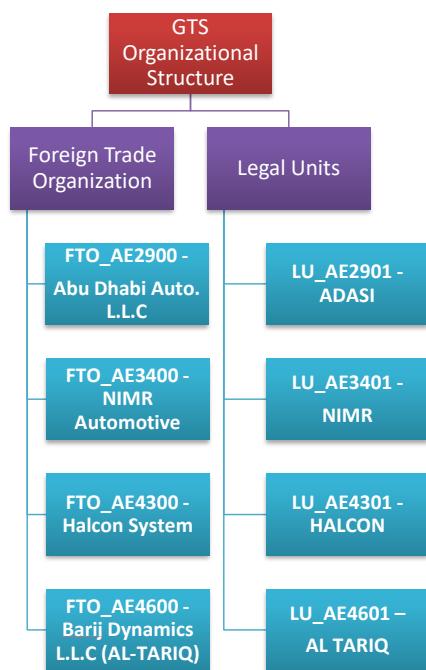
- Business Partners

Business partners include customers, vendors, and data provider needs to be transferred to the GTS system.

3.10.2. Organizational Structure Requirements

3.10.2.1. GTS Organization Structure for P2 Entities

Figure 1:GTS Organization Structure for P2 Entities



4. DETAILED SOLUTION DESIGN

4.1. Solution Pre-requisites

EDGE must comply with the Denied Party list issued by various authorities like FBI, etc. and avoid business transactions with them as it can lead to compliance issues and possible penalties.

EDGE must screen their Business Partners like Customer accounts against the Denied party list details provided by the data provider to identify the sanctioned party.

SAP GTS will be updated with the Denied party list provided by the data provider, therefore the Customer Business partner replicated from the S/4HANA system will be screened and identify as blocked or released.

The partner is blocked when the data is matching with denied party list which will be based on the SPL settings maintained in the SAP GTS system.

In EDGE, the Business Partners can be screened in different cases: creation of new business partner, change in SPL data and periodical screening of existing Business partners

For Wave 2A Build in EDGE, the following scenario is included in the implementation of the Sanction party list screening

SPL screening for Business Partners process steps with integration of S/4HANA:

- Upload denied party lists in the GTS system
- Supplier data will be replicated from the IVEN system as a Business Partner master data in to the SAP S/4HANA system (Vendor, Goods Supplier)
- S/4HANA is the feeder system for SAP GTS where all the Supplier related information are transferred from S/4HANA to SAP GTS
- All transferred Master Record from S/4HANA is replicated in SAP GTS as Business Partner master records
- Newly created Master Records and/or changes made to existing master records are written to change pointer tables in S/4HANA
- All changes from the change pointer table ADRC are picked up by a scheduled batch job and transferred from feeder system (S/4HANA) to SAP GTS.

Scenario1: Synchronous screening

Newly created/changed business partners are screened synchronously against Sanctioned Party Lists and SPL screening status is updated in the Business Partner master record.

Scenario2: Periodic screening

Screen Business Partner address (Batch) will be done. This program selects all Business Partner records (blocked and released) in the system and screens them against the entire SPL master. This should be done at regular intervals to ensure the SPL statuses of BPs are correct

Scenario3: SPL screening after changes to Sanctioned Party List

The screening will be performed on a business partner if the SPL master data is updated. i.e., due to additions or changes to SPL. Only Business Partners that are currently released in the system will be selected by this program. If GTS system finds a match of Business Partner against the SPL list, then the Business Partner is marked as blocked.

Trade Compliance specialist will monitor all screened Business Partners and can decide the following:

- Release blocked partners with incorporating the reasons for release
- Check for false positives and move them to Positive list
- Identify Business partners and move them to Negative list
- Confirm the block

All Partners are screened for Name and address fields by the defined screening algorithm.

Standard Reports to be checked to view Blocked Business partners, Positive and Negative Lists or existing Business partners.

Audit reports are available to check all changes made for each business partner from the time it is created and record the reasons for the change with time and date stamp.

Further archiving activity to be taken up post Go-live

4.2. Manage customer creation and validation" and include the GTS; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
BP	Create new business partner	Tab / Desktop	Master Data Specialist	S4HANA
Batch job	Transfer Business Partner to GTS System	Tab / Desktop	Batch job	S4HANA
Batch job	Business Partner replicated in GTS	Tab / Desktop	Batch job	GTS
Background	Screening of Business partner in GTS	Tab / Desktop	Background	GTS
Manage Business Partner	Release blocked business partner	Tab / Desktop	Trade Compliance specialist	GTS
Manage Business Partner	Add Business Partner to Positive List	Tab / Desktop	Trade Compliance specialist	GTS
Manage Business Partner	Add Business Partner to Negative List	Tab / Desktop	Trade Compliance specialist	GTS

4.3. Execute screening simulations prospect customers; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
ADVNG-8238	Lead created in MS CRM	Tab / Desktop	Master Data Specialist	CRM
Batch job	Business Partner details send to GTS	Tab / Desktop	Batch job	CRM

Background	Screening of Business partner in simulation mode.	Tab / Desktop	Background	GTS
Background	Screening result updated in GTS and send back to MS CRM	Tab / Desktop	Background	GTS

4.4. Role Definition

The content in this section will serve as input for the training and performance support team's deliverables.

4.5. Role/Skill Class Inventory

Role	Skills	Knowledge
Trade Compliance specialist (SAP_BR_SCRNG_SPCLST_LLS)	SAP GTS Compliance Management	Manage blocked partners, maintain data relevant to compliance

5. PROCESS FITNESS & GAP ANALYSIS

5.1. Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets
N/A	N/A	N/A	N/A	N/A

5.2. Gap Analysis

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req. id.
UAE	Interface between GTS and CRM for screening partner for sanctioned party	N	H		WRICEF_D2S_P2_69_I (ADVNG-8238)	N/A
UAE	Embargo check in GTS for the Partner master data from CRM	N	M	Gap and can't be addressed* (explanation below)	N/A	N/A

Country specific block for the Partner can't be performed as the Embargo situations are maintained in the following combination in GTS

- Country/Country group of Departure
- Country/Country group of Destination
- Validity starts date
- Validity end date
- Situation active

This information can be only determined at the transaction level and not at the Customer account level

The Embargo checks in SAP GTS can be performed only with the S/4HANA feeder system

5.3. WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Use from myConcerto (New/Rework/Rep)	Ref # from WRICEF inventory
ADVNG-8238	Interface	Interface between GTS and CRM for screening partners for sanctioned party	M	N/A	N/A	N/A

5.4. Integration Points

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

Instructions:

Process ID	Leading stream	Integration with domain	Description	In	out
[ED-04_050100]	CRM	L2C	Master data between MS CRM and GTS - Address data of the Lead and Customer account	Name and Address data of Leads and Customers from MS CRM will be sent to SAP GTS for synchronous screening and is on demand from CRM side.	Results of the Screening request initiated from MS CRM will be sent out of SAP GTS. Screening Result would contain either Blocked or Released status.
[ED-04_050300]	S/4HANA	L2C	Master data between S/4HANA and GTS - Business Partner (Customer)	Create Business Partner general data with customer as external number will be replicated in SAP GTS and screening will be done synchronously. Changed Business Partner address details in S/4HANA, will update the corresponding Business Partner address in SAP GTS and screening will be done synchronously.	N/A

5.5. Other issues

Issue #	Issue Description	Impact	Status	Resolution
N/A	N/A	N/A	N/A	N/A

SECOND PART OF GTS PDD

DEMAND TO SUPPLY – D2S

6. BUSINESS PROCESS (LEVEL 2) – GTS – DEMAND TO SUPPLY (D2S)

For the most efficient usage of the SAP GTS five core processes have been defined and aligned over all entities in scope (HALCON, NIMR, ADASI, AL-TARIQ) during High-level and Deep-Dive Workshops.

The SAP GTS business process for D2S area majorly contains below mentioned sub-processes:

➤ **MANAGE EMBARGO BLOCK DOCUMENTS (EMBARGO SCREENING)**

BPH [7.3.1.1] (ED-07_030101)

This process enables to perform Embargo checks on country level, and release or block transactions originating from SAP S/4HANA and CRM system.

➤ **EXECUTE SPL SCREENING**

BPH [7.3.1.3] (ED-07_030103)

SPL helps business to comply with gov laws that prohibits dealing with parties (individual and organization) which are sanctioned by gov agencies.

SPL list source is government agencies, it is updated periodically and the same is uploaded to GTS

SPL allows screening for all customers/vendors. Whenever order or delivery gets created in feeder system they go to GTS and their partner are screened against the already uploaded SPL denied party. The order gets blocked for further processing if the partner is in the list. This screening can be synchronous or asynchronous – Synchronous means in the real time, i.e., as soon as the order is created it goes to GTS and get screened. For asynchronous, we can do the screening at a later point in time.

➤ **MANAGE PRODUCT CLASSIFICATION FOR LEGAL CONTROL**

BPH [7.3.2.1] (ED-07_030201)

This process enables and ensures the classification of products in proper form, updating classifications for the event that an export procedure cannot be completed. The user proactively classifies the products transferred to the GTS system for compliance area with Export control lists, Monitors, and updates product classification in the event of export classification changes.

➤ **MANAGE PRODUCT CLASSIFICATION FOR CUSTOMS PROCESSING**

BPH [7.3.2.2] (ED-07_030202)

This process enables and ensures the classification of products in proper form, Updating HS Code classifications for the event that an import or export procedure cannot be completed. The user proactively classifies the products transferred to the GTS system for customs area with HS Codes/Tariff codes, monitors, and updates product classification in the event of HS Code changes, perform the duty calculations relevant before submitting to a broker, who in turn files the customs declaration with the UAE customs authority

➤ **MANAGE EXPORT TRADE (CUSTOMS) COMPLIANCE DOCUMENTATION**

BPH [7.3.1.2] (ED-07_030102)

This process enables to maintain licenses, assign licenses, setup control data. These are related to master data logic that is fed to SAP GTS to perform the screening.

6.1. Key Value Drivers for the Business Process

The new GTSE4HANA system improves the efficiency by being the central system to manage and monitor global trade processes across multiple geographical and functional areas. It shall help EDGE in being compliant and fulfil the standardization and help automate the processes across EDGE group.

Below are some tangible and intangible benefits of using GTSE4HANA:

- SAP GTS is an enterprise trade management platform that automates, centralizes, and manages trade compliance requirements
- By implementing SAP GTS, EDGE has the potential to avoid costly fines and penalties by screening their business partners, trade documents
- EDGE can gain visibility into each export and import transactions and reduce the delivery times gained through automated trade compliance processes
- Fulfill the complex documentation requirements through electronic data interchange with Brokers and partners (freight forwarders)
- Drive process efficiency through tight integration with inbound and outbound processes originating from SAP S/4HANA

6.2. Key Design Decisions

Process ID	KDD ID	Type	Description
ED-07_030102	KDD_D2S_2A_29	Solution	<p>Manage Export Trade Compliance Documentation Transfer of Country of Origin for the Products on transactional documents from SAP S/4HANA to SAP GTS system</p> <p>Option 2 – automatic update of Country of origin</p> <p>For EDGE business, Country of Origin is to be printed on export declaration document as part of custom clearance requirement.</p> <p>Country of Origin is maintained under three master data i.e. Material Master, Purchase Info record and Batch master level. At EDGE Business, same product is sourced from multiple sources and hence batch level COO maintenance is part of solution design. In standard GTS solution, Country of origin is picked up from Material master.</p> <p>In this option, proposal is to automate the maintenance of Country of Origin at Export declaration document by referring to batch master data.</p> <p>Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 Medium complexity RICEFW.</p>
ED-07_030101	KDD_D2S_2A_35	Solution	<p>Manage Blocked Documents in Sales Legal control check based on Country of departure, country of destination, product, Country of Origin of product, and ECCN/USML classification</p> <p>Option 1 – determination and assignment of legal control W/O country of Origin</p> <p>In standard, the license is assigned at the Sales Order level and delivery level. Corresponding customs document are screened for legal control in GTS system. The system blocks the transaction based on criteria set by GTS system.</p> <p>In standard, legal control checks can be based on following criteria:</p> <ul style="list-style-type: none"> - Country of departure, - country of destination, - product, and - ECCN/USML classification. <p>In addition to SAP Standard Criteria, in some case EDGE has additional criteria of checking "Country of Origin" for legal control check and this needs to be managed Offline (outside SAP).</p> <p>Note: Country of Origin is for product on sales order/Delivery/invoice. This is not for Component level material.</p> <p>Pros: Adherence to EDGE specific compliance requirement Cons:</p> <ul style="list-style-type: none"> • Custom development and testing required. • Delay in shipment release process due to screening only at Outbound delivery level for determining the Country of Origin
ED-07_030101	KDD_D2S_2A_30	Solution	<p>Manage Blocked Documents in Sales Automatic update of Data provider's compliance data in SAP GTS system.</p> <p>Option 2 – automatic update of spl list</p> <p>For EDGE, Sanction party list is business critical data input for doing business transaction with their customer and vendor. EDGE screen its business</p>

			<p>partners daily against the SPL (Sanction Party List data) available in the GTS system</p> <p>To get the updated Sanction party list, we have dedicated institution which act as a data provider. Based on input from these data providers, EDGE business updates their sanction party list.</p> <p>In this option, proposal is to do automated the process of updating the Sanction party list based on inputs from data providers. 1 High complexity RICEFW</p> <p>Pros: Automatic update of Denied party list Cons: Custom development and testing required</p>
ED-07_030101	KDD_D2S_2A_33	Solution	<p>Manage licenses and embargo situations Export control statements are required to be printed in the shipping documents like Invoice and Packing list for the Repair and Return scenario. Option 2 – automatically fetch classification and license exemption details in invoice</p> <p>For EDGE business, during invoice processing in SAP, certain trade compliance related information needs to be maintained on the invoice Form. The invoice form will be processed in S/4HANA and the required information to be printed on the invoice form is available in SAP GTS. For example, ECCN/USML number and license exemption details In this option we are proposing RICEFW to enable the Invoice form to be printed with trade compliance related information. This RICEFW is required to develop RFC to pull the information from SAP GTS to S/4HANA.</p> <p>Pros:</p> <ul style="list-style-type: none"> Automatically fetch classification and license exemption details at the transaction level. This will eliminate manual errors. <p>Cons: Additional efforts towards system modification.</p>
ED-07_030202	KDD_D2S_2A_34	Solution	<p>Manage Blocked Documents in Sales Documents in GTS are blocked for SPL, Embargo and Legal control. Trade compliance specialist to get notification in 'My Inbox' Fiori app for the blocked documents.</p> <p>Option 1 – manually monitor manage blocked documents app. For EDGE business, trade compliance check and validation are critical for business transaction. Various business transaction like Sales Order and Delivery are checked on regular basis and validated based on GTS control. As an outcome of trade compliance check (<i>SPL, Embargo and Legal control</i>) document are blocked if they are not compliant, additional validation or approval is required. The next steps are to review and release the blocked document or to inform the shipping specialist to modify the document in S/4HANA. In this option, the proposal is to monitor the Blocked document centrally. Refer the Manage blocked documents' Fiori app to get the list of blocked documents and process further to release the block or inform shipping specialist to modify the documents in S/4HANA.</p> <p>Pros: Aligned to Standard SAP</p>

			Cons: Trade compliance specialist need to constantly monitor the Fiori app for updates
ED-07_030102	KDD_D2S_2A_31	Solution	<p>Manage Export Trade Compliance Documentation Generate Output Form for Customs Exports Declaration Document from SAP GTS.</p> <p>Option 2 – Export Declaration Form from system For EDGE business, sharing all relevant information on an Export Declaration document is necessary to file the exports with the customs authority. Exports Declaration Document form has additional information which helps the Forwarding agent to file with the customs authority using correct information. In this option, the proposal is to create ONE Export declaration document form with a common template for all entities directly from SAP GTS. Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 High complexity RICEFW.</p> <p>Form Layout:  HS Code Summary Form_Layout.xlsx</p>
ED-07_030102	KDD_D2S_2A_32	Solution	<p>Manage Export Trade Compliance Documentation Default data on Customs Exports Declaration Document in SAP GTS.</p> <p>Option 2 – Default values for required data fields. For EDGE business, there is certain amount of information required to be present for filing Exports using the Forwarding Agent. Some of the fields in SAP GTS may not be defaulted using standard S/4HANA integration. In this option, the proposal is to automatically update data on the Export declaration document in SAP GTS so that declaration is filed with the customs authority using correct information.</p> <p>Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 High complexity RICEFW</p>

6.3. Standard KPI and Reports

Following reports are available in GTS, also relevant FIORI Apps which will be addresses the reporting requirement:

Standard SAP GTSE4HANA Report	SAP FIORI Apps
Blocked documents: Provides list of documents blocked for SPL, Embargo and Legal control.	Manage Blocked Documents
Audit Trails: Audit trail shows the list of blocked and released documents with the reason for release.	Display Audit Trail Documents
Analyse SPL release: Analyse reasons for release for SPL screening of documents	Analise Reason for SPL Release
Monitor customs declaration: Monitor customs declaration for exports	Display Export Declarations
Product classification: Find products with missing classification	Classify Products

Integration with BW advanced reporting is not available as part of SAP GTSE4HANA SP01 release. It is planned for future releases as per the SAP product management team.

6.4. Extreme Automation

All the relevant use cases under consideration for extreme automation are updated (with EBS input if required) before the initiation of validation phase.

Detailed key-stroke level process details will be captured through walkthrough sessions in the Extreme automation PDD section. ERP PDD's and ERP training manuals shall be leveraged to capture information that is readily available for the identified automations.

6.5. Key Design Decisions

Process ID	KDD ID	Type	Description
ED-07_030102	ADVNG- 7971	Solution	<p>Manage Export Trade Compliance Documentation Transfer of Country of Origin for the Products on transactional documents from SAP S/4HANA to SAP GTS system</p> <p>Option 2 – automatic update of Country of origin</p> <p>For EDGE business, Country of Origin is to be printed on export declaration document as part of custom clearance requirement.</p> <p>Country of Origin is maintained under three master data i.e. Material Master, Purchase Info record and Batch master level. At EDGE Business, same product is sourced from multiple sources and hence batch level COO maintenance is part of solution design. In standard GTS solution, Country of origin is picked up from Material master.</p> <p>In this option, proposal is to automate the maintenance of Country of Origin at Export declaration document by referring to batch master data.</p> <p>Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 Medium complexity RICEFW.</p>
ED-07_030101	ADVNG- 7967	Solution	<p>Manage Blocked Documents in Sales Legal control check based on Country of departure, country of destination, product, Country of Origin of product, and ECCN/USML classification</p> <p>Option 1 – determination and assignment of legal control W/O country of Origin</p> <p>In standard, the license is assigned at the Sales Order level and delivery level. Corresponding customs document are screened for legal control in GTS system. The system blocks the transaction based on criteria set by GTS system.</p> <p>In standard, legal control checks can be based on following criteria:</p> <ol style="list-style-type: none"> 1. Country of departure, 2. country of destination, 3. product, and 4. ECCN/USML classification. <p>In addition to SAP Standard Criteria, in some case EDGE has additional criteria of checking "Country of Origin" for legal control check and this needs to be managed Offline (outside SAP).</p> <p>Note: Country of Origin is for product on sales order/Delivery/invoice. This is not for Component level material.</p> <p>Pros: Adherence to EDGE specific compliance requirement Cons:</p> <ul style="list-style-type: none"> ▪ Custom development and testing required. ▪ Delay in shipment release process due to screening only at Outbound delivery level for determining the Country of Origin
ED-07_030103	ADVNG- 7973	Solution	<p>Manage Blocked Documents in Sales Automatic update of Data provider's compliance data in SAP GTS system.</p> <p>Option 2 – automatic update of spl list</p> <p>For EDGE, Sanction party list is business critical data input for doing business transaction with their customer and vendor. EDGE screen its business</p>

			<p>partners daily against the SPL (Sanction Party List data) available in the GTS system</p> <p>To get the updated Sanction party list, we have dedicated institution which act as a data provider. Based on input from these data providers, EDGE business updates their sanction party list.</p> <p>In this option, proposal is to do automated the process of updating the Sanction party list based on inputs from data providers. 1 High complexity RICEFW</p> <p>Pros: Automatic update of Denied party list Cons: Custom development and testing required</p>
ED-07_030201	ADVNG- 7969	Solution	<p>Manage Blocked Documents in Sales Export control statements are required to be printed in the shipping documents like Invoice and Packing list for the Repair and Return scenario.</p> <p>Option 2 – automatically fetch classification and license exemption details in invoice</p> <p>For EDGE business, during invoice processing in SAP, certain trade compliance related information needs to be maintained on the invoice Form. The invoice form will be processed in S/4HANA and the required information to be printed on the invoice form is available in SAP GTS. For example, ECCN/USML number and license exemption details In this option we are proposing RICEFW to enable the Invoice form to be printed with trade compliance related information. This RICEFW is required to develop RFC to pull the information from SAP GTS to S/4HANA.</p> <p>Pros:</p> <ul style="list-style-type: none"> ▪ Automatically fetch classification and license exemption details at the transaction level. This will eliminate manual errors. <p>Cons: Additional efforts towards system modification.</p>
ED-07_030102	ADVNG- 7970	Solution	<p>Manage Blocked Documents in Sales Documents in GTS are blocked for SPL, Embargo and Legal control. Trade compliance specialist to get notification in 'My Inbox' Fiori app for the blocked documents.</p> <p>Option 1 – manually monitor manage blocked documents app. For EDGE business, trade compliance check and validation are critical for business transaction. Various business transaction like Sales Order and Delivery are checked on regular basis and validated based on GTS control. As an outcome of trade compliance check (<i>SPL, Embargo and Legal control</i>) document are blocked if they are not compliant, additional validation or approval is required. The next steps are to review and release the blocked document or to inform the shipping specialist to modify the document in S/4HANA. In this option, the proposal is to monitor the Blocked document centrally. Refer the Manage blocked documents' Fiori app to get the list of blocked documents and process further to release the block or inform shipping specialist to modify the documents in S/4HANA.</p> <p>Pros: Aligned to Standard SAP</p>

			Cons: Trade compliance specialist need to constantly monitor the Fiori app for updates
ED-07_030102	ADVNG- 8077	Solution	<p>Manage Export Trade Compliance Documentation Generate Output Form for Customs Exports Declaration Document from SAP GTS.</p> <p>Option 2 – Export Declaration Form from system For EDGE business, sharing all relevant information on an Export Declaration document is necessary to file the exports with the customs authority. Exports Declaration Document form has additional information which helps the Forwarding agent to file with the customs authority using correct information. In this option, the proposal is to create ONE Export declaration document form with a common template for all entities directly from SAP GTS. Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 High complexity RICEFW.</p> <p>Form Layout:  HS Code Summary Form_Layout.xlsx</p>
ED-07_030102	ADVNG- 8078	Solution	<p>Manage Export Trade Compliance Documentation Default data on Customs Exports Declaration Document in SAP GTS.</p> <p>Option 2 – Default values for required data fields. For EDGE business, there is certain amount of information required to be present for filing Exports using the Forwarding Agent. Some of the fields in SAP GTS may not be defaulted using standard S/4HANA integration. In this option, the proposal is to automatically update data on the Export declaration document in SAP GTS so that declaration is filed with the customs authority using correct information.</p> <p>Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 High complexity RICEFW</p>
ED-07_030102	ADVNG- 8079	Solution	<p>Manage Export Trade Compliance Documentation Automated check to validate completeness of the Export Declaration Document in SAP GTS.</p> <p>Option 2 – Automated Check for Completeness For EDGE business, there is certain amount of information required to be present for filing Exports using the Forwarding Agent.</p>

		<p>Prior to sending the information from the Exports Declaration to the Forwarding Agent, it must be ensured that the document is complete in all aspects.</p> <p>In this option, the proposal is to automatically validate the Export declaration document using rules set up in the system to ensure that all required fields are maintained.</p> <p>Pros: Aligned with EDGE localization requirement Cons: Additional efforts towards system modification using 1 High complexity RICEFW</p>
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6.6. Standard KPI and reports

Following reports are available in GTS, also relevant FIORI Apps which will be addresses the reporting requirement:

Standard SAP GTSE4HANA Report	SAP FIORI Apps
Blocked documents: Provides list of documents blocked for SPL, Embargo and Legal control.	Manage Blocked Documents
Audit Trails: Audit trail shows the list of blocked and released documents with the reason for release.	Display Audit Trail Documents
Analyse SPL release: Analyse reasons for release for SPL screening of documents	Analise Reason for SPL Release
Monitor customs declaration: Monitor customs declaration for exports	Display Export Declarations
Product classification: Find products with missing classification	Classify Products

Integration with BW advanced reporting is not available as part of SAP GTSE4HANA SP01 release. It is planned for future releases as per the SAP product management team.

6.7. Extreme automation

All the relevant use cases under consideration for extreme automation are updated (with EBS input if required) before the initiation of validation phase.

Detailed key-stroke level process details will be captured through walkthrough sessions in the Extreme automation PDD section. ERP PDD's and ERP training manuals shall be leveraged to capture information that is readily available for the identified automations.

6.8. Other D2S Related Documents

Related Document	Comment
20220804_AdvantEDGE_PDD_D2S_Contract_Fulfillment_P2_v0.9	Details of the Domestic and Export Sales processes
20210929_ADVANTEDGE_Design_Authority_v1.0.0	Design Authority Decision on re-structuring the GTS functionality cross domain and process streams

7. PROCESS DESIGN

7.1. Manage embargo block documents (Embargo Screening) (ED-07_030101)

7.1.1. Embargo Exports

EDGE expects to adhere to the restrictions imposed by the EDGE specific Embargo list (which also includes United Nations Embargo list) for export to certain countries.

For this, EDGE must consider all the export related business transactions to check the embargo situation using the business partners details like company's location i.e., Country/Country group. Domestic sales transactions will be excluded from the Embargo compliance checks.

If an embargo situation exists, the system blocks the business transaction for further processing. EDGE Trade compliance analyst to evaluate these blocked business transactions and release them as necessary.

In standard, when the documents (Sales Order and Deliveries) are transferred from the feeder system, the GTS system creates a 'Customs Document' as a replicate of the feeder system document.

As per standard, GTS determines the Embargo situation by getting the delivery plant's country as 'Country of departure' and Ship-to-party country as 'Country of destination'.

EDGE has the following specific requirements for Embargo situations.

- 'Country of Origin' means where the item is originally manufactured. Both the Embargo situations maintained for the 'Country of Origin' and the 'Country of Departure' to be checked for the Sales transaction - Refer KDD ADVNG – 7971 and ADVNG 7967 for COO
- If a US technology is used for manufacturing a non-US country of origin items, then based on the US technology involved in the product, the US ITAR or EAR controls and Embargo situations of sending country 'US' will apply.

'Country of Origin' for both the Finished Goods and components are not transferred from S/4HANA to GTS system, therefore all the export related Sales orders and Outbound deliveries will be checked for Embargo compliance and blocked for further processing.

User should manually release the blocked documents by verifying the 'Country of Origin' of both the Finished Goods and components in accordance with applicable trade regulations.

One Legal regulation will be created for checking the Embargo situations maintained as per EDGE specific embargo list.

Note - Each legal requirement must be created in GTS as a Legal Regulation. The Embargo sanctions is a legal requirement for which we will create one Legal Regulation for e.g., ZEMB. The transactions blocked for ZEMB legal regulation are the transactions adhering to Embargo situations maintained by EDGE.

7.1.2. License Management – Exports

EDGE has specific requirements to adhere to restrictions imposed by the respective Country of Origin of the product and not based on the country of departure e.g.: The sold product has country of Origin as 'US' but exported from country UAE, for this sales transaction the legal control check will be against the US as well as UAE trade Legal regulations.

In EDGE, the scope for check for Legal control will include all the export and domestic sales transactions.

In standard, when the documents (Sales Order and Deliveries) are transferred from the feeder system, the GTS system creates a 'Customs Document' as a replicate of the feeder system document. As per standard functionality the following data in this customs document is relevant for determining the Legal regulation:

- Country of departure (From delivery plant)
- Country of destination (From Ship-to-party)

The EDGE specific requirement for determining the legal regulation of sales/delivery transaction should include criteria of 'Country of Origin'.

- Legal regulation should be determined based on the 'Country of Origin' country instead of the 'Country of departure'. This detail will be maintained at the batch characteristics of the material in Outbound delivery.
- If the country of origin is non-US, then system should check whether the product has been manufactured using US technology for determining the US export controls. To identify this, the product should be classified for either EAR or ITAR legal regulation.
- If the country of Origin of the product is country 'US' then the legal regulation will be either EAR or ITAR
- If the product is not established as US 'Country of Origin' product and not manufactured using US-based technology and it is a Dual use/Military customer, then non-US based legal regulation should be determined.
- If the product is not established as US 'Country of Origin' product and not manufactured using US-based technology and it is not a Dual use/Military customer, then exclude from Legal trade control check and considered as a commercial item.

PLEASE NOTE - Refer KDD ADVNG – 7971 and ADVNG 7967 for Country of origin.

Additional requirement is to consider the country of origin of the component used to manufacture the Finished goods for Legal control check while selling the Finished Good.

F.eg: In Re-export scenario, the component used for manufacturing Finished Good is bought from country 'US' which is the country of origin. This component is not allowed for export to certain countries in any form. Whenever the Finished Good is sold from UAE, the system should check both the Finished Goods' and Component's country of origin for legal control check.

For this requirement, Legal control check will be done on both Sales and Delivery documents.

The Finished Goods may be subject to any of the following trade control or multiple trade regulations.

- US EAR or ITAR
- UK Military or UK Dual use
- EU Military or EU Dual use
- UAE Military/Dual use
- Generic Legal Regulations It is applicable for other applicable regulations Any other applicable trade regulations.

Specific Legal regulations like UAE trade laws, EAR, ITAR, UK & EU trade regulations etc, will be configured for countries like US, UK, UAE and Country group EU which needs product classification details in the GTS system.

Generic Legal regulation ZGEN will be configured for all countries other than US, UK, UAE and Country group EU

The sales/delivery transaction will be determined as Dual/Military use transaction based on the Customer (Sold-to-party/Ship-to-party) and not based on the product master. Customer should be maintained for Dual/Military use in the Business Partner master data.

Legal Regulation	License Type/License Master	Classification	Additional information
EAR	License Exemption	EAR99	

EAR	BIS License	4A001	
ITAR	License Exemption		
ITAR	Technical Assistance Agreement (TAA)		
ITAR	GC Authorization		
UK Military use	Individual License		
UK Military use	License Exemption		
UK Military use	Not Valid Scenario		Dummy license
UK Dual use	Individual License		
UK Dual use	License Exemption		
UK Dual use	Not Valid Scenario		Dummy license
EU Military use	Individual License		
EU Military use	License Exemption		
EU Military use	Not Valid Scenario		Dummy license
EU Dual use	Individual License		
EU Dual use	License Exemption		
EU Dual use	Not Valid Scenario		Dummy license
UAE Military/Dual use	Individual License		
UAE Military/Dual use	License Exemption		
UAE Military/Dual use	Not Valid Scenario		Dummy license
Generic	Individual License		
Generic	License Exemption		
Generic	Not Valid Scenario		Dummy license

Automatic license determination will be configured, and all the Sales/delivery related customs documents will be blocked for missing license.

EDGE should provide specific samples of license types and licenses which are to be maintained in the system for validating the above scenarios. Based on the data the Legal regulation, License types will be configured

In legal control, the system imposes blocks if licenses are missing or insufficient. To continue the business transactions in question, Trade compliance specialist either create and assign additional licenses or assign existing licenses (Valid license/Exception license/dummy license), releasing the transaction manually.

Since the user must ensure legal compliance, particularly for manual releases, and document the release for the authorities during audits, the user should enter additional information in the comments for each affected transaction.

F.e.g: The product is classified for EAR, UK, EU, UAE legal regulations and the country of origin is 'France'. When the user creates Sales Order for the product then the document will be blocked for missing license in EAR, UK, EU, UAE and ZGEN legal regulation.

The following parameters will be allowed to maintain in the license master:

1. The type of export license (License type)
2. The legal regulation for which the license is valid (Legal regulation)
3. Export control classification the license covers (ECCN, USML, EAR99)
4. Country of Origin
5. Departure country
6. Destination country
7. Validity dates
8. External license number
9. End-user (Business partner with function)
10. Total Quantity allowed (if applicable)
11. Total Value allowed (if applicable)

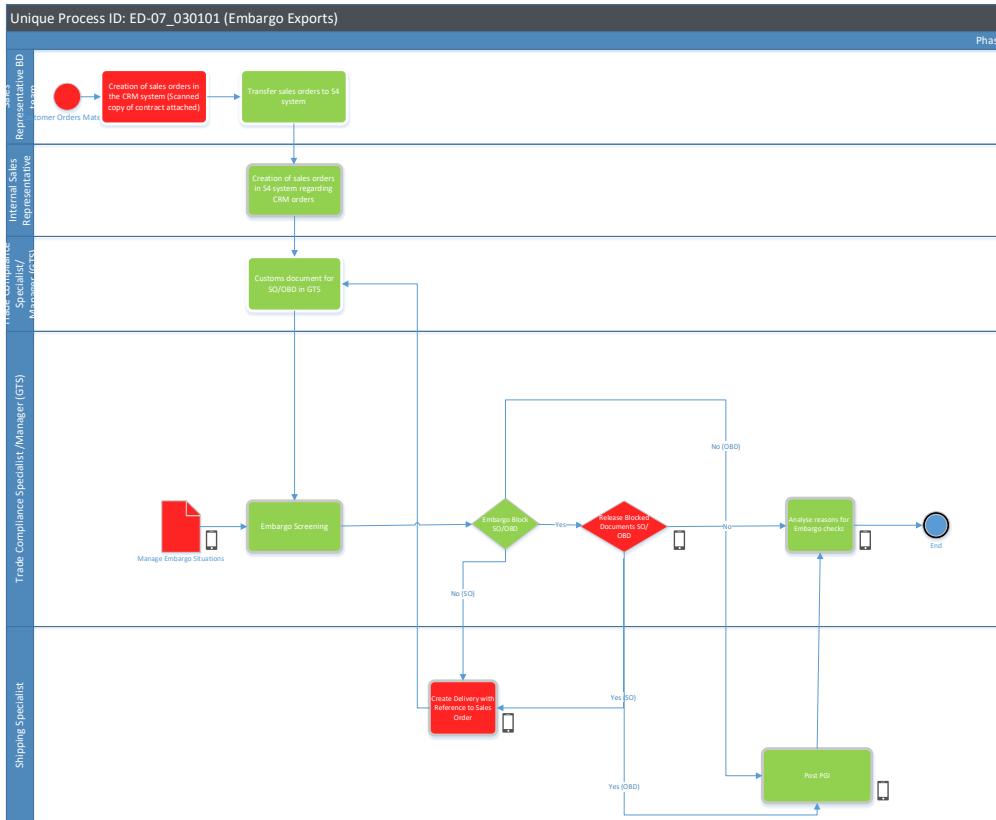
Relevant License master will be enabled to maintain Quantity and/or Value limit, so that Sales transactions will be blocked if transaction exceeds the total limits.

End-use details of the sales transaction will not be maintained in the SAP GTS system and can't be used for determining the license type or license master.

7.2. Process Diagram

7.2.1. Embargo Exports

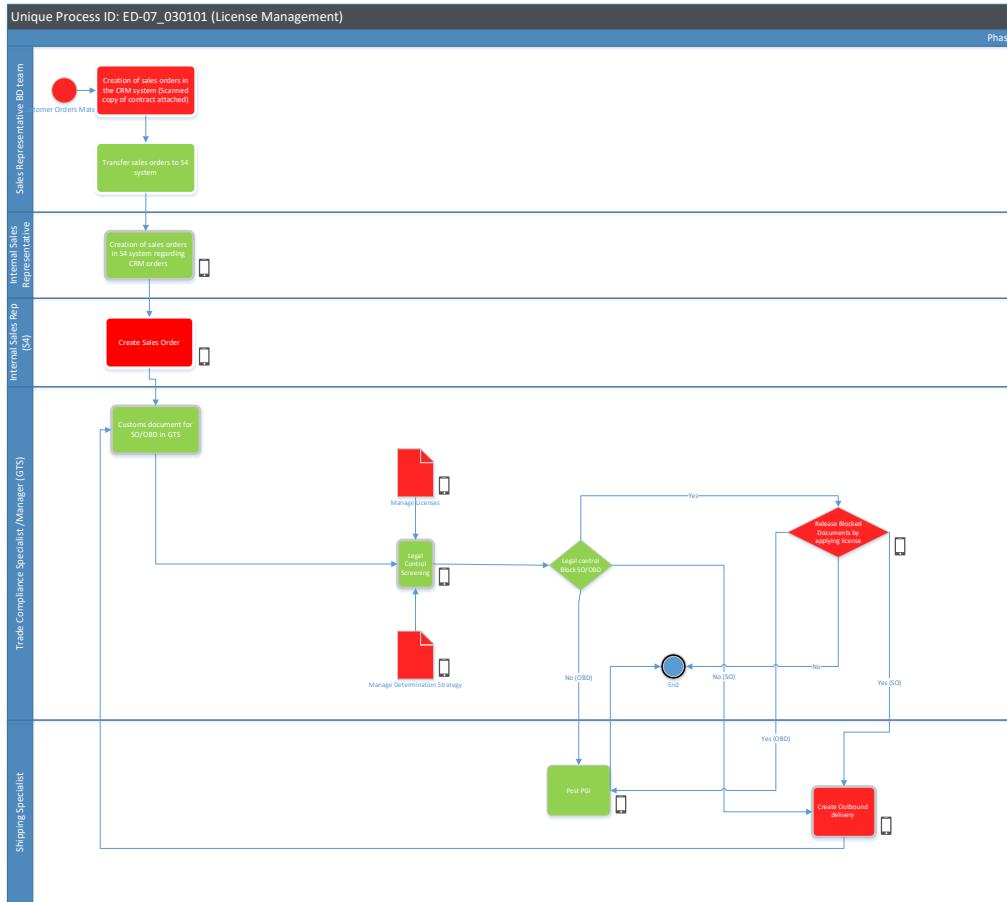
Automatic screening for Embargo Situation is happening based on the departure county and the destination country. All partner functions will be checked for Embargo like Sold to, Ship to, Bill to and Payer.



7.2.2. License Management – Exports

Automatic license determination will be configured, and all the Sales/delivery related customs documents will be blocked for missing license.

Automatic Licence Determination is the master data which needs to maintain in GTS system and to maintain this the criteria are as follows:



License Determination in SAP GTSE:

Legal Regulation + Country of Departure/Destination + Control Code + Grouping + License Type = Licenses

7.2.3. Activity List & Automation

7.2.3.1. Embargo Exports

Process Step ID	BPH ID	Process Step Description	Owner	Automation *	Tcode	Fiori
P100	ED-07_030101	Customer Orders Material	Sales Representative BD team	Partially Manual	N/A	N/A
P200	ED-07_030101	Creation of sales orders in the CRM system (Scanned copy of contract attached)	Sales Representative BD team	Partially Manual	N/A	N/A
P300	ED-07_030101	Transfer sales orders to S4 system	Sales Representative BD team	Fully Automated	N/A	N/A
P400	ED-07_030101	Creation of sales orders in S4 system regarding CRM orders	Internal Sales Representative	Fully Automated	VA01	N/A
P500	ED-07_030101	Customs document for SO/OBD in GTS		Automated		N/A
P600	ED-07_030101	Embargo Screening	Trade Compliance Specialist /Manager (GTS)	Automated		N/A
P700	ED-07_030101	Manage Embargo Situations	Trade Compliance Specialist /Manager (GTS)	Human Triggered		Manage Blocked Documents
P800	ED-07_030101	Embargo Block SO/OBD	Trade Compliance Specialist /Manager (GTS)	Automated		N/A
P900	ED-07_030101	Release Blocked Documents SO/OBD	Trade Compliance Specialist /Manager (GTS)	Human Triggered		Manage Blocked Documents
P1000	ED-07_030101	Create Delivery with Reference to Sales Order	Shipping Specialist	Partially Manual	VL01N	Create Delivery with Reference to Sales Order
P1100	ED-07_030101	Post PGI	Shipping Specialist	Fully Automated	VL01N / VL02N	Create/Change Delivery with Reference to Sales Order
P1200	ED-07_030101	Analyse reasons for Embargo checks	Trade Compliance Specialist /Manager (GTS)	Automated		Analyse Embargo Release Reason

P1300	ED-07_030101	End	Trade Compliance Specialist /Manager (GTS)			N/A
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7.2.3.2. License management - Exports

Process Step ID	BPH ID	Process Step Description	Owner	Automation *	Tcode	Fiori
P100	ED-07_030101	Customer Orders Material	Sales Representative BD team	Partially Manual	N/A	N/A
P200	ED-07_030101	Creation of sales orders in the CRM system (Scanned copy of contract attached)	Sales Representative BD team	Partially Manual	N/A	N/A
P300	ED-07_030101	Transfer sales orders to S4 system	Sales Representative BD team	Fully Automated	N/A	N/A
P400	ED-07_030101	Creation of sales orders in S4 system regarding CRM orders	Internal Sales Representative	Fully Automated	VA01	Create Sales Order
P500	ED-07_030101	Create Sales Order	Internal Sales Rep (S4)	Partially Manual	VA01	Yes
P600	ED-07_030101	Customs document for SO/OBD in GTS	Trade Compliance Specialist /Manager (GTS)	Automated		N/A
P700	ED-07_030101	Legal Control Screening	Trade Compliance Specialist /Manager (GTS)	Automated		N/A
P800	ED-07_030101	Manage Determination Strategy	Trade Compliance Specialist /Manager (GTS)	Partially Manual		Manage Determination Strategy
P900	ED-07_030101	Manage Licenses	Trade Compliance Specialist /Manager (GTS)	Partially Manual		Manage Licenses
P1000	ED-07_030101	Legal control Block SO/OBD	Trade Compliance Specialist /Manager (GTS)	Automated		N/A
P1100	ED-07_030101	Release Blocked Documents by	Trade Compliance Specialist /Manager (GTS)	Human Triggered		Manage Blocked Documents

		applying license				
P1200	ED-07_030101	Create Outbound delivery	Shipping Specialist	Partially Manual	VL01N	Create Delivery with Reference to Sales Order
P1300	ED-07_030101	Post PGI	Shipping Specialist	Fully Automated	VL01N/ VL02N	Create/Change Delivery with Reference to Sales Order
P1400	ED-07_030101	End	Trade Compliance Specialist /Manager (GTS)			N/A

7.3. Manage Exports – Trade Compliance Documentation (ED-07_030102)

7.3.1. Process Description

For exporting goods out of the country, it must be declared to the customs authority and appropriate customs documents must be accompanied during the transport. To help with the process of export declaration, a customs export declaration will be created in GTS automatically when the Proforma Invoice is transferred from S/4HANA. Proforma Invoice is represented as F8 Billing document type in S/4HANA.

The export declaration created contains data from S/4HANA, master data from GTS and data which are defaulted to ensure that the declaration has all the necessary details required for filing with customs authorities.

Required documents by customs:

- Invoice
- Packing list
- Certificate of Origin
- Permit from restriction entities.

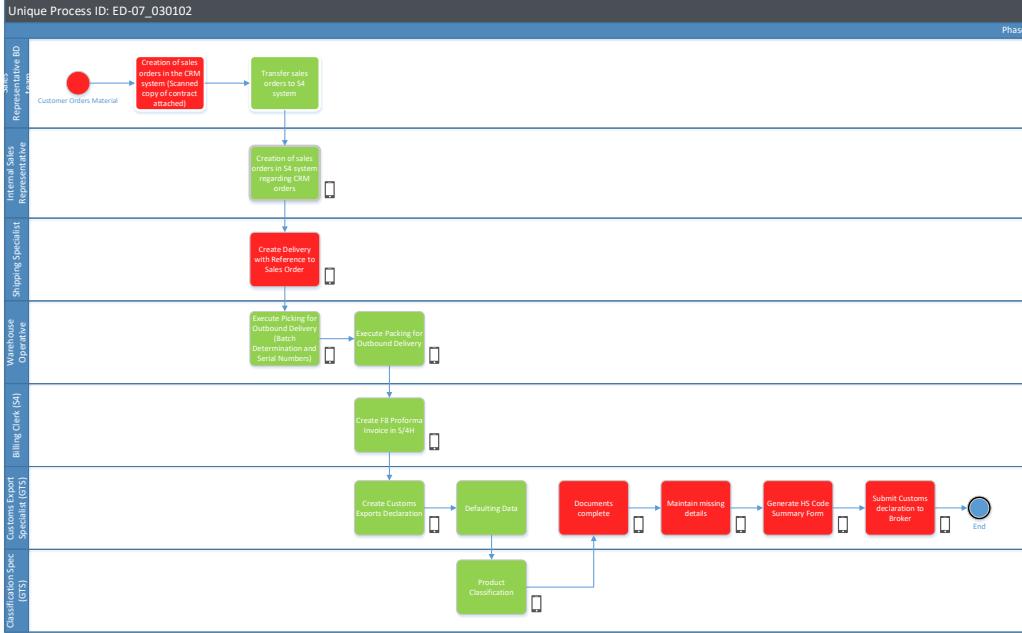
EDGE will use the services of forwarding agent to file the declaration with the customs for exporting goods out of the country.

The details of an individual export declaration will be printed on a new custom developed form in GTS and subsequently PDF of the form will be sent to the forwarding agent by email. Along with this export declaration form, Proforma Invoice and Packing list produced from S/4HANA will also be shared by the customs export specialist. Sometimes these documents could also be uploaded on to a portal provided by the forwarding agent.

EDGE will not consolidate multiple outbound deliveries into a single Proforma Invoice in S/4HANA. This means that each outbound delivery will have a Proforma Invoice in S/4HANA, and an Export Declaration created in GTS.

If there is a need to cancel the customs declaration for exports, the proforma invoice in S/4HANA should be ‘completed’, which would automatically cancel the declaration in GTS. Subsequently, a revised proforma can be created in S/4HANA which would create a new export declaration.

7.3.2. Process Diagram



7.3.3. Activity List & Automation

Process Step	BPH ID	Description	Role	Automation*	Tcode	Fiori
P100	ED-07_030102	Customer Orders Material	Sales Representative BD team	Partially Manual	N/A	N/A
P200	ED-07_030102	Creation of sales orders in the CRM system (Scanned copy of contract attached)	Sales Representative BD team	Partially Manual	N/A	N/A
P300	ED-07_030102	Transfer sales orders to S4 system	Sales Representative BD team	Fully Automated	N/A	N/A
P400	ED-07_030102	Creation of sales orders in S4 system regarding CRM orders	Internal Sales Representative	Fully Automated	VA01	Create Sales Order
P500	ED-07_030102	Create Delivery with Reference to Sales Order	Shipping Specialist	Partially Manual	VL01N	Create Delivery with Reference to Sales Order
P600	ED-07_030102	Execute Picking for Outbound Delivery	Warehouse Operative	Automated		/SCWM/MON

		(Batch Determination and Serial Numbers)				
P700	ED-07_030102	Execute Packing for Outbound Delivery	Warehouse Operative	Automated		/SCWM/RFUI
P800	ED-07_030102	Create Proforma Invoice (F8) in S/4H	Billing Clerk (S4)	Fully Automated	VF01	Yes
P900	ED-07_030102	Create Customs Exports Declaration	Customs Export Specialist (GTS)	Automated		Manage Customs Exports Declaration
P1000	ED-07_030102	Defaulting Data	Customs Export Specialist (GTS)	Fully Automated		N/A
P1100	ED-07_030102	Product Classification	Classification Spec (GTS)	Fully Automated		Classify Product
P1200	ED-07_030102	Documents complete	Customs Export Specialist (GTS)	Partially Manual		Manage Customs Exports Declaration
P1300	ED-07_030102	Maintain missing details	Customs Export Specialist (GTS)	Partially Manual		Manage Customs Exports Declaration
P1400	ED-07_030102	Generate HS Code Summary Form	Customs Export Specialist (GTS)	Partially Manual		Manage Customs Exports Declaration
P1500	ED-07_030102	Submit Customs declaration to Broker	Customs Export Specialist (GTS)	Partially Manual		Manage Customs Exports Declaration
P1600	ED-07_030102	End	Customs Export Specialist (GTS)			N/A

7.4. Manage Product Classification for Legal Control (ED-07_030201)

7.4.1. Process Description

Every product at EDGE that is part of Export and domestic sales, and purchases needs to be classified for Legal control. The corresponding export classification codes follow an internationally agreed upon standard that will make some important determinations such as potential required license or exemptions etc.

Es DGE is sourcing ECCN Classification code from the manufacturer or supplier for procured items. These ECCN codes are required for the Legal control check. These include **ECCN numbers for UAE trade control**, **EAR regulation**, **UK/EU dual-use items** and **USML codes for ITAR regulation**.

US specific ECCN number schemes like CCL and USML will be maintained in the system.

UK, EU and UAE specific ECCN, Military/Dual use number schemes will be maintained in the system.

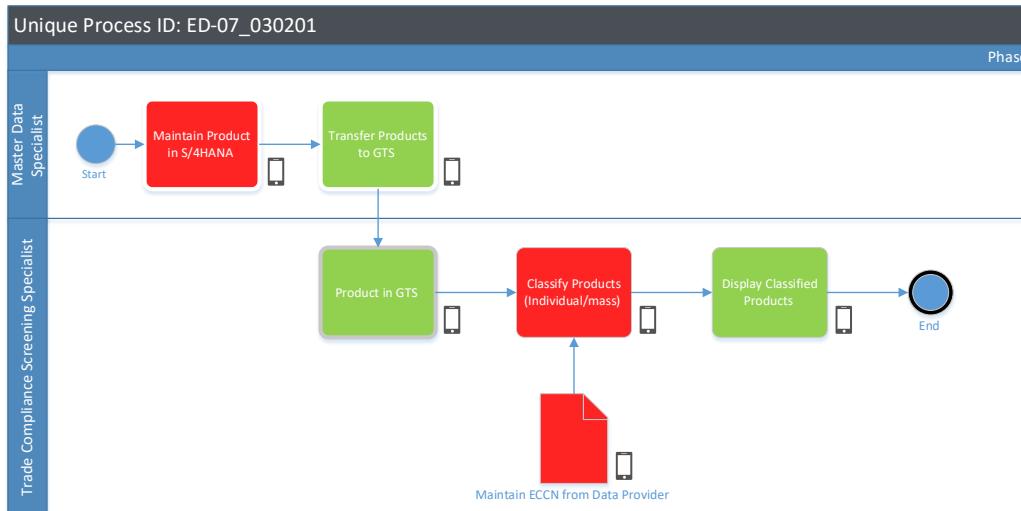
Other numbering schemes which are not part of the above countries/country group will not be maintained in the GTS system.

Based on the numbering schemes identified & configured for each legal regulations, these codes will be uploaded into SAP GTS, so that EDGE users can use the classification tool to assign their products with classification codes.

For US Legal regulations, the product classification for products should be done either for EAR or ITAR Legal regulations. The product should be marked as 'No control' wherever the Legal regulation is not valid

As and when products need to be re-classified based on regulatory changes announced by the governments, products need to be reclassified using reclassification tool periodically.

7.4.2. Process Diagram



7.4.3. Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Owner	Automation *	Tcode	Fiori
P100	ED-07_030201	Start	Master Data Specialist			N/A
P200	ED-07_030201	Maintain Product in S/4HANA	Master Data Specialist	Partially Manual	BP	Manage Partner
P300	ED-07_030201	Transfer Products to GTS	Master Data Specialist	Fully Automated		Batch Job

P400	ED-07_030201	Product in GTS	Trade Compliance Screening Specialist	Fully Automated		Manage Product
P500	ED-07_030201	Classify Products (Individual/mass)	Trade Compliance Screening Specialist	Human Triggered		Classify Products – Legal Control
P600	ED-07_030201	Maintain ECCN from Data Provider	Trade Compliance Screening Specialist	Partially Manual		Manage Control Classes
P700	ED-07_030201	Display Classified Products	Trade Compliance Screening Specialist	Fully Automated		Manage Control Classes
P800	ED-07_030201	End	Trade Compliance Screening Specialist			N/A

7.5. Execute SPL Screening (ED-07_030103)

7.5.1. Process Description

EDGE must comply with the Denied Party list issued by various authorities like UN Sanctions list, UAE denied parties list, etc.

EDGE must screen their Business Partners like Customer's against the Denied party list's address.

EDGE to screen the Business Partners periodically, whenever a new Business partner is created and whenever there is a change in SPL data.

In EDGE, the scope for check for SPL check will include all the export and domestic sales transactions.

To fulfil the above requirements, one Legal regulation will be configured for SPL screening.

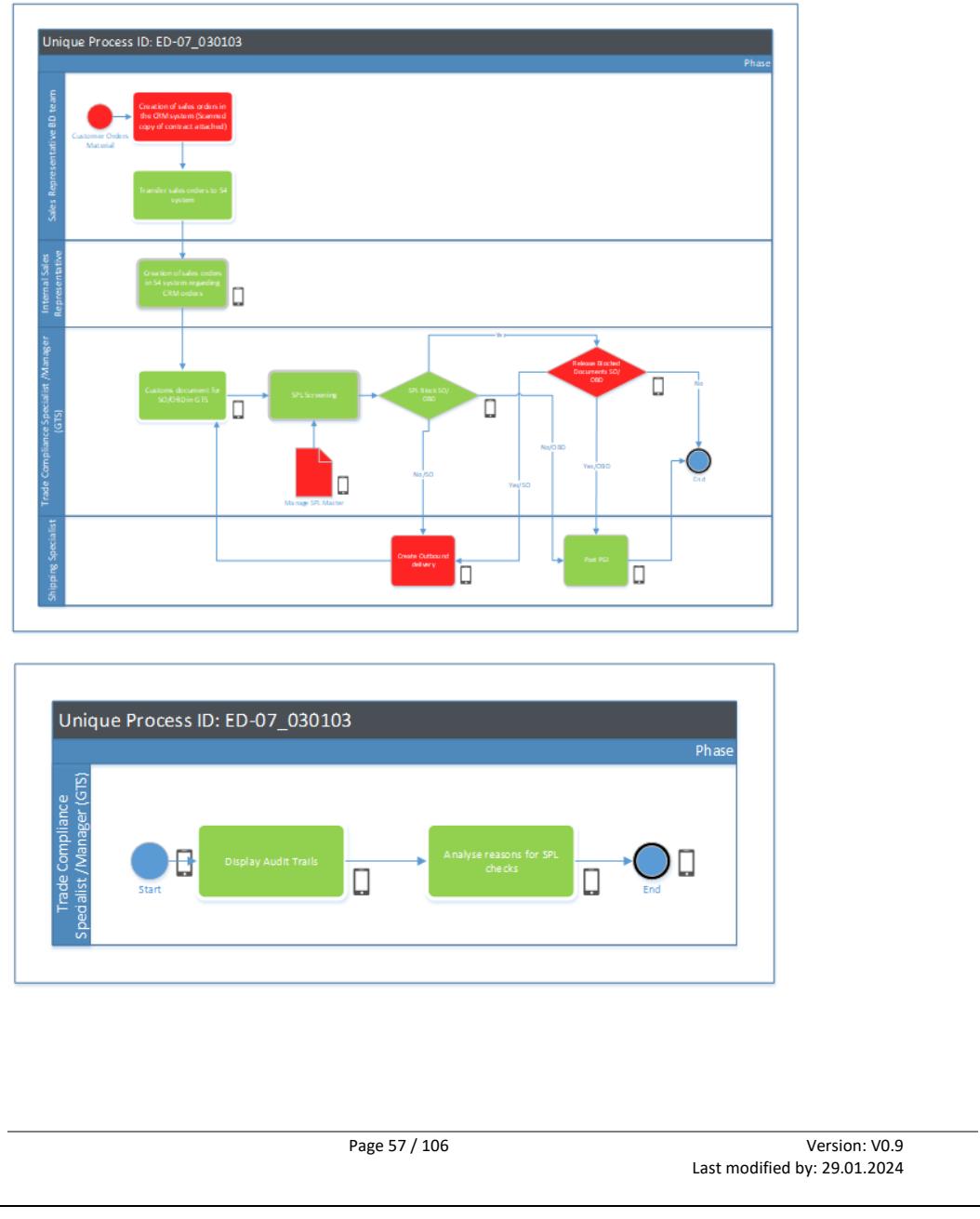
For P2 in EDGE program, the following business process steps are considered for the implementation of the Sanction party list screening.

Process steps:

1. Sales Order:
 - Create/Change a Sales Order.
 - Complete the Sales order with necessary details.
 - Save the Sales order Purchase Order.
 - Sales order is created in the S/4HANA system and gets transferred to the GTSE4H system.
2. Customs document:
 - The system uses the SO information to create a Customs document in GTS system as a replicate.
 - Custom Document is created in GTSE4H system.
3. SPL Screening in GTSE4H:
 - The system runs SPL screening of the Business Partner (maintained as partner functions) addressed in the document
 - A document block is triggered by a match between an entity in SPL list and BP data in the document.
4. Sales order blocked in S/4HANA system:
 - If SPL block exists, the Sales order is blocked for further processing.
 - Notify User of the blocked document
 - Sales order is blocked in S/4HANA system.
5. Manage Blocked Documents in GTSE4H:
 - Review of blocked documents
 - Release blocked document if the review reveals that the system block is inappropriate.
 - The system updates the audit trail for each of these releases.
 - Enter comments to justify the reason for releasing the document.
 - Business decision taken whether the document is to be released or stays in blocked status.
6. Further processing in S/4HANA:
 - The Sales order / Sub-contracting Purchase Order is released from SPL block for further processing.

- Sales order / Sub-contracting Purchase Order ready for subsequent steps like Outbound delivery, pick, pack, etc.
7. Outbound delivery:
- Create/Change an Outbound delivery.
 - Complete the Outbound delivery with necessary details.
 - Save the Outbound delivery.
 - Outbound delivery is created in the S/4HANA system and gets transferred to the GTSE4H system.
8. Customs document:
- The system uses the Outbound delivery information to create a Customs document in GTS system as a replicate.
 - Custom Document is created in GTSE4H system.
9. SPL Screening in GTSE4H:
- The system runs SPL screening of the Business Partner (maintained as partner functions) address in the document.
 - A document block is triggered by a match between an entity in SPL list and BP data in the document.
10. Outbound delivery blocked in S/4HANA system:
- If SPL block exists, the Outbound delivery is blocked for further processing.
 - Notify User of the blocked document
 - Outbound delivery is blocked in S/4HANA system.
11. Manage Blocked Documents in GTSE4H:
- Review of blocked documents
 - Release blocked document if the review reveals that the system block is inappropriate.
 - The system updates the audit trail for each of these releases.
 - Enter comments to justify the reason for releasing the document.
 - Business decision taken whether the document is to be released or stays in blocked status.
12. Further processing in S/4HANA
- The Outbound delivery is released from SPL block for further processing.
 - Outbound delivery ready for subsequent steps like Post Goods Issue etc..

7.5.2. Process Diagram



7.5.3. Activity List & Automation

SPL check process:

Process Step ID	BPH ID	Process Step Description	Owner	Automation *	Tcode	Fiori
P100	ED-07_030103	Customer Orders Material	Sales Representative BD team	Partially Manual	N/A	N/A
P200	ED-07_030103	Creation of sales orders in the CRM system (Scanned copy of contract attached)	Sales Representative BD team	Partially Manual	N/A	N/A
P300	ED-07_030103	Transfer sales orders to S4 system	Sales Representative BD team	Fully Automated	N/A	N/A
P400	ED-07_030103	Creation of sales orders in S4 system regarding CRM orders	Internal Sales Representative	Fully Automated	VA01	Create Sales Order
P500	ED-07_030103	Customs document for SO/OBD in GTS	Trade Compliance Specialist /Manager (GTS)	Fully Automated		Manage Blocked Document
P600	ED-07_030103	SPL Screening	Trade Compliance Specialist /Manager (GTS)	Fully Automated		N/A
P700	ED-07_030103	Manage SPL Master	Trade Compliance Specialist /Manager (GTS)	Partially Manual		Manage Blocked Partners
P800	ED-07_030103	SPL Block SO/OBD	Trade Compliance Specialist /Manager (GTS)	Automated		Manage Blocked Document
P900	ED-07_030103	Release Blocked Documents SO/OBD	Trade Compliance Specialist /Manager (GTS)	Human Triggered		Manage Blocked Document
P1000	ED-07_030103	Create Outbound delivery	Shipping Specialist	Partially Manual	VL01N	Create Delivery with Reference to Sales Order
P1100	ED-07_030103	Post PGI	Shipping Specialist	Fully Automated	VL01N / VL02N	Create/Change Delivery with Reference to Sales Order
P1200	ED-07_030103	End	Trade Compliance Specialist /Manager (GTS)			N/A

Audit Trails:

Process Step ID	BPH ID	Process Step Description	Owner	Automation*	Tcode	Fiori
P100	ED-07_030103	Start	Trade Compliance Specialist /Manager (GTS)			N/A
P200	ED-07_030103	Display Audit Trails	Trade Compliance Specialist /Manager (GTS)	Automated		Display Audit Trail Document s
P300	ED-07_030103	Analyse reasons for SPL checks	Trade Compliance Specialist /Manager (GTS)	Automated		Display Audit Trail Document s
P400	ED-07_030103	End	Trade Compliance Specialist /Manager (GTS)			N/A

7.6. Manage product HS code classification for customs processing (ED-07_030202)

7.6.1. Process Description

At the time of declaring imports and exports to the customs authorities, each product should have a valid HS Code (customs tariff number and commodity code). For imports, customs tariff numbers are used by the customs authorities to calculate duties for the products.

Customs tariff numbers and commodity codes will be obtained periodically from an approved and EDGE contracted data provider using XML files and subsequently uploaded in the GTS system using standard Fiori App.

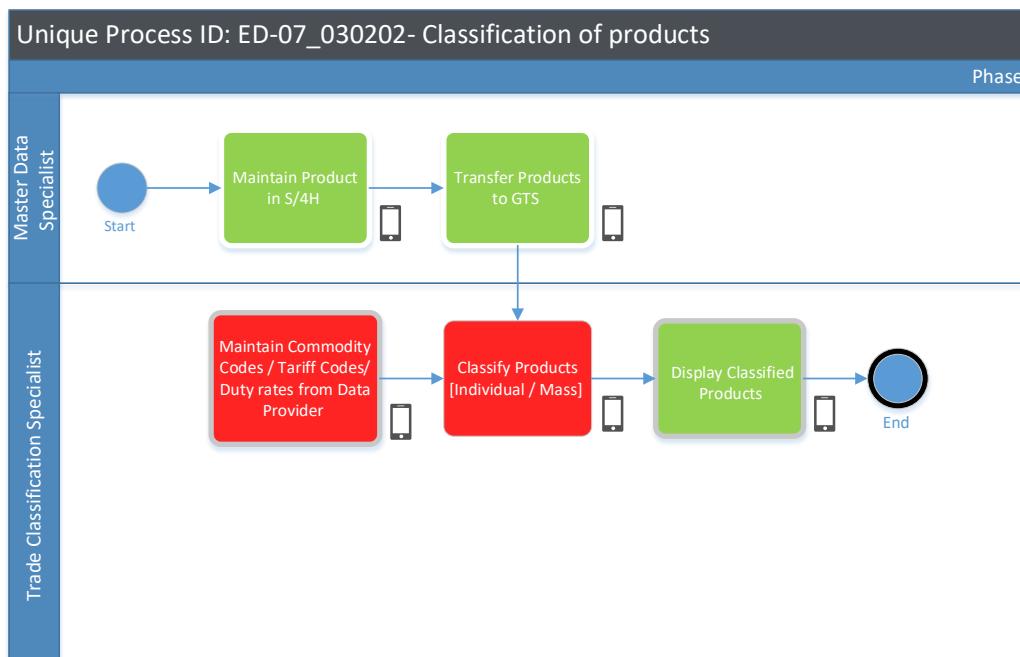
Once the products are transferred from SAP S/4HANA system to GTS, these need to be classified for customs tariff number and commodity code using mass classification.

Two numbering schemes will be configured in Customs for HTS codes (Commodity codes for exports and Tariff codes for imports).

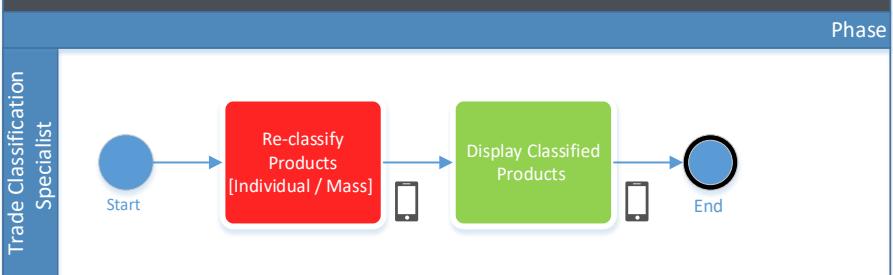
As and when products need to be re-classified based on regulatory changes announced by the governments, products need to be reclassified using reclassification tool periodically.

These HS codes are planned to be transferred to S/4HANA for usage on reports and forms built on S/4HANA.

7.6.2. Process Diagram



Unique Process ID: ED-07_030202- Re-Classification of products



7.6.3. Activity List & Automation

7.6.3.1. Classification of Products:

Process Step	BPH ID	Description	Role	Automation*	Tcode	Fiori
P100	ED-07_030202	Start	Master Data Specialist			N/A
P200	ED-07_030202	Maintain Product in S/4H	Master Data Specialist	Fully Automated	MM01	Maintain Product
P300	ED-07_030202	Transfer Products to GTS	Master Data Specialist	Fully Automated	Background job	Batch Job
P400	ED-07_030202	Maintain Commodity Codes / Tariff Codes/ Duty rates from Data Provider	Trade Classification Specialist	Human Triggered		Manage Commodity Codes
P500	ED-07_030202	Classify Products [Individual / Mass]	Trade Classification Specialist	Partially Manual		Classify Products
P600	ED-07_030202	Display Classified Products	Trade Classification Specialist	Automated		Display Classified Products
P700	ED-07_030202	End	Trade Classification Specialist			N/A

* Options: Automated, Automated (WRICEF), Manual or Non-System

7.6.3.2. Re-Classification of Products:

Process Step	BPH ID	Description	Role	Automation*	Tcode	Fiori
P100	ED-07_030202	Start	Trade Classification Specialist			N/A
P200	ED-07_030202	Re-classify Products [Individual / Mass]	Trade Classification Specialist	Partially Manual		Re-classify Products

P300	ED-07_030202	Display Classified Products	Trade Classification Specialist	Automated		Display Classified Products
P400	ED-07_030202	End	Trade Classification Specialist			N/A

^{*)} Options: Automated, Automated (WRICEF), Manual or Non-System

8. DETAILED SOLUTION DESIGN

8.1. Solution Prerequisites

8.1.1. Company Code and plant relevant for SAP GTS

All Company Codes and plants are relevant for compliance check. FTO (Foreign Trade Organization) will be created in SAP GTS as FTO_AEXXXX, where XXXX represents the Company code in S/4HANA and Legal unit in SAP GTS will be created as LU_AEYYYY, where YYYY represents the Plant code in S/4HANA. Legal unit is created as a Business Partner with BP Role SLLSIT

8.1.2. Document Types and item Categories relevant for SAP GTS

All SAP S4-HANA 'Document Types' and 'Item Categories' that require SAP GTS compliance screening and customs processing are mapped in GTS system.

Hyper link to relevant document access:

8.1.3. Mapping of Doc Types & Item Cat from S/4HANA to SAP GTS

- Sales Documents Type from Feeder system group are mapped to GTS document types

SDOA: Dispatch/Export: Sales Document	
Doc Type in S/4HANA	Doc Type in SAP GTS
ZORE-EDGE Standard Order	ZEXORD
ZOLP-EDGE Scheduling Agreement	ZEXORD
ZOCQ-EDGE Standard Contract	ZEXORD
ZOSD-EDGE FoC Order	ZEXORD
ZERE-EDGE Returns	ZEXORD
ZOWV-EDGE Service and Maint.	ZEXORD
ZSCR-EDGE Scrap Order	ZEXORD

SDOB: Dispatch/Export: Outbound Delivery	
Doc Type in S/4HANA	Doc Type in SAP GTS
ZELF - EDGE OB Delivery	ZEXDLV - Customs Doc Delivery
ZENL - EDGE Replen. Dlv.	ZEXDLV - Customs Doc Delivery
ZNLC - EDGE Replen. Cr-Comp.	ZEXDLV - Customs Doc Delivery

- Item Categories from Feeder system group are mapped to Item categories in SAP GTS

SDOA: Dispatch/Export: Sales Document

Doc Item Cat in S/4HANA	Doc Item Cat in SAP GTS
ZTAN - EDGE Standard Item	EXORD1
ZLPN - EDGE Sched.Ag Itm	EXORD1
ZDLN - EDGE Std Itm w/o Ord	EXORD1
ZKLN - EDGE FoC Item	EXORD1
ZKLX - EDGE sub. del. foc	EXORD1
ZTAS - EDGE Third Party Itm	EXORD1
ZWKN - Value Contract Item	EXORD2

SDOB: Dispatch/Export: Outbound Delivery

Doc Item Cat in S/4HANA	Doc Item Cat in SAP GTS
ZTAN - EDGE Standard Item	EXDLV1
ZDLN - EDGE Std Itm w/o Ord	EXDLV1
ZKLX - EDGE sub. del. foc	EXDLV1
ZLPN - EDGE Sched.Ag Itm	EXDLV1
ZNLC - EDGE InrCo Stk Tr.it	EXDLV1
ZNLN - EDGE StdStk TrsItem	EXDLV1
ZTNN - EDGE Item PoD Diff	EXDLV1

Note: For more detailed mapping, please refer the **GTS_KDS_D2S** sheets from 19 -22

8.2. SPL, Embargo and Legal Control Screening

The legal regulation setup for Sanction Party, Embargo and Legal Control screening is required to screen the documents in SAP GTS system.

8.3. License Checks

The export license checks in the GTS system. To ensure that license checks can be carried out for all the relevant scenarios, the system must have legal regulations in place the applicable license or exemption types defined for export license checks.

License will be checked as per the license determination strategy maintained in the GTS system, if the license determination strategy is not maintained then system will not assign license to the transaction automatically and the document will go into the blocked document list.

Product must be classified for license check it is also required to the license assignment, all the required partners country of departure and destination, control classes, these are required for license checks.

8.3.1. License Determination are:

Legal Regulation + Country of Departure/Destination + Control Code + Grouping + License Type = Licenses

8.4. Partner Groups for GTS Compliance and Customs Checks

The Partner group defined for each legal regulation is used to determine the destination country for export license validity. GTS will check the partner functions in the order they are assigned in the partner group and take the destination country from the first partner function which exists both in the partner group and the sales document being checked for licensing.

Partner Group for GTS:

Partner Function	Description
ZSPL1	Partner Group for "Sanctioned Party List" Service - Import
ZSPL2	Partner Group for "Sanctioned Party List" Service - Export
ZSPL2	Partner Group for "Sanctioned Party List" Service - Export
ZSPL2	Partner Group for "Sanctioned Party List" Service - Export
ZSPL2	Partner Group for "Sanctioned Party List" Service - Export
ZEMB2	Partner Group for "Embargo" Service - Export
ZEMB2	Partner Group for "Embargo" Service - Export
ZEMB2	Partner Group for "Embargo" Service - Export
ZEMB2	Partner Group for "Embargo" Service - Export
ZLDT2	Partner Group for "License Determination" Service - Export
ZLDT2	Partner Group for "License Determination" Service - Export
ZLDT2	Partner Group for "License Determination" Service - Export
ZPGEAE	Partner Group for Customs Exports - UAE
ZPGEAE	Partner Group for Customs Exports - UAE
ZPGEAE	Partner Group for Customs Exports - UAE
ZPGEAE	Partner Group for Customs Exports - UAE
ZPGEAE	Partner Group for Customs Exports - UAE

ZPGEAE	Partner Group for Customs Exports - UAE
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Note: for more mapping/assignment details, Please refer **GTS_KDS_DTS 10,11 & 12** sheets.

8.4.1. Process predecessor and successor

RFC setup is required between S/4 and GTS, and all the relevant master data should be transferred to GTS system from S/4.

8.4.2. Master data prerequisites

8.4.2.1. Define Foreign Trade Organization

Foreign trade organizations are the counterpart to company codes in your SAP feeder system, such as SAP ERP. The outline level beneath the foreign trade organization contains legal units, which reflect plants or combinations of plants and warehouses in an SAP ERP system. Defining the organizational structure is a prerequisite for transferring master data from your feeder system. Foreign trade organizations is defined as the highest organizational unit in the organizational structure for GTS. This is created as a Business Partner with the Role 'SLLFTO'.

8.4.2.2. Define Legal Units

The legal units divide your company into subareas. This corresponds to the concept of plants and storage locations in SAP S/4HANA. The legal unit is required for the services in Customs Management of SAP Global Trade Services. This definition is optional for Compliance Management. Legal unit is created as a Business Partner with BP Role SLLSIT.

8.4.2.3. Business Partners

Business partners include customers, vendors, and data provider needs to be transferred to the GTS system.

8.4.2.4. Products

All the materials need to be transferred to the GTS system and the relevant product is created in the GTS system.

8.4.2.5. Content Provider files

All the files are required to upload to the system which we are getting from the content provider e.g.: SPL file, ECCN/ICCE numbers, HS Codes and Commodity codes.

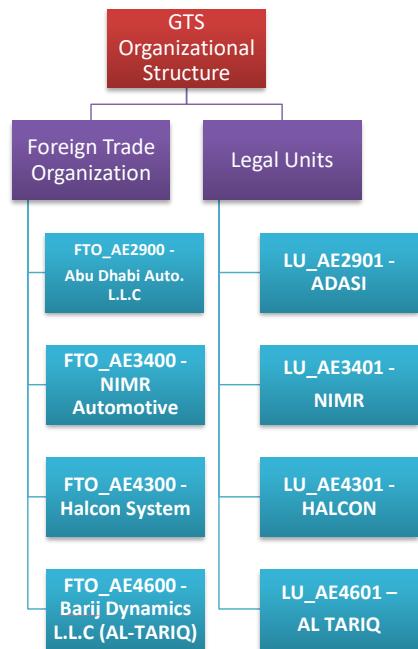
Below mentioned are the list of the files which are getting from the content provider.

- SPL files (Global and UAE specific)
- Embargo details (Global and UAE specific)
- ECCN codes (US and UAE specific), CCL & USML (US specific)
- HS Codes (UAE specific)
- Tariff codes (UAE specific)
- Duty rates
- Denied Parties Screening tool.

8.4.3. Organizational structure requirements

8.4.3.1. GTS Organization Structure for P2 Entities

Figure 2: GTS Organization Structure for P2 Entities



8.5. Detailed Solution Design

8.5.1. Manage embargo block documents (Embargo Screening); Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Block/Display Documents	Customs document for SO/OBD in GTS	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Block Documents	Embargo Screening	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Embargo Situations	Manage Embargo Situations	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Display Documents – Compliance Management	Embargo Block SO/OBD	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Licenses	Release Blocked Documents SO/OBD	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Block/Display Documents	Legal Control Screening	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Determination Strategy	Manage Determination Strategy	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Licenses	Manage Licenses	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Block Documents	Legal control Block SO/OBD	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Block Documents	Release Blocked Documents by applying license	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS

9. MANAGE EXPORTS – TRADE COMPLIANCE DOCUMENTATION

9.1.1. Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Sales Order	Create Sales Document in S/4H	Tab / Desktop	Internal Sales Rep	S4HANA
Manage Delivery	Create Outbound Delivery Document in S/4H	Tab / Desktop	Warehousing Clerk	S4HANA
Manage Billing	Create F8 Proforma Invoice in S/4H	Tab / Desktop	Billing Clerk	S4HANA
Manage Export Declarations	Create Customs Exports Declaration	Tab / Desktop	Customs Export Specialist	GTS
Manage Export Declarations	Defaulting Data	Tab / Desktop	Customs Export Specialist	GTS
Manage Export Declarations	Product Classification	Tab / Desktop	Classification Spec	GTS
Manage Export Declaration	Documents complete	Tab / Desktop	Customs Export Specialist	GTS
Manage Export Declaration	Maintain missing details	Tab / Desktop	Customs Export Specialist	GTS
Manage Export Declaration	Submit Customs declaration to Broker	Tab / Desktop	Customs Export Specialist	GTS

9.1.2. Execute SPL Screening; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Block Documents	SPL Screening	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
Manage Block Partners	Manage SPL Master	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS

Manage Block Documents	Release Blocked Documents SO/OBD	Tab / Desktop	Trade Compliance Specialist /Manager (GTS)	GTS
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9.1.3. Manage product export classification for legal control; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
MM01	Maintain Product in S/4HANA	Tab / Desktop	Master Data Specialist	S4HANA
Batch job	Transfer Products to GTS	Tab / Desktop	Batch job	S4HANA
Manage Product	Product in GTS	Tab / Desktop	Trade Compliance Screening Specialist	GTS
Classify Product – Legal Control	Classify Products (Individual/mass)	Tab / Desktop	Trade Compliance Screening Specialist	GTS
Classify Product – Legal Control	Maintain ECCN from Data Provider	Tab / Desktop	Trade Compliance Screening Specialist	GTS
Display Classified Products – Legal Control	Display Classified Products	Tab / Desktop	Trade Compliance Screening Specialist	GTS

9.1.4. Manage product HS code classification for customs processing; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
MM01	Maintain Product in S/4H	Tab / Desktop	Master Data Specialist	S4HANA
Batch job	Transfer Products to GTS	Tab / Desktop	Batch job	S4HANA
Manage Commodity Codes / Manage Tariff Numbers	Maintain Commodity Codes / Tariff Codes/ Duty rates from Data Provider	Tab / Desktop	Trade Classification Specialist	GTS

Classify Products	Classify Products [Individual / Mass]	Tab / Desktop	Trade Classification Specialist	GTS
Display Classified Products	Display Classified Products	Tab / Desktop	Trade Classification Specialist	GTS
Reclassify Products Manually	Re-classify Products [Individual / Mass]	Tab / Desktop	Trade Classification Specialist	GTS
Display Classified Products	Display Classified Products	Tab / Desktop	Trade Classification Specialist	GTS

10. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

10.1. Role/Skill Class Inventory

Role	Description	Tasks
Trade Compliance specialist (SAP_BR_SCRNG_SPCLST_LLS)	The Trade Classification Specialist is responsible for the correct classification of products.	Among other things, the Trade Classification Specialist is responsible for the following tasks: <ol style="list-style-type: none">1. Ensuring the classification of products in proper form2. Updating classifications for the event that an import- or export procedure cannot be completed3. Proactively classifies the products transferred to the GTS system4. Monitors and updates product classification in the event of legal changes5. In the event of classification questions, contacts the national authority6. Regularly checks and improves the quality of Existing classifications7. Is available to answer questions on the subject of classification
Trade Compliance Specialist – Screening (SAP_BR_SCRNG_SPCLST_LLS)	The Trade Compliance Specialist – Screening is responsible for checking and screening business partners and documents. He or she ensures that the business partner and transactional documents conform to the rules.	Among other things, the Trade Compliance Specialist – Screening is responsible for the following tasks: <ol style="list-style-type: none">1. Ensures that all relevant names and addresses are compared with current embargo lists and sanctions lists2. Checks business partners and documents in a timely manner3. Prioritizes and makes comment on hits4. Supports auditors and the auditing process5. Ensures that no business relationships are entered into with persons or enterprises on a sanctions list
Trade Classification Specialist (SAP_BR_CLSFCTN_SPCLST_LL_S)	The Trade Classification Specialist is responsible for the correct classification of products.	Among other things, the Trade Classification Specialist is responsible for the following tasks: <ol style="list-style-type: none">1. Ensuring the classification of products in proper form2. Updating classifications for the event that an import- or export procedure cannot be completed3. Proactively classifies the products transferred to the GTS system4. Monitors and updates product classification in the event of legal changes5. In the event of classification questions, contacts the national authority6. Regularly checks and improves the quality of Existing classifications7. Is available to answer questions on the subject of classification

Customs Export Specialist (SAP_BR_EXPORT_SPCLST_LLS)	<p>The Customs Export Specialist is responsible for processing export processes and creates and monitors export declarations and transit declarations.</p>	<p>Among other things, the Customs Export Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Managing export declarations and transit declarations 2. Monitoring overdue exit confirmations and transit confirmations 3. Managing the creation of supplementary customs declarations 4. Managing required licenses in the export and transit areas 5. Managing required securities in the transit area 6. Processing master data for declarations such as the following: <ul style="list-style-type: none"> - Code lists - Customs offices - Geographical details - Default data 7. Creating reports for audits or for the business area
Trade Compliance Manager (SAP_BR_CMPLNC_MANAGER _LLS)	<p>The Trade Compliance Manager is responsible for compliance with legal guidelines.</p> <p>He or she ensures that all intra-enterprise processes and procedures are in accordance with valid regulations and laws.</p>	<p>Among other things, the Trade Compliance Manager is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Streamlining compliance processes 2. Monitoring the number of blocked objects 3. Ensuring that trade is maintained to avoid contractual penalties, financial losses, and delays in delivery 4. Ensures that his or her enterprise's worldwide trade conforms to statutory regulations
Customs Special Procedure Specialist (SAP_BR_SP_PROCED_SPCLST _LLS)	<p>The Customs Special Procedure Specialist is responsible for processing the following procedures:</p> <ul style="list-style-type: none"> - Inward processing - Outward processing - Processing under customs control - Prescribed end use - China Processing Trade - US Foreign-Trade Zone <p>The Customs Special Procedure Specialist creates and monitors the following:</p> <ul style="list-style-type: none"> - Stocks - Bills - Authorizations - Special processes in customs procedures - Bills of material and product descriptions in procedures 	<p>Among other things, the Customs Special Procedure Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Creating and monitoring customs import declarations according to special customs procedures 2. Posting inventories for the procedure and monitoring inventory management 3. Creating and monitoring bills 4. Managing the creation of supplementary customs declarations 5. Managing required authorizations for special customs procedures 6. Processing master data for declarations such as the following: <ul style="list-style-type: none"> - Code lists - Customs offices - Geographical details - Default data 7. Carrying out special processes, such as stock transfers, undefined goods movements, or scrapping 8. Managing product-based data such as bills of material or product descriptions for the procedure

		9. Creating reports for audits or for the business area
EMCS Specialist (SAP_BR_EMCS_SPCLST_LLS)	The EMCS Specialist is responsible for checking goods movements subject to excise duties.	<p>Among other things, the EMCS Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Creating administrative documents 2. Checking administrative documents for correctness 3. Sending administrative documents electronically to an authority 4. Deals with particulars concerning the transport of goods, for example: <ul style="list-style-type: none"> - Fallback procedures - Rejections - Returns - Change of destination
Intrastat Specialist (SAP_BR_INTRASTAT_SPCLST_LLS)	The Intrastat Specialist is responsible for the creation of Intrastat declarations.	<p>Among other things, the Intrastat Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Creating Intrastat declarations 2. Checking Intrastat declarations for correctness and completeness 3. Creating declaration files for Intrastat

10.2. Security roles as per process design

GTS have specific roles which is already mapped in the activity list. Custom business catalogue has been created and provided to basis for user role assignment respect to authorisation object.

Sr. No	Business User Role	Technical Role	Description	Tasks
1	Trade Classification Specialist	SAP_BR_CLSFCTN_SPCLST_LLS	The Trade Classification Specialist is responsible for the correct classification of products.	<p>Among other things, the Trade Classification Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Ensuring the classification of products in proper form 2. Updating classifications for the event that an import- or export procedure cannot be completed 3. Proactively classifies the products transferred to the GTS system 4. Monitors and updates product classification in the event of legal changes 5. In the event of classification questions, contacts the national authority 6. Regularly checks and improves the quality of Existing classifications
2	Trade Compliance Manager	SAP_BR_CMPLNC_MANAGER_LLS	The Trade Compliance Manager is responsible for compliance with legal guidelines. He or she ensures that all	<p>Among other things, the Trade Compliance Manager is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Streamlining compliance processes 2. Monitoring the number of blocked objects

			<p>intra-enterprise processes and procedures are in accordance with valid regulations and laws.</p>	<p>3. Ensuring that trade is maintained to avoid contractual penalties, financial losses, and delays in delivery</p> <p>4. Ensures that his or her enterprise's worldwide trade conforms to statutory regulations</p>
3	Trade Compliance Specialist	SAP_BR_CMPLNC_SPCLST_LLS	<p>The Trade Compliance Specialist is responsible for import-and export processes.</p> <p>He or she ensures that all import-and export processes and procedures are in accordance with valid regulations and laws.</p>	<p>Among other things, the Trade Compliance Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Ensuring that import-and export processes run friction-free 2. Ensures that import- and export regulations are adhered to, to avoid contractual penalties, financial losses, and delays in delivery 3. Monitors legal changes and updates import-and export control policies 4. Monitors the results of compliance checks on documents 5. Decides if blocked documents can be released 6. Creates import-and export licenses in the system and assigns them to blocked documents in a timely manner
4	Trade Compliance Specialist - Screening	SAP_BR_SCRNG_SPCLST_LLS	<p>The Trade Compliance Specialist – Screening is responsible for checking and screening business partners and documents.</p> <p>He or she ensures that the business partner and transactional documents conform to the rules.</p>	<p>Among other things, the Trade Compliance Specialist - Screening is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Ensures that all relevant names and addresses are compared with current embargo lists and sanctions lists 2. Checks business partners and documents in a timely manner 3. Prioritizes and makes comment on hits 4. Supports auditors and the auditing process 5. Ensures that no business relationships are entered into with persons or enterprises on a sanctions list
5	Customs Export Specialist	SAP_BR_EXPORT_SPCLST_LLS	<p>The Customs Export Specialist is responsible for processing export processes and creates and monitors export declarations and transit declarations.</p>	<p>Among other things, the Customs Export Specialist is responsible for the following tasks:</p> <ol style="list-style-type: none"> 1. Managing export declarations and transit declarations 2. Monitoring overdue exit confirmations and transit confirmations 3. Managing the creation of supplementary customs declarations 4. Managing required licenses in the export and transit areas 5. Managing required securities in the transit area 6. Processing master data for declarations such as the following: <ul style="list-style-type: none"> - Code lists - Customs offices - Geographical details

				<ul style="list-style-type: none">- Default data7. Creating reports for audits or for the business area
6	Customs Import Specialist	SAP_BR_IMPORT_SPCLST_LLS	<p>The Customs Import Specialist is responsible for processing import processes and monitors the following:</p> <ul style="list-style-type: none">- Presentations- Transit declarations- Customs invoices- Customs waybills- Import declarations- Supplementary customs declarations- Tax statements	<p>Among other things, the Customs Import Specialist is responsible for the following tasks:</p> <ul style="list-style-type: none">1. Creating and monitoring customs import declarations, transit declarations, and presentations2. Managing additional documents, such as customs invoices and customs waybills3. Managing the creation of supplementary customs declarations4. Managing tax statements5. Managing required licenses in the import, transit, and presentation areas6. Managing the required securities in the transit area7. Processing master data for declarations such as the following:<ul style="list-style-type: none">- Code lists- Customs offices- Geographical details- Default data8. Creating reports for audits or for the business area

Note: BC must reach out to Business to figure out the required role which can be mapped in SAP.

11. PROCESS FITNESS & GAP ANALYSIS

11.1. Process Variation (legal, geographical or business-led)

NA

11.1.1. Sub-Process Variation

NA

11.1.1.1. Business Unit Level

All the business processes are harmonized across ADASI/AL TARIQ/HALCON/NIMR entities.

11.1.1.2. Geography/Legal Entity Led

All the business processes will be as per the requirement of ADASI/AL TARIQ/HALCON/NIMR entities. The legal entity will be as per UAE rules.

11.2. GAP Register

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req. id. (GAP ID)
UAE	Transfer COO from S/4HANA to GTS for Export customs declaration	N/A	H		WRICEF_D2S_065_E	GAP_D2S_P2_053
UAE	Trade compliance on Invoice. RICEFW to enable the Invoice form printing with trade compliance related information	N/A	H		WRICEF_D2S_P2_59	GAP_D2S_P2_054
UAE	Automatic update of SPL lists from EDGE's data provider	N/A	H		WRICEF_D2S_060_E	GAP_D2S_P2_055
UAE	Automatic update of SPL lists from EDGE's data provider	N/A	H		WRICEF_D2S_060A_I	GAP_D2S_P2_055
UAE	RFC enabled custom Function	N/A	H		WRICEF_D2S_066_E	GAP_D2S_P2_059

	Module to fetch legal control details from SAP GTS to S/4HANA					
UAE	Workflow development - notification for blocked documents	N/A	L		WRICEF_D2S_064_W	GAP_D2S_P2_058
UAE	Fiori App related development for Document approval process	N/A	L		WRICEF_D2S_064_E	GAP_D2S_P2_058
UAE	Enhancement to UPDATE SERIAL NO. ON EXPORT DECLARATION	N/A	H		WRICEF_D2S_P2_63_E	GAP_D2S_P2_057
UAE	Customs Export Declaration Form	N/A	H		WRICEF_D2S_062_F	GAP_D2S_P2_056
UAE	Synch Blocking Status from GTS to S4H & MDG	N/A	M		WRICEF_D2S_P2_10A_E	GAP_D2S_P2_060

11.3. Process Fitness

NA

11.4. WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Use from myConcerto (New/Rework/Rep)	Ref # from WRICEF inventory	Assign system / SAP component
WRICEF_D2S_065_E	Enhancement	Transfer COO from S/4HANA to GTS for Export customs declaration	Medium				
WRICEF_D2S_060_E	Enhancement	Automatic update of SPL lists from EDGE's data provider	High				
WRICEF_D2S_060A_I	Interface	Automatic update of SPL	High				

		lists from EDGE's data provider					
WRICEF_D2S_059_E	Enhancement	RFC enabled custom Function Module to fetch <u>legal</u> control details from SAP GTS to S/4HANA	High				
WRICEF_D2S_P2_63	Enhancement	Enhancement to UPDATE SERIAL NO. ON EXPORT DECLARATION	High				
WRICEF_D2S_064_W	Workflow	Workflow development - notification for blocked documents	High				
WRICEF_D2S_064_E	Enhancement	Fiori App related development for Document approval process	High				
WRICEF_D2S_P2_62	Form	Customs Export Declaration Form	High				
WRICEF_D2S_066_E	Enhancement	Define function to extract Country of Origin for the finished item and a BADI to enhance the legal control check.	High				
WRICEF_D2S_P2_69	Interface	Screening CRM - Account Information in GTS	Medium				
WRICEF_D2S_P2_10A_E	Enhancement	Synch Blocking Status from GTS to S4H & MDG	Medium				

12. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

12.1. Integration points

Process ID (L4 process)	Type (legacy system, DT Ops, functional integration)	Related technical scope item (if required)	Leading stream	Business process Integration with domain	Description	In	out
ED-07_040100 ED-07_040200 ED-07_040300 ED-07_040400 ED-07_040500			D2S	S/4HANA	Master data between S/4HANA and GTS - Business Partner (Customer) - Material Master	Automatic update in GTS based on change pointers	
ED-07_040100 ED-07_040200 ED-07_040400			D2S	S/4HANA	Transaction Data Synchronization Between S/4HANA & GTS -Sales Order -Outbound delivery -Pro-forma Invoice	Automatic update in GTS	
ED-07_040100 ED-07_040200 ED-07_040300 ED-07_040400 ED-07_040500			D2S	Data provider	Data received from data provider. -ECCN -SPL list -HS codes/Tariff numbers	Provide in XML and uploaded into GTS system	

12.2. Inbound Communication

Activity	Type	Automatic/Manual	Source	Destination	Description
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Files from data provider	XML files	Manual	Data Provider		Upload SPL files, ECCN, HS Codes / Tariff Codes, Duty Rates
Receive files from CRM system for screening	XML files	Automatic	CRM system		Receive Customer accounts in GTS, screen them and send back the results to the CRM system
Master data between S/4HANA and GTS	RFC	Automatic	S/4HANA		Created/Changed - Business Partner (Customer) in S/4HANA are transferred to GTS system
Transaction Data Synchronization Between S/4HANA & GTS	RFC	Automatic	S/4HANA		Created/Changed Sales transaction like Sales Order, Outbound delivery, Pro-forma invoice in S/4HANA are transferred to GTS system

12.3. Outbound Communication

Activity	Type	Automatic/Manual	Source	Destination	Description
Send screening results to CRM	XML	Automatic	GTS		Send back the screened results to the CRM system
Block/Release status of documents	RFC	Automatic	GTS		Send back the Block/Release status of the documents

12.4. Other Issues

Not Applicable

THIRD PART OF SAP GTS PDD

SOURCE TO PAY (S2P)

13. SOURCE TO PAY (S2P – SAP GTS)

- ADD/ VALIDATE AND CERTIFY SUPPLIER (FOR NEW)" [BPH-1.1.6.1]
- MANAGE BLOCKED DOCUMENTS IN PURCHASING" [BPH-1.3.2.7]
- MANAGE IMPORT - TRADE COMPLIANCE DOCUMENTATION [BPH-1.3.2.9]

13.1. Other Related Documents (S2P)

Related Document	Comment
ADVANTEDGE_PDD_S2P_Goods Receipt_v01	Part of Wave 1B: EDGE corporate
ADVANTEDGE_PDD_S2P_Master Data_v01	Part of Wave 1B: EDGE corporate
ADVANTEDGE_PDD_S2P_Strategic Sourcing_v01	Part of Wave 1B: EDGE corporate
ADVANTEDGE_PDD_S2P_Contracts_v01	Part of Wave 1B: EDGE corporate
ADVANTEDGE_PDD_S2P_RFQ & Outline agreement_v01	Part of Wave 1B: EDGE corporate

14. BUSINESS PROCESS (LEVEL 2)

14.1. Process Overview and Context

EDGE is undergoing a digital transformation program with the move to SAP S/4HANA and identified SAP GTS Edition for HANA as a global trade system which will be integrated with SAP S/4HANA to run international trade processes, thus fulfilling their trade compliance needs.

For the most efficient usage of the SAP GTS, five core processes have been defined and aligned over all entities in scope (HALCON, NIMR, ADASI, AL TARIQ) during High-level and Deep-Dive Workshops.

The SAP GTS business process for S2P area majorly contains below mentioned sub-processes:

1. ADD / VALIDATE AND CERTIFY SUPPLIER (FOR NEW) [ED-01_010601] - 1.1.6.1

This process enables to perform Sanctioned Party List screening for every business partner and provides features to block, maintain in positive list or negative list and release the business partners in SAP S/4HANA.

2. MANAGE BLOCKED DOCUMENTS IN PURCHASING [ED-01_030207] - 1.3.2.7

This process enables to perform SPL, Embargo & Legal Control Checks, and release or block transactions originating from SAP S/4HANA

3. MANAGE IMPORT -TRADE COMPLIANCE DOCUMENTATION [ED-01_030209] - 1.3.2.9

This process enables smooth operations when performing imports, such as consolidating the information required to submit customs import declarations (with all necessary information) to Broker/Agent/Freight Forwarder, who in turn submits the details to Customs Authority

14.2. Key Value Drivers for the Business Process

The new GTSE4HANA system improves the efficiency by being the central system to manage and monitor global trade processes across multiple geographical and functional areas. It shall help EDGE in being compliant and help automate the processes across EDGE group.

Below are some tangible and intangible benefits of using SAP HANA powered order management system:

1. SAP GTS is an enterprise trade management platform that automates, centralizes, and manages trade compliance requirements
2. By implementing SAP GTS, EDGE has the potential to avoid costly fines and penalties by screening their business partners, trade documents
3. EDGE can gain visibility into each export and import transactions and reduce the delivery times gained through automated trade compliance processes
4. Fulfil the complex documentation requirements through electronic data interchange with brokers and partners (freight forwarders)
5. Increase process efficiency through tight integration with inbound and outbound processes in SAP S/4HANA

14.3. Key Design Decisions

Process ID	KDD ID	Type	Description
ED-01_010604	ADVNG-8240	Solution	<p>Supplier data should be received from the IVEN system to be screened against the denied party list in the GTS system. The output results are sent back to the IVEN system for further processing</p> <p>Option 2 – receive and process the screening of SUPPLIER synchronously</p> <p>For EDGE business, the requirement is to screen the Supplier accounts maintained in the IVEN system. These master data should be sent to GTS system for screening and the screening results will be sent back</p> <p>The data transfer and screening process will be automated using Webservice available in SAP GTS</p> <p>In this option,</p> <ul style="list-style-type: none"> 1. IVEN system can call the webservice URL with Customer data and receive the screening result immediately 2. Cloud connector middleware can be used to send/receive data in required format <p>Pros:</p> <ul style="list-style-type: none"> ▪ Synchronous screening can be done ▪ Lead time is less for sending and receiving data <p>Cons:</p> <ul style="list-style-type: none"> ▪ Additional effort towards modification of Webservice with 1 medium complexity
ED-01_030207	ADVNG-8242	Solution	<p>KDD_S2P_1.3.2.7 Manage blocked document in Purchasing</p> <p>Option 1 – managing purchasing document blocks from S/4HANA</p> <p>For EDGE business, all purchase related transactions in S/4HANA should be blocked if vendors are blocked for compliance in GTS.</p> <p>A regular job will check the status of vendors in GTS. If a vendor status in GTS is blocked, the status of the vendor in S/4HANA and MDG is also blocked. This ensures not to initiate further purchasing transactions with this vendor in S/4HANA.</p> <p>Pros:</p>

- Usage of standard system behavior upon purchasing block on Vendor master in SAP
- Vendor Master Data status (Block/unblock) will be in sync with GTS and S/4HANA system
- Follow-on processes in S/4HANA will be impacted based on vendor block
- No manual dependency for managing purchasing documents
- Standard RFC available to fetch vendor status from GTS to S/4HANA

Cons:

- Solution depends on automatically blocking the vendors in SAP S/4HANA
- Custom development and testing required

Business Process impact

Below are the list of processes impacted due to blocked vendors (Compliance check status) in S/4HANA

- **New RFQ/PO/SA/Contract Creation:** Document should not be created
- **Open RFQ/PO/SA/Contract:** No further transaction should be allowed (Short closing open documents will be done manually)
- **Open PR (with vendor assignment):** No further transaction should be allowed (Short closing open documents will be done manually)
- **Open Invoice - GR done, Invoice not done:** No further transaction should be allowed. If needed, allowed with exceptional approval
- **Open payments - Invoice booked, payment not made:** No further transaction should be allowed. If needed, allowed with exceptional approval
- **Vendor payment has been made, batch job has been created, still under BCM approval:** No further transaction should be allowed. If needed, allowed with exceptional approval
- **Vendor Return process:** Vendor return for blocked vendors are not allowed. If needed, allowed with exceptional approval

14.4. KPI and custom reports

Following reports are available out of GTS which addresses the reporting requirement.

- **Blocked documents:** Provides list of documents blocked for SPL, Embargo and Legal control
- **Audit Trails:** Audit trail shows the list of blocked and released documents with the reason for release
- **Analyze SPL release:** Analyze reasons for release for SPL screening of documents

Integration with BW advanced reporting is not available as part of SAP GTSE4HANA SP01 release. It is planned for future releases as per the SAP product management team.

15. BUSINESS PROCESS DESCRIPTIONS

15.1. Add/Validate and certify supplier (for new)

15.1.1. Business Description

EDGE must comply with the Denied Party list issued by various authorities like FBI, etc. and avoid business transactions with them as it can lead to compliance issues and possible penalties.

EDGE must screen their Business Partners like Supplier accounts against the Denied Party list provided by the data provider to identify the sanctioned party.

Supplier on-boarding is done in the IVEN system. The confirmed suppliers in IVEN system are transferred to S/4HANA where it will be used for purchase processes.

SAP GTS system will be updated with the Denied Party list provided by the data provider, therefore the Supplier Business Partner replicated from the S/4HANA system will be screened and identify as blocked or released.

The partner is blocked when the data is matching with denied party list, which will be based on the SPL settings maintained in the SAP GTS system.

In EDGE, the Business Partners can be screened in following cases, whenever a new Business Partner is created, whenever there is a change in SPL data and also during periodical screening of existing Business partners.

For Wave 2A Build in EDGE, the following scenario is included in the implementation of the Sanction party list screening:

SPL screening for Business Partners process steps with integration of S/4HANA:

- Upload denied party lists in the GTS system
- Supplier data will be replicated from the IVEN system as a Business Partner master data into the SAP S/4HANA system (Vendor, Goods Supplier)
- S/4HANA is the feeder system for SAP GTS where all the Supplier related information are transferred from S/4HANA to SAP GTS
- All transferred Master Record from S/4HANA is replicated in SAP GTS as Business Partner master records
- Newly created Master Records and/or changes made to existing master records are written to change pointer tables in S/4HANA
- All changes from the change pointer table ADRC are picked up by a scheduled batch job and transferred from feeder system (S/4HANA) to SAP GTS.
- **Scenario1: Synchronous screening**
 - Newly created/changed business partners are screened synchronously against Sanctioned Party Lists and SPL screening status is updated in the Business Partner master record.
- **Scenario2: Periodic screening**
 - Screen Business Partner address (Batch) will be done. This program selects all Business Partner records (blocked and released) in the system and screens them against the entire SPL master. This should be done on regular basis to ensure the SPL statuses of BPs are correct
- **Scenario3: SPL screening after changes to Sanctioned Party List**
 - The screening will be performed on a business partner if the SPL master data is updated (i.e., due to additions or changes to SPL). Only Business Partners that are currently released in the system will be selected by this program
 - If GTS system finds a match of Business Partner against the SPL list, then the Business Partner is marked as blocked.
 - Trade Compliance specialist will monitor all screened Business Partners and can decide the following:

1. Release blocked partners with incorporating the reasons for release
 2. Check for false positives and move them to Positive list
 3. Identify Business partners and move them to Negative list
 4. Confirm the block
- All Partners are screened for name and address fields by the defined screening algorithm
 - Standard Reports to be checked to view Blocked Business partners, Positive and Negative Lists or existing Business partners
 - Audit reports are available to check all changes made for each business partner from the time it is created and record the reasons for the change with time and date stamp.
 - Further archiving activity to be taken up post Go-live

Comparison procedure for Address comparison:

Language: Specify the language in which the addresses are to be compared

The language will be English

Search Algorithm for Sanctioned-Party Lists: Activate the search algorithm to be used during sanctioned-party list screening.

The SAP HANA Search algorithms will be activated.

Assignment of Address Comparison Objects: Assign the address comparison objects to a comparison procedure.

The following address objects will be used for address comparison

- CITY1
- COUNTRY
- NAME1
- NAME2
- NAME3
- NAME4
- STREET

NAME1 and COUNTRY are mandatory fields for screening.

Comparison procedure for SAP HANA search:

1. Screening pattern: **Screen Name, Country, City and Street Address**

Defines which address elements the SAP HANA Search includes in the comparison.

These are the system's reactions to the individual screening patterns:

- **Screen Name and Country**

To get a hit, both the name and country in the addresses must match the respective elements in the sanctioned-party lists.

- **Screen Name Only**

To get a hit, only the name in the addresses must match the respective element in the sanctioned-party lists.

- **Screen Name, Country, and Street Address**

To get a hit, the name, the country and the street address in the addresses must match the respective elements in the sanctioned-party lists.

- **Screen Name, Country, City, and Street Address**

To get a hit, the name, the country, the city and the street address in the addresses must match the respective elements in the sanctioned-party lists.

- **Screen Name or the Address Elements Street, City and Country**

To get a hit, either the name or the address elements street, city and country in the business partner or document partner addresses must match the sanctioned party lists.

2. Exactness: Value to be decided based on the quality of the partner data. Optimal value can be decided after testing in SIT/UAT. Recommended value for exactness is >= '90'

A percentage between 0 and 100 that specifies how exact two words must match to be considered as equal.

User can use this parameter to make the screening tolerant towards typos, name variations, accents, umlauts, and so on. The lower the value, the more tolerant the system is.

Example:

- An exactness of 70% will match "Jose" to "Jase".
- An exactness of 90% will not match "Jose" to "Jase".

3. Minimum Score: Value to be decided based on the quality of the partner data. Optimal value can be decided after testing in SIT/UAT. Recommended value is between '75' and '80'

A minimum score is a number between 0 and 100 that specifies how precise two names, or two addresses must match to be considered as a hit.

The user can use this parameter to reduce low-quality hits produced when the "Exactness" parameter is set too low. Use this search parameter to cut off the long tail of low-quality hits produced by hits due to stop words or exclusion terms.

In contrast to "Exactness", this parameter affects the names and addresses as a whole, not the single words. The lower the value, the more two names or addresses can differ and still be a hit.

Example:

- A minimum score of 50% will produce "Tomas Meyer" as a hit for "Thomas Mayer".
- A minimum score of 100% will not produce a hit.

4. Percentage Rate of Matching Words: Value to be decided based on the quality of the partner data. Optimal value can be decided after testing in SIT/UAT. Recommended value is between '75' and '80'

A number between 0 and 100 that specifies the minimum percentage of words within a full name or a full address that need to match.

This parameter to fine-tune the balance between false positives and real hits. The lower the value, the more reactive the screening is towards single words.

Example:

- A percentage of matching words of 66% will produce "Jose Maria Sison" as a hit for "Jose Maria".
- A percentage of matching words of 80% will not return a hit.

5. Symmetric Search: With the symmetric search enabled the false positive hits will be high

Example below:

During the screening of sanctioned-party lists, the system calculates the number of matching words for all screened names and compares that number with the matching percentage rate threshold defined in Customizing.

If the computed percentage is greater than the specified threshold, the name is treated as a hit and the respective business partner or document is blocked.

By default, the system uses the number of words in the business partners to calculate the matching percentage rate.

By selecting this checkbox, the symmetric search is activated, and the system uses the number of words in the sanctioned-party list entry to compute the matching percentage rate. If the percentage rate for any of these calculation types exceeds the threshold value, the name is treated as a hit.

Example:

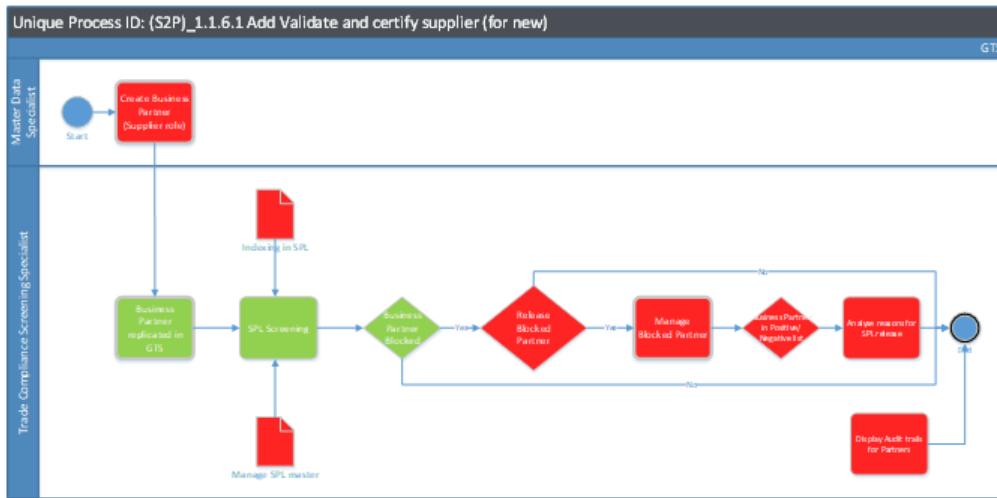
System Behaviour in Symmetric Searches

You want to check whether a business partner with the name "Jose Maria Sison" is listed in the sanctioned-party list. The sanctioned-party list contains an entry for "Jose Maria" and 70% has been defined in Customizing as the matching percentage rate threshold.

- If you have not selected the Symmetric Search check box, the system only uses the number of business partner words to calculate the matching percentage rate. In this case, the matching percentage rate is calculated as follows: 2 divided by 3 = 66.67%. Hence, the name is not treated as a hit.
- If you selected the checkbox, the system uses both the business partner words as well as the sanctioned-party list words when calculating the matching percentage rate. In this case, the matching percentage rate for the sanctioned-party list is calculated as follows:

2 divided by 2 = 100%. Hence, the name is treated as a hit.

15.1.2. Process Diagram



15.1.3. Activity List

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Tcode	Fiori
P100 ED-01_010601_01	ED-01_010601	Start	Master Data Specialist			
P200 ED-01_010601_02	ED-01_010601	Create Business Partner (Supplier role)	Master Data Specialist	Partially Manual	BP	Yes
P300 ED-01_010601_03	ED-01_010601	Business Partner replicated in GTS	Trade Compliance Screening Specialist	Fully Automated		

P400 ED- 01_010601_04	ED-01_010601	SPL Screening	Trade Compliance Screening Specialist	Fully Automated		
P500 ED- 01_010601_05	ED-01_010601	Manage SPL master	Trade Compliance Screening Specialist	Human Triggered		Yes
P600 ED- 01_010601_06	ED-01_010601	Indexing in SPL	Trade Compliance Screening Specialist	Human Triggered		
P700 ED- 01_010601_07	ED-01_010601	Business Partner Blocked	Trade Compliance Screening Specialist	Fully Automated		
P800 ED- 01_010601_08	ED-01_010601	Release Blocked Partner	Trade Compliance Screening Specialist	Partially Manual		Yes
P900 ED- 01_010601_09	ED-01_010601	Manage Blocked Partner	Trade Compliance Screening Specialist	Partially Manual		
P1000 ED- 01_010601_10	ED-01_010601	Business Partner in Positive/Negative list	Trade Compliance Screening Specialist	Partially Manual		
P1100 ED- 01_010601_11	ED-01_010601	Display Audit trails for Partners	Trade Compliance Screening Specialist	Human Triggered		
P1200 ED- 01_010601_12	ED-01_010601	Analyse reasons for SPL release	Trade Compliance Screening Specialist	Partially Manual		Yes
P1300 ED- 01_010601_13	ED-01_010601	End	Trade Compliance Screening Specialist			

15.2. Manage blocked documents in purchasing

15.2.1. Business Description

As per EDGE business requirement, all the purchase related transactions in S/4HANA should be blocked if vendors are blocked for compliance in GTS.

In SAP standard, whenever a purchasing document is created in S/4HANA system, the document is replicated to GTS as customs document, where it will be checked against vendor status in GTS. If the vendor is in blocked status in GTS, then the system will block the purchasing document in GTS.

And whenever there is a change in vendor address (Name, Country etc.) in purchasing document in S/4HANA, the changed address is checked against the Sanctioned Party List data and the purchase document is blocked if a match is found for the Name and Country in GTS.

There are limitations in GTS in restricting the subsequent transactions of the blocked Purchasing document, eg: After Purchase Order creation, when the Purchase order is blocked in GTS for compliance checks, the Goods Receipt for the Purchase Order is blocked but the other subsequent steps of PO approval, PO Output, ASN are allowed where the Vendor can receive and process the PO.

Due to the limitations in purchasing document blocking functionality in GTS, the purchase document block will be handled in S/4HANA by managing Vendor statuses in S/4HANA. The Blocked/Released status of Supplier in GTS will be used to update the S/4HANA vendor master status.

The compliance check against the supplier will be done in GTS and this part is covered in "3.1 ADD/ VALIDATE AND CERTIFY SUPPLIER (FOR NEW)". The status of supplier in S/4HANA should be in synchronization with GTS where S/4HANA to pull the status from GTS system and update the Vendor Master status.

Based on the S/4HANA vendor status, the transactions in S/4HANA will be allowed or blocked. Therefore, there will be no compliance check on the Purchasing/Inbound delivery documents from GTS system and all documents blocks are managed in S/4HANA.

15.2.2. Process Diagram

Not Applicable.

15.2.3. Activity List

Not Applicable.

15.3. Manage Import – Trade compliance documentation

15.3.1. Business Description

In the case of imports, this process deals with the customs clearance in the receiving country and is managed within the Customs Management part of GTS.

When an import Purchase Order is saved in the S/4HANA system, this will be available as a worklist in SAP GTS system for Customs Declaration. However, most of the suppliers will also be relevant for sending Advanced Shipping Notification (ASN) to EDGE entities. This ASN in S/4HANA is saved as an Inbound Delivery document.

In case of partial shipments, there can be multiple Inbound Delivery for a single Purchase Order. This Inbound Delivery also gets transferred to SAP GTS and is available in the worklist for Import Declaration.

Worklist for Import Declaration within Customs Management displays the list of all Purchase Orders and Inbound Deliveries which have originated in S/4HANA and provides a function to create Customs Declaration. This Customs Declaration can represent partial or consolidated Shipment against the Purchase Orders raised to a Supplier.

Customs Declaration will be used to track the import shipments and will have relevant details e.g. supplier, forwarding agent, mode of transport, dispatch country, material code with qty, weight, country of origin, HS Codes, customs value (based on pricing conditions maintained in Purchase Order in S/4HANA), insurance (if any), which will help in monitoring shipments and reporting purposes. This will also help to get rid of the excel-based shipment monitoring and tracking currently followed by the logistics teams. Attachment functionality of the declaration document will be used to store all relevant documents that are used in the customs clearance process.

Currently across the four entities, below documents issued by the supplier are used in the customs clearance process:

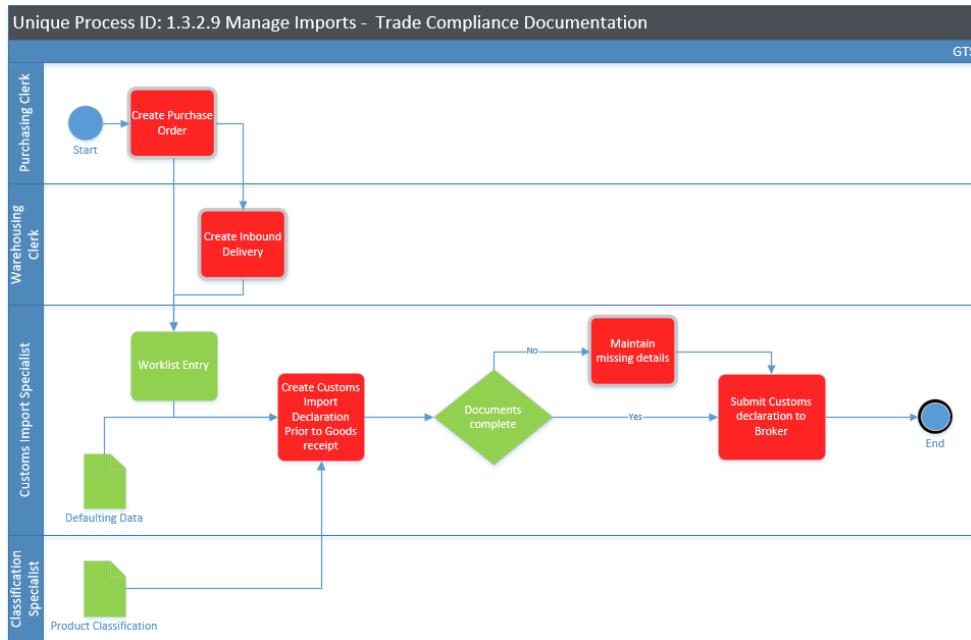
- Supplier Invoice
- Delivery Note with Certificate of Conformity
- Packing list
- Certificate of Origin
- Waybill

If there are any duty exemptions or government approval applicable for a shipment, the same is arranged by the EDGE entities and is also used in the customs clearance process. Duty exemption approval or any other NOC document received against a Shipment will also be attached to the Import declaration document in GTS along with the necessary documents provided by the Supplier as mentioned above. This would be a single document in GTS where all related documents for imports can be found.

For NIMR, almost all transactions are cleared by forwarding agents like Fedex, DHL or other third-party agents.

For HALCON, most of the project related imports are cleared by EPI authorized representative as these related to GHQ or MoD. These shipments have exemptions on duty and approval is sought online for each shipment. Forwarding agents are also used to clear customs for smaller shipments.

15.3.2. Process Diagram



15.3.3. Activity List

Process Step	BPH ID	Description	Role	Automation	TCode	Fiori
P100	ED-01_030209	Start	Purchasing Clerk			
P200	ED-01_030209	Create Purchase Order	Purchasing Clerk	Partially Manual	ME21N	
P300	ED-01_030209	Create Inbound Delivery	Warehousing Clerk	Partially Manual	VL31N	
P400	ED-01_030209	Worklist Entry	Customs Import Specialist	Fully Automated		
P500	ED-01_030209	Create Customs Import Declaration Prior to Goods receipt	Customs Import Specialist	Partially Manual		
P600	ED-01_030209	Defaulting Data	Customs Import Specialist	Automated		

P700	ED-01_030209	Product Classification	Classification Specialist	Automated		
P800	ED-01_030209	Documents complete	Customs Import Specialist	Automated		
P900	ED-01_030209	Maintain missing details	Customs Import Specialist	Partially Manual		
P1000	ED-01_030209	Submit Customs declaration to Broker	Customs Import Specialist	Partially Manual		
P1100	ED-01_030209	End	Customs Import Specialist			

15.4. Inbound Communication

Activity	Type (email, form, handoff, etc)	Automatic/Manual	Source	Description
Receive files from IVEN system for screening	XML files	Automatic	IVEN system	Receive Supplier accounts in GTS, screen them and send back the results to the IVEN system
Master data between S/4HANA and GTS	RFC	Automatic	S/4HANA	Created/Changed - Business Partner (Supplier) in S/4HANA are transferred to GTS system
Transaction Data Synchronization Between S/4HANA & GTS	RFC	Automatic	S/4HANA	Created/Changed purchasing transaction like Purchase Order and Inbound delivery in S/4HANA are transferred to GTS system

15.5. Outbound Communication

Activity	Type (email, form, handoff, etc)	Automatic/Manual	Source	Description
Send screening results to IVEN	XML	Automatic	GTS	Send back the screened results to the IVEN system
Block/Release status of documents	RFC	Automatic	GTS	Send back the Block/Release status of the documents

16. DETAILED SOLUTION DESIGN

16.1. Solution prerequisites

The subsections below call out any dependencies and process requirements such as predecessor and successor, master data requirements and organizational structure.

16.1.1. Company Code and plant relevant for SAP GTS

All Company Codes and plants are relevant for compliance check. FTO will be created in SAP GTS as FTO_AEXXXX, where XXXX represents the Company code in S/4HANA and Legal unit in SAP GTS will be created as LU_AEYYYY, where YYYY represents the Plant code in S/4HANA. Legal unit is created as a Business Partner with BP Role SLLSIT

16.1.2. Document Types and item Categories relevant for SAP GTS

All SAP S4-HANA 'Document Types' and 'Item Categories' that require SAP GTS compliance screening and customs processing are mapped in GTS system.

16.2. SPL Screening

The legal regulation setup for Sanction Party screening is required to screen the documents in SAP GTS system.

Partner Groups for GTS Compliance and Customs Checks

The Partner group defined for each legal regulation is used to determine the destination country for export license validity. GTS will check the partner functions in the order they are assigned in the partner group and take the destination country from the first partner function which exists both in the partner group and the sales document being checked for licensing.

16.2.1. Process predecessor and successor

Please, describe the process predecessor and successor dependencies that are relevant for the end-to-end view.

RFC setup is required, and all the relevant master data should be transferred to the GTS system.

16.2.2. Master data prerequisites

1. Define Foreign Trade Organization

Foreign trade organizations are the counterpart to company codes in your SAP feeder system, such as SAP ERP. The outline level beneath the foreign trade organization contains legal units, which reflect plants or combinations of plants and warehouses in an SAP ERP system. Defining the organizational structure is a prerequisite for transferring master data from your feeder system. Foreign trade organizations are defined as the highest organizational unit in the organizational structure for GTS. This is created as a Business Partner with the Role 'SLLFTO'.

2. Define Legal Units

The legal units divide your company into subareas. This corresponds to the concept of plants and storage locations in SAP S/4HANA. The legal unit is required for the services in Customs Management of SAP Global Trade Services. This definition is optional for Compliance Management. Legal unit is created as a Business Partner with BP Role SLLSIT.

3. Business Partners

Business partners include customers, vendors, and data providers that need to be transferred to the GTS system.

4. Products

All the materials need to be transferred to the GTS system and the relevant product is created in the GTS system.

5. Content Provider Files

All the files are required to be uploaded to the system which we are getting from the content provider e.g.: SPL file, ECCN/ICCE numbers, HS Codes and Commodity codes.

16.2.3. Organizational Structure Requirements:

16.2.3.1. GTS Organization Structure for P2 Entities

Figure 3: GTS Organization Structure for P2 Entities



1.1. Detailed Solution Design

1.1.1. Add/Validate and certify supplier (for new); Solution steps & elements (Level 5-6)

This section repeats each level 4 process.

Detailed L5/L6 process transaction steps (with reference to WRICEFs and KDS)

Activity steps description and target application incl. devices and inputs such as forms/labels.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
BP	Create new business partner (Supplier)	Tab / Desktop	Master Data Specialist	S4HANA
Batch job	Transfer Business Partner to GTS System	Tab / Desktop	Batch job	S4HANA
Batch job	Business Partner replicated in GTS	Tab / Desktop	Batch job	GTS
Background	Screening of Business partner in GTS	Tab / Desktop	Background	GTS
Manage Business Partner	Release blocked business partner	Tab / Desktop	Trade Compliance specialist	GTS
Manage Business Partner	Add Business Partner to Positive List	Tab / Desktop	Trade Compliance specialist	GTS
Manage Business Partner	Add Business Partner to Negative List	Tab / Desktop	Trade Compliance specialist	GTS

1.1.2. Manage Blocked Document in Purchasing; Solution steps and elements (Level 5-6)

This section repeats each level 4 process.

Detailed L5/L6 process transaction steps (with reference to WRICEFs and KDS)

Activity steps description and target application incl. devices and inputs such as forms/labels.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
ME21n	Create Purchase Order in S4HANA	Tab / Desktop		S4HANA
RFC	Transfer PO to GTS system	Tab / Desktop	RFC	S4HANA
Manage Blocked Documents	Monitor Export Document at Sales Order Level	Tab / Desktop	Trade Compliance specialist	GTS
Manage Blocked Documents	Check SPL block / Release SPL block	Tab / Desktop	Trade Compliance specialist	GTS
Manage Blocked Documents	Check Embargo block / Release Embargo block	Tab / Desktop	Trade Compliance specialist	GTS
Manage Blocked Documents	Release block from GTS	Tab / Desktop	Trade Compliance specialist	GTS

1.1.3. Manage Import -Trade Compliance Documentation; Solution steps & elements (Level 5-6)

This section repeats each level 4 process.

Detailed L5/L6 process transaction steps (with reference to WRICEFs and KDS)

Activity steps description and target application incl. devices and inputs such as forms/labels.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
ME21n	Create Purchase Order in S4HANA	Tab / Desktop	Purchase Requisitioner	S4HANA
RFC	Transfer PO to GTS system	Tab / Desktop	RFC	S4HANA
Manage Blocked Documents	Monitor Export Document at Sales Order Level	Tab / Desktop	Trade Compliance specialist	GTS
Manage Blocked Documents	Release block from GTS	Tab / Desktop	Trade Compliance specialist	GTS
MIGO	Create Inbound delivery & Goods Receipt in S4HANA	Tab / Desktop	Purchase Requisitioner	S4HANA
Manage Import Declaration	Import Declaration created in GTS	Tab / Desktop	Customs Import Specialist	GTS

2. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

2.1. Role/Skill Class Inventory

Role	Skills	Knowledge
Trade Compliance specialist (SAP_BR_SCRNG_SPCLST_LLS)	SAP GTS Compliance Management	Manage blocked documents, maintain data relevant to compliance
Customs Import Specialist SAP_BR_IMPORT_SPCLST_LLS)	Imports Management	Imports process and supportive documentation

3. PROCESS FITNESS & GAP ANALYSIS

3.1. Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets
N/A	N/A	N/A	N/A	N/A

3.2. Gap Analysis

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req. id.
UAE	Integration between IVEN and SAP GTS system for screening partners for sanctioned party	N	H		N/A	N/A

4. WRICEF REGISTER

Not Applicable

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Use from myConcerto (New/Rework/Rep)	Ref # from WRICEF inventory

5. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

Instructions:

Process ID	Leading stream	Integration with domain	Description	In	out
ED-01_010601	S/4HANA	S2P	Master data between S/4HANA and GTS - Business Partner (Supplier)	Automatic update in GTS based on change pointers	N/A

5.1. Other issues

Issue #	Issue Description	Impact	Status	Resolution
N/A	N/A	N/A	N/A	N/A

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY
13 LOGISTICS AND TRANSPORTATION
13.1 INBOUND LOGISTICS

1. Introduction	4
1.1 Change History	4
1.2 Approval Details	5
1.3 Other Related Documents.....	5
2. Business Process (Level 2)	7
2.1 To-Be Process Overview and Context	7
2.1.1 Definitions: Handling units management, batch management, serial number management	8
2.2 Key Value Drivers for the Business Process.....	12
2.3 Key Design Decisions	13
2.4 Standard KPI and reports	14
2.5 Extreme automation	15
3. Process Design.....	16
3.1 Perform goods receipt (ED-13_010101).....	17
3.1.1 Inbound Delivery Creation	18
3.1.2 Performing Goods Receipt.....	25
3.1.3 Perform quality inspection.....	34
3.1.4 Putaway of a product.....	38
3.2 Perform goods receipt reversal (ED-13_010102).....	43
3.2.1 Goods receipt reversal	43
3.2.2 Return to vendor process: final return and replacement.....	44
3.2.3 Rework process: internal & external rework	49
3.3 Manage inbound transports (ED-13_010201).....	51
3.3.1 Process Description.....	51
3.3.2 Process Diagram.....	55
3.3.3 Activity List & Job Role Mapping.....	55
3.3.4 Applicability Matrix and Special Requirements	57
4. Detailed Solution Design	58
4.1 Perform quality inspection at goods receipt, Solution steps and elements.	62
4.1.1 Solution prerequisites.....	62
4.1.2 Process predecessor and successor.....	62
4.1.3 Master data prerequisites.....	62
4.1.4 Organizational structure requirements	62
4.1.5 Detailed solution design Perform Quality Inspection at Goods Receipt; Solution steps and elements (Level 5-6)	64
4.2 Perform Goods Receipt Reversal.....	69
4.2.1 Solution prerequisites.....	69
4.2.2 Process Predecessor and Successor.....	69
4.2.3 Master data prerequisites.....	69
4.2.4 Organizational structure requirements	69
4.2.5 Solution prerequisites.....	72
4.2.6 Master data prerequisites.....	72
4.2.7 Organizational structure requirements	73
4.3 Manage Inbound Transports	78
4.3.1 Solution prerequisites	78
4.3.2 Process Predecessor and Successor.....	79
4.3.3 Master data prerequisites.....	79

4.3.4 Organizational structure requirements.....	79
4.3.5 Detailed solution design.....	79
Associated Fiori Apps	80
Reporting Overview.....	83
5. Role Definition.....	85
5.1 Role/Skill Class Inventory	85
5.2 Security Roles as per Process Design	85
6. Process Fitness & Gap Analysis	89
6.1 Process Variation (legal, geographical or business-led).....	89
6.1.1 Sub-Process Variation	89
6.1.2 Business Unit Level	89
6.2 GAP Register.....	89
6.3 Process Fitness	90
6.4 WRICEF Register	90
7. Integration Points.....	91
7.1 Integration points.....	91
7.2 Inbound Communication.....	92
7.3 Outbound Communication.....	92
7.4 Other Issues.....	92
8. KUT feedback and new requests (implementation to be decided on Compliance/Customer/Business Case/Usability).....	93

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	01.10.2021	First Draft	Martin Posarnig
V0.3	03.10.2021	ACN content first draft	Sunil Kumar
V0.4	06.10.2021	ACN content revised / rework	Sunil Kumar / Martin Posarnig
V0.5	10.10.2021	Revised draft	Sunil Kumar / Martin Posarnig
V0.6	13.10.2021	Update content (master data, reporting, fiori)	Martin Posarnig
V1.0	07.11.2021	Approval from GPO	Martin Posarnig
V1.1	13.12.2021	Incorporated Feedback	Sunil Kumar / Martin Posarnig
V2.0	20.12.2021	Ready for BO Approval	Martin Posarnig
V2.1	26.01.2022	Incorporated Feedback 2.0	Sunil Kumar / Martin Posarnig
V2.2	01.03.2022	Updated PDD based on further feedback from DT Team	Sunil Kumar / Martin Posarnig
P2_v0.1	9.8.2022	Updated PDD based new P2 structure	Moritz Waubke
P2_v0.2	21.9.2022	Updated Business process description	Martin Posarnig
P2_v0.3	14.10.2022	Updated Business process description, Activity Lists	Martin Posarnig
P2_v0.4	19.10.2022	Updated Solution Design Section	Pranaya Kumar Barik
P2_v0.5	23.10.2022	Updated Solution Design Section	Pranaya Kumar Barik
P2_v0.6	23.11.2022	Incorporating SI Feedback	Martin Posarnig
P2_v0.7	10.12.2022	Incorporating open points from Feedback Tracker and OPL (Deliverables list)	Martin Posarnig
P2_v0.8	12.01.2023	Incorporating open points from Feedback Tracker, OPL (Deliverables list) and entity feedback	Martin Posarnig

P2_v0.9	06.02.2023	Incorporating open points from Feedback Tracker, OPL (Deliverables list) and entity feedback	Martin Posarnig
Change of versioning numbering policy			
V0.7	09.03.2023	Incorporating open points from Feedback Tracker, OPL (Deliverables list) and entity feedback	Martin Posarnig / Zakia El Houary / Azam Hussain Syed / Sateesh Natarajan / Shakti Prasad
V0.8	22.03.2023	Quality review	Dr. Piotr Rykaczewski
V0.9	29.03.2023	GPO approval (V0.8→V0.9)	
V0.9	16.06.2023	Detailed description of the use of HHT, update of the putaway strategy, added the approval process of GRN, transportation processes have been updated and simplified as per business requirements	Zakia El Houary /Faraz Quddusi
V0.9	02.08.2023	Update of the labels and forms	Zakia El Houary /Faraz Quddusi
V0.9	04.08.2023	Quality review of the updates	Dr. Piotr Rykaczewski
V0.9	22.08.2023	Update of transportation processes (introduction of freight unit and freight order)	Zakia El Houary /Faraz Quddusi
V0.9	05.10.2023	Update of the structure of process design section as aligned with DT team	Zakia El Houary /Faraz Quddusi
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See cover sheet			

1.3 Other Related Documents

Please insert links/References to related Documents (issues, data entities, extreme automation, etc.)

Related Document	Comment
EDGE_KDS_EWM.xlsx	Warehouse KDS

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

The inbound logistics process is one subprocess of logistics within demand to supply. It is the starting point of operational handling with productive material within EDGE premises. The target is to create a smooth system supporting handling of incoming goods that is valid for all entities. Goods reception is also the starting point of traceability (via batches and/or serial numbers) within EDGE entities. Using Handling Unit management, a physical object called Handling Unit (HU = packaging + material + label) is created. A HU will carry all material related information and record events throughout its lifecycle.

HU Management is not applicable to all P2 entities. Only HALCON is opting for Inbound HU Management and other three entities NIMR, AL TARIQ and ADASI are not going to HU Management in receiving process.

Management of inbound transportation is also part of inbound logistics. This subprocess is dealing with planning of inbound transports, carrier communication and freight settlement.

Orientation within business process hierarchy:

Demand to Supply → 13 Logistics and Transportation → 13.1 Inbound Logistics

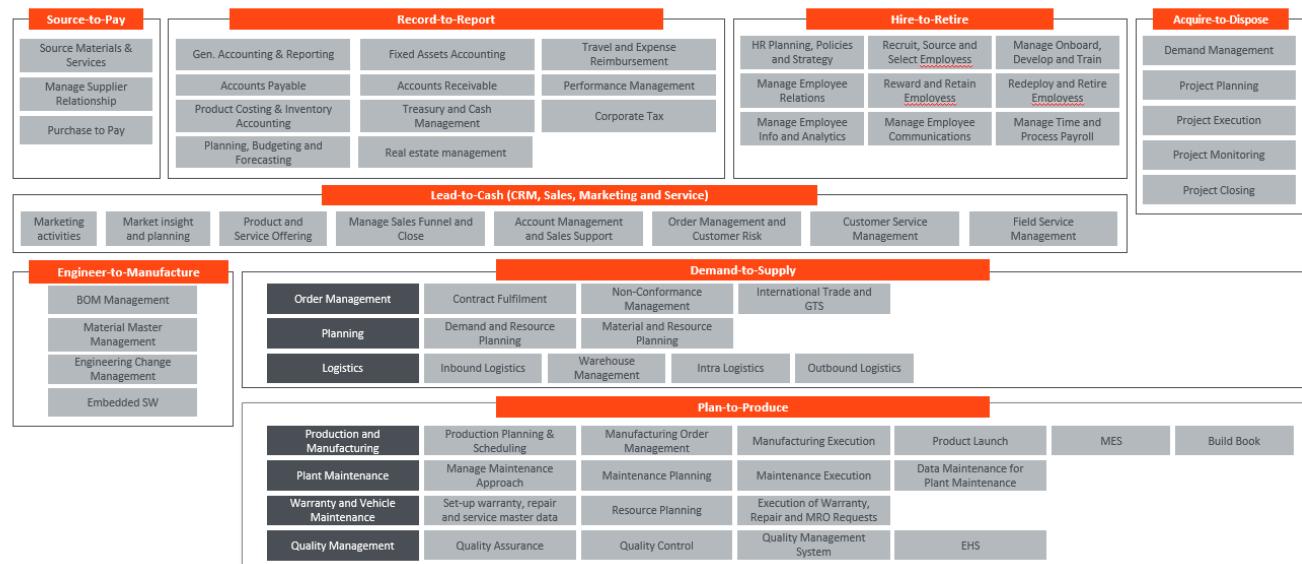


Figure 1: EDGE Business Processes Overview

The inbound logistics process is dealing with all operations after the purchase order is released to the supplier. The process is embedded between production planning & purchasing on one hand and warehousing on the other. The inbound process is divided in 3 subprocesses that are valid across all entities:

- Perform goods receipt with / without quality inspection: Managing all relevant steps for incoming goods from unloading to putaway.

- Perform goods receipt reversal: Reverse inbound process in case of discrepancy regarding quantity, damage, or delivery papers. Return to vendor process if applicable.
- Manage inbound transports: Is about planning and organizing transports of inbound deliveries.

2.1.1 Definitions: Handling units management, batch management, serial number management

This section provides definitions of Handling units management, batch management and serial number management that will be useful in the upcoming processes of the document

a- Serial number management

A serial number is a unique identifier or code assigned to a specific individual item or product. It is used to distinguish and track the item throughout its lifespan. Serial numbers are typically assigned during the manufacturing process. Managing serial numbers involves assigning, recording, and utilizing serial numbers to enable traceability, warranty tracking and inventory management.

All P2 entities Raw Material Components, Sub-Assemblies and Final Assemblies will be managed through Serial Numbers except for Al Tariq, that is not going to use serialisation in SAP.

The only other exception is that all components / materials may not be serialized, and therefore all serial-relevant materials will be serialised with the application of serialisation profiles on the material master.

For incoming goods, serial number will be alphanumeric with external number range of a maximum of 18 characters. A Serial number is unique for a material, but different materials can have same serial number.

Serial Number capturing with further scenarios (in case of with I-VEN or without I-VEN) on Section 3.1.1.

b- Batch management

A batch number or a lot number or batch code, is a unique identification code assigned to a specific group or lot of products during the manufacturing process and the receiving process from external sources. It is used to track and trace the products throughout their lifecycle, from receipt from purchase or production to distribution and often through to the end-use. Batch number management involves assigning, recording, and using batch numbers to ensure traceability, quality control, and product recall.

All P2 entities Components, Sub-Assemblies and Final Assemblies will be managed through Batch.

Below aspects to consider in batch management:

- Internal batch number is unique for Material/Plant
- Batch Number range is set on internal assignment from 0000000001 to 9999999999.
- Just like Edge's internal batch numbers, the products coming from suppliers carry the supplier batch numbers. The supplier batch information will be captured and recorded in the Supplier Batch Number Field inside the Edge Batch information in SAP system.
- Batch number will be generated by the system at the time of Inbound Delivery or at the time of Goods Receipt in case of purchased material. Vendor batch number will be populated automatically from I-VEN via ASN or manually at the time of goods receipt and recorded as mentioned above.

- Batch number will be generated by the system at the time of production confirmation and goods receipt from production on the shop floor in case of manufactured goods.
- Batch Class is harmonized with a consolidated list of all characteristics to be used across all entities so that an easy assignment can be done in operations. The following KDD refers to this decision:

BATCH CLASS HARMONIZATION

SA Architect



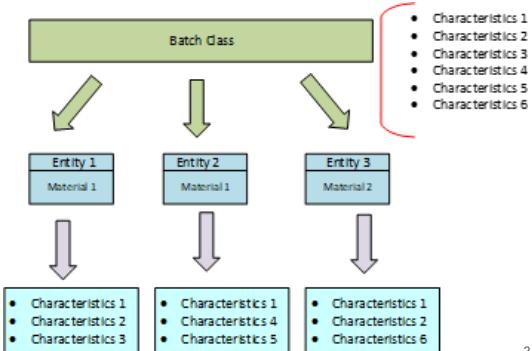
Problem Statement

- Each Entity is using its own batch characteristics in legacy systems
- Some characteristics are common but different naming conventions are followed in each entity
- in ADVANTEDGE system future state, when the same material is used in different entities in SAP we can't assign multiple batch class
- Some material can be produced in-house and also procured externally
- Inconsistency in batch classification, difficulty for batch search by characteristics
- Data redundancy



Solution

- Harmonized single the Batch class which contains the consolidated list of all Characteristics used across all the entities



2

Figure 2: batch class harmonization

- The consolidated list of characteristics for the Batch is as follows:

Sr No	BATCH CHARACTERISTICS	DESCRIPTION	Remarks
1	ZCONCESSION	Concession Number	Concession number for Rework order
2	ZREVISION	Revision Number	Revision number for the Material
3	ZREWORK	Rework Code	Rework order number
4	ZREPACKAGING	Repacking Code	Repacking order number
5	ZPPS	Process Planning Sheet	Process Planning Sheet number(It is applicable only for ALTARIQ)
6	ZTRIAL	Trial Code	Trial Order Number
7	ZDEVIATION	Deviation Number	Deviation Number
8	LOBM_QNDAT	Next Insp date for Batch	Next inspection date for a recurring inspection
9	LOBM_VFDAT	Expiration date, shelf life	Shelf life expiration date
10	LOBM_HERKL	Country of Origin	Country of Origin from where the goods are manufactured/imported
11	LOBM_LICHA	Vendor Batch Number	The supplier batch number for the Material/Component
12	LOBM_LWEDT	Date of last goods receipt	The date of last goods receipt in the warehouse for the Material in question
13	LOBM_RLZ	Remaining Shelf life for Batch	Remaining shelf life for the particular batch of a Material
14	Z_PREVBATCH	Previous Batch Number	Previous batch no for the Material

3

Figure 3: batch characteristics

- Batch creation is covered with further scenarios (in case of with I-VEN or without I-VEN) on Section 3.1.1.

c- Handling Units

Handling Unit (HU) is the SAP term for a package (pallet, container, etc.) and describes the physical combination of

- Packaging material (pallet, carton, container, box, etc.) and
- Goods (material to be shipped, stored, used, etc.)

Each HU has a unique identification. All necessary information is contained in this identification number.

Following categories of HU can be used in the case of EDGE entities:

- Single SKU Package

A single SKU package is an HU with a single material / SKU.

- Multiple SKU Package

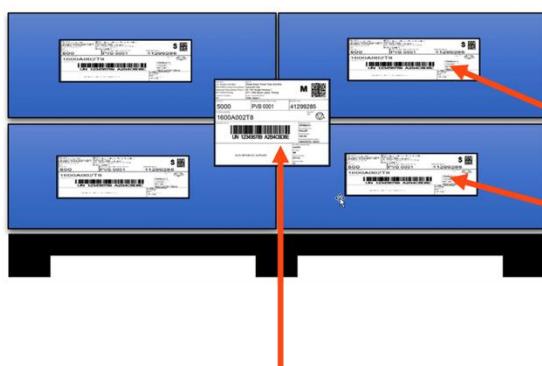
A Multiple SKU Package is an HU containing multiple materials / SKUs.

- Single HU

A single HU implies one package without any internal packages. For ex, a box with the direct materials in it without any further marked packaging inside.

- Nested HU

A Nested HU implies a parent level HU that contains further packages / HUs inside. The materials are stored inside the child level HUs. This parent HU can contain multiple item HUs. The nested HU can contain one or more batches as well as different materials.



Nested HU / Header HU



Single HU



Homogeneous HU



Mixed HU

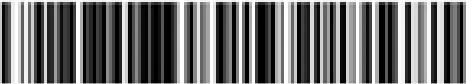
A homogenous HU contains only one material number but can contain one to multiple batches. Each single HU is labelled with an HU Label. This is the smallest movable unit and material gets consumed on that level. The nested HU label is only to move multiple single HU's at the time.

A mixed HU can contain multiple materials and multiple batches. The labelling rules follow the same as the homogenous HU. Each entity can decide to allow mixed HU's or not. In terms of proper utilization of the warehouse the recommendation is to allow mixed HUs.

The HU label is a sticker label and printed: before GR posting (if GR is performed with HHT), after GR (if GR performed via desktop version), or when executing an HU split. HU labels can be reprinted at every time in case of loss or damage.

HU creation process is covered with further scenarios (in case of with I-VEN or without I-VEN) on Section 3.1.1.

Figure 4: HU Label Example

Entity Logo HALCON	Goods receipt number 202210030915	GR Date 10/03/2022
Material number 9386274361	Material text Wing cover coated small	
Batch number 36253984	Drawing number DN9386274361-01-02	Expiry date 10/03/2042
Vendor batch 4009	Material number barcode 	
National stock number 2734234706234	Quantity 5	UoM pcs
Inspection lot number 837492423	Quality inspector N.N.	
HU Number 376285539889	HU Barcode 	

*

In case of this project, handling units at inbound will be only created for Halcon

In case of a WBS-stock, it will be managed as a nested HU at NIMR

The following chart presents the entity level applicability of HUs for the inbound operations:

S No	Scenarios / Entities	AL TARIQ	ADASI	NIMR	HALCON
1	HUs for incoming Packaged Goods	✗	✗	✗	✓
2	HUs for entity's own packaging for incoming goods	✗	✗	✗	✓
3	HUs for entity's repackaging for incoming goods	✗	✗	✗	✓

2.2 Key Value Drivers for the Business Process

The new system-supported inbound logistics process will provide the following advantages:

- Clear picture of upcoming workload in goods reception
- Mobile devices supporting operators in performing logistics tasks like unloading and performing goods receipt (if supplier delivers appropriate labels and advanced shipping notification (ASN)), moving material (HUs) across the shopfloor, Info scan to show status of HU, sampling process for quality inspection, split HUs and repackaging
- Automated communication with other departments like quality, production, or planning
- Automated or semi-automated calculation of KPIs (Key Performance Indicator) and visualization of operational performance

2.3 Key Design Decisions

Process ID	KDD ID	Type	Description
ED-13_040100	KDD_D2S_95	Foundation	<p>Decision statement - quality check for goods receipt process</p> <p>After goods receipt unload at warehouse, inspection lot will be created automatically for QC (quality check) relevant material. EWM (extended warehouse management) integrated quality check will be performed based on EDGE specific HU or product.</p> <p>HU Managed Entities:</p> <ul style="list-style-type: none"> • HALCON <p>Non-HU Managed Entities:</p> <ul style="list-style-type: none"> • ADASI • AL TARIQ • NIMR
ED-13_040100	KDD_D2S_95	Foundation	<p>Decision statement - goods receipt process at warehouse with accounting</p> <p>Goods receipt to be performed in warehouse with Goods receipt process. System will update both qty. and accounting. Rejection will be measured by QC check and send back to supplier (RTV = return to vendor)</p> <p>Note: 101 movement type triggered in S4 system with corresponding Material document</p> <p>Rejection will be measured by QC check for customer return with scrap or rework</p> <p>Following the above process we can have better Inventory traceability like total receipt, rejection, scrap etc.</p>
ED-13_010200	KDD_D2S_152	Solution	<p>Quality inspection allows inspection of the products received from external suppliers in an inbound process. The process starts with the posting of the goods receipt. By posting goods receipt, the system runs active inspection rules and creates an inspection lot for the inbound delivery items if they are relevant for inspection. Upon creation of the inspection lot the system updates the EWM inbound delivery by adding the inspection lot number to the document flow and the stock is posted to stock type 'quality inspection' stock.</p> <p>User can use Fiori App - Manage Inspection Lots to see how many Inspections Lots are pending to make Usage Decision.</p>
ED-13_010300 / ED-13_040100	KDD_D2S_P2_25	Foundation	<p>Numbering Ranges TM</p> <p>In Transportation Management, number ranges distinguish the different document types applicable for inbound and outbound transportation. Business user will understand the segregation of transportation TM documents</p>
ED-13_010101 / ED-13_020102	KDD_D2S_P2_30	Foundation	<p>NUMBER RANGES FOR EWM - D2S</p> <ul style="list-style-type: none"> • Delivery Number Range in S4 • Material Document – 5000000000 - 5999999999 • Inb. Del - 180000000 - 189999999 • Out. Del – 80000000 - 899999999 • Delivery Number Range in EWM • Inb. Del - 000000001 – 999999999 • Out. Del – 000000001 - 999999999 • Warehouse Order – 1000000000 – 1999999999 • Warehouse Task - 1000000000 - 1999999999 • Physical Inventory - 1000000000 – 1999999999 • Serial Number - 1 – 9999999999999999 (external) • Inspection Lot – 170000000001 – 179999999999

			<ul style="list-style-type: none"> • HU Number Range – 112345678000000000 – 11234567899999999
			<p>Concession material code in batch characteristics <i>Batch Management integrated with EWM uses the standard batch characteristics starting with prefix LOBM*. Creating a new characteristic will not be compatible with the EWM system.</i> <i>Suggested solution is to create new batch characteristics specific for Concession material code.</i></p>

2.4 Standard KPI and reports

The following KPIs out of the EDGE KPI handbook should be recorded and visualized to monitor various aspects of the inbound logistic process:

- **Supplier delivery performance:**

Depending on the supplier performance appropriate measures can be taken by supplier development department.

Calculation: # deliveries on time / # total inbound deliveries * 100 = x%

Threshold for intervention must be defined. Either on a general level for all suppliers or individual thresholds if necessary.

- **Freight cost ratio:**

Freight cost of incoming freight from external and intercompany suppliers in relation to the turnover.

Calculation: Total inbound freight cost / entity turnover * 100 = x%

Threshold for intervention must be defined.

The following KPIs can be considered to optimize operational performance for the inbound process:

- **Repackaging level**

Calculation: # inbound deliveries to repack / # total inbound deliveries * 100 = x%

This is only relevant if there is an agreement with the supplier to use standard packaging that can be directly used by EDGE entities to avoid or reduce repackaging effort in goods reception.

- **ASN rate**

Calculation: # inbound deliveries with ASN / # total inbound deliveries * 100 = x%

Processing the goods receipt will be much faster with ASN because most of the information will be available in the system already.

- **Goods reception processing time**

Time between posted goods receipt and putaway of products on average of all inbound deliveries. It makes sense to look at this KPI together with “repackaging level” and “ASN rate”.

- **Carrier performance**

Tracking of carrier performance can be aggregated from several sub-KPIs like response time, availability, damage rates or losses, etc.

- **Average duration of transportation**

Duration will be recorded via the transportation orders. A visualized trend can indicate if optimizations are needed. A correlated view with the warehouse utilization can be useful.

- **Service level of 3rd party service provider**

This KPI can contain several parameters (response time for inquiry, on time pick-up and delivery, run time)

2.5 Extreme automation

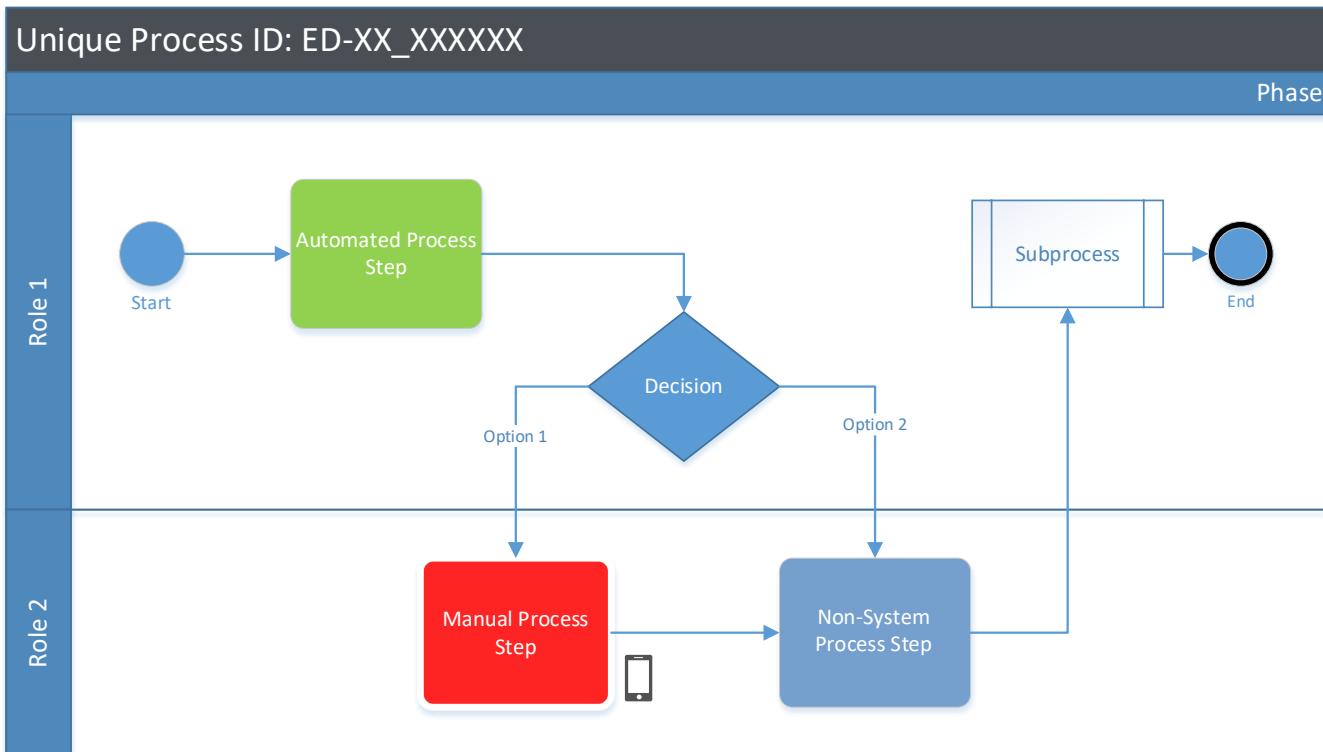
All the relevant use cases under consideration for extreme automation are updated (with EBS input if required) in before the initiation of validation phase.

Detailed key-stroke level process details will be captured through walkthrough sessions in the Extreme automation PDD section. ERP PDD's and ERP training manuals shall be leveraged to capture information that is readily available for the identified automations.

3. PROCESS DESIGN

In the following chapters processes are described in swimlane flow diagrams, in which the swimlanes represent responsible roles and the flow is shown in process steps of different kinds (see legend).

Example for swimlane flow chart:

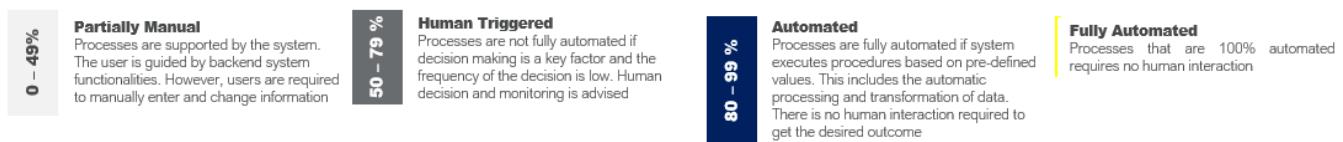


Legend



For each swimlane flow diagram, a corresponding activity list exists, with additional details:

- Process Step - Number of process step (Pxxx)
- BPH ID - BPH ID of L4 process
- Description - Short description of the step
- Role - Responsible role for executing the step
- SAP-Automation - Options: Partially Manual, Human Triggered, Automated, Fully Automated, Sub-Process/Non-System (blank); details on definition see below
- Tcode - SAP Transaction Code (SAP EWM in Italic letters)
- Fiori - Y, if Fiori App is available



3.1 Perform goods receipt (ED-13_010101)

This process describes inspection of the products received from external suppliers in a warehouse inbound process using warehouse management functionality seamlessly integrated in quality management in SAP S/4HANA. Please note that the processes are named “Perform goods receipt with quality inspection” but also covers the goods receipt without quality inspection as detailed in the steps of the process.

In this process the main steps are:

Main steps	Brief description	Forms & labels	Hardware use	Integration
3.1.1 Inbound delivery creation	The inbound delivery is created in EWM through ASN if available or manually	HU Labels (Delivery Based)	Desktop	I-ven MM EWM/IM
	The physical receiving process of the goods is ensured by warehouse operator and consist in receiving the unloaded goods from the track, store it in the receiving area and conduct a physical inspection of the goods to make sure quantities supposed to be delivered are correct	NA	NA	NA
3.1.2 Goods receipt	This step consists of processing the goods receipt in the system either through desktop application or Handheld device	Goods Receipt Note	HHT	MM EWM/IM QM
	If the goods are not already labelled, the labels can be created based on the GR (HU and item)	HU Label (GR Based)	Desktop	MM EWM/IM QM
3.1.3 Performing quality inspection	Quality inspection is performed by quality technician, after this step the goods having any quality related issue will be moved to quarantine otherwise the stock is released to putaway to final bin	Putaway Label Rejection Label	HHT	QM EWM/IM

3.1.4 Putaway	Moving to the final destination of the item	Putaway Label	HHT	EWM
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3.1.1 Inbound Delivery Creation

3.1.1.1 Process Description

The starting point to perform goods receipt is the inbound delivery, which is created based on the purchase order (for Inbound from supplier, or subcontractor) or the customer return order (from customer). Inbound deliveries have one number range for IM and EWM.

Regarding the customer returns, the process in logistics starts by receiving the goods in the warehouse from the customer. Before the goods are sent back to the warehouse, the quality team creates a quality notification based on the customer claim and confirms the return of goods. Further details are available in quality PDD (ED-11_020401). The process is then managed in non-conformance PDD (ED-07_020102) for customer return order creation.

Once the goods arrive to the warehouse, a return delivery is created in S4. If the returns are managed in IM, the GR is processed directly, whilst if it is EWM managed, the return delivery is replicated in EWM before processing GR. After processing goods receipt, the goods are handled to quality team to create inspection lot and perform NCR decision.

In the following section a detailed description of the process is provided considering the variants identified below:

Var No	Variant Description	Trigger Point	Batch Information	HU Info.	Serialised Goods	Action on Inbound Delivery	Action on Goods Receipt
1	Var 1 – ASN of Serialized Goods with Batch & HU info	ASN through I-VEN	Provided by Supplier	Applicable & Provided by Supplier	Yes	Auto Update HUs in Inbound Delivery	Scan HU labels
2	Var 2 – ASN of Non-Serialized Goods with Batch with Batch & HU Info	ASN through I-VEN	Provided by Supplier	Applicable & Provided by Supplier	No	Auto Update HUs in Inbound Delivery	Scan HU labels
3	Var 3 – ASN of Serialized Goods with Batch but missing HU details	ASN through I-VEN	Provided by Supplier	Applicable but Not Provided by Supplier	Yes	Manual Update HUs in	Scan HU labels

						Inbound Delivery	
4	Var 4 – ASN of Non-Serialized Goods with Batch but missing HU details	ASN through I-VEN	Provided by Supplier	Applicable but Not Provided by Supplier	No	Manual Update HUs in Inbound Delivery	Scan HU labels
5	Var 5 – ASN of Serialized Goods with Batch, and HUs are not applicable	ASN through I-VEN	Provided by Supplier	Not Applicable	Yes	No Update on Inbound Delivery	Perform Goods Receipt through Desktop System
6	Var 6 – ASN of Non-Serialized Goods with Batch, and HUs are not applicable	ASN through I-VEN	Provided by Supplier	Not Applicable	No	No Update on Inbound Delivery	Perform Goods Receipt through Desktop System
7	Var 7 – HU Managed Serialized Goods Received without I-VEN	ASN in SAP S4H without I-VEN	Not Provided by Supplier	Applicable and generated by Warehouse	Yes	Manual Update HUs in Inbound Delivery	Scan HU labels
8	Var 8 – HU Managed Non-Serialized Goods Received without I-VEN	ASN in SAP S4H without I-VEN	Not Provided by Supplier	Applicable and generated by Warehouse	No	Manual Update HUs in Inbound Delivery	Scan HU labels
9	Var 9 – Non-HU Managed Serialized Goods Received without I-VEN	ASN in SAP S4H without I-VEN	Not Provided by Supplier	Not Applicable	Yes	No Update in Inbound Delivery	Perform Goods Receipt through Desktop System
10	Var 10 – Non-HU Managed, Non-Serialized Goods Received without I-VEN	ASN in SAP S4H without I-VEN	Not Provided by Supplier	Not Applicable	No	No Update in Inbound Delivery	Perform Goods Receipt through

						Desktop System
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In the following paragraphs, a detailed description of the main process steps are provided:

1- Inbound Delivery Creation through I-VEN (Variants 1 – 6)

I-VEN is a supplier portal where main suppliers will be connected. I-VEN provides ASN to SAP. With ASN all relevant data:

- Purchase order number
- Expected delivery date
- Ship from and to information
- Item details and quantity (name, quantity, unit of measure)
- Physical characteristics (weight, dimensions, & packaging type)
- Pallet code
- Packaging details
- Shipment tracking details (carrier details and shipment number)
- Supplier batch
- Serial numbers
- Manufacturing date
- SLED (shelf-life expiration date)

The above data will be available in the IBD (inbound delivery) automatically. ASN from I-VEN will trigger IBD creation in S/4HANA followed by IBD creation in EWM and GR is triggered in EWM.

The I-VEN portal will do a validation of serial numbers to ensure that there are no duplicates of serial numbers in the IBD, or duplication from existing stock or other open ASN. Following a serial number could exist twice but with different material from different vendors. The combination of serial number and material number is unique. Since serial numbers are created by vendor and following their own nomenclature it is only a theoretical scenario that a serial number from different vendors occurs twice. In case of using the same serial number with same material from different vendor, I-VEN portal will not allow to enter the duplicate.

In case of mismatch between serial numbers or batch numbers received from I-VEN and physical goods, the goods are put in quarantine, and 2 cases can be expected:

Case 1: A modified ASN is requested from the supplier with the right serial numbers/batch numbers

Case 2: Goods returned to the supplier

For traceability reasons all incoming goods are tracked with batch and/or serial numbers.

It is possible in I-VEN portal to duplicate the vendor batch if necessary. This scenario comes up if EDGE has sent back a product to supplier to overhaul it and the supplier sends the same product with same batch number again. The same is valid if the supplier is not connected via I-VEN. S4/H provides same functionality out of the box.

Inbound Delivery Creation without I-VEN (Variants 7 – 10)

The Suppliers/Vendors who are not onboarded in I-VEN will be treated as normal Vendor/Supplier. The inbound delivery will be created directly in S4 against the purchase order. The IBD will pick the initial quantity of the PO which can be changed manually by the logistics operator/Warehouse Clerk respecting tolerances if available. The packaging details will be added during the GR, this can be done based on packaging instructions if available or manually. All information regarding batch and serial number should be added manually.

For traceability reasons all incoming goods are tracked with batch and/or serial numbers.

Batch Information on the Inbound Delivery (with I-VEN ASN) (Variants 1 – 6)

During IBD creation in S4 through the ASN, the system creates batch automatically with following batch characteristics:

- Supplier batch
- Manufacturing date
- SLED (shelf-life expiration date)
- Certificate of origin
- Previous batch number (example NIMR with 11-digit batch numbers)
- Concession ID (could be multiple IDs) - Concession ID gets created after the quality inspection, it will not come from the Supplier. If some quantity is identified to be used as Concise material, batch split will happen and in the new Batch number Concession ID will be captured in the Batch Characteristics.

If ASN is used the batch will contain all batch characteristics.

Batch Information on the Goods Receipt (without I-VEN ASN) (Variants 7 – 10)

If there is no ASN the batch must be created automatically by system and key batch characteristics parameters will be maintained by Warehouse Clerk at the time of Goods Receipt.

During the GR an internal batch number gets created and this internal batch number gets linked to the vendor batch. Later in the process vendor batches can be identified via the internal batch numbers and vice versa.

- If the delivery contains serial numbers, the serial numbers get allocated to the batches and/or HU. It is recommended to capture serial number at GR level for 4 entities as part of harmonized process, currently only Al Tariq is adding serial numbers starting the production process.

Goods Inspection upon Physical Receipt of Goods

- There should be a physical logistics goods inspection during or after unloading the truck to assure that goods are not damaged, or quantity is incorrect. Obvious deviations need to be remarked on the delivery papers of the carrier.
- After performing the logistics goods inspection GR is going to be processed. The accepted part will follow the usual GR process with quality inspection and put away. The declined part follows the decision of the MRB.

- In case of deviation of quantity there must be a check if the entity has defined tolerances for the materials. If the delivery is within defined tolerances, the Warehouse Clerk can update the quantity and execute the GR. The PO must be updated afterwards.
- If there are no defined tolerances or the delivery is out of defined tolerance a clarification with the planning and buying department must be done. If the deviation is accepted the quantity will be updated and GR will be done. In case of rejection the decision for next steps depends on the kind of deviation. In case of over delivery, the exceeding quantity must be returned to vendor. In case of under delivery, a manual request for remaining quantity must be raised and GR will be done the request is addressed.
- GR can be executed for accepted quantities. The GR for the over delivered quantity must wait for clarification and stays within clarification zone in GR.

Printing process of Handling Unit Labels

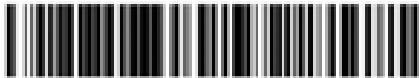
EWM can automatically print lists or labels according to the customized settings when we work with handling units (HUs). HU-Label should also be manually printable using the warehouse monitor.

Printing of HU documents is based on Adobe Forms with design as per the HU label design specified in KDD – Warehouse Label Forms.

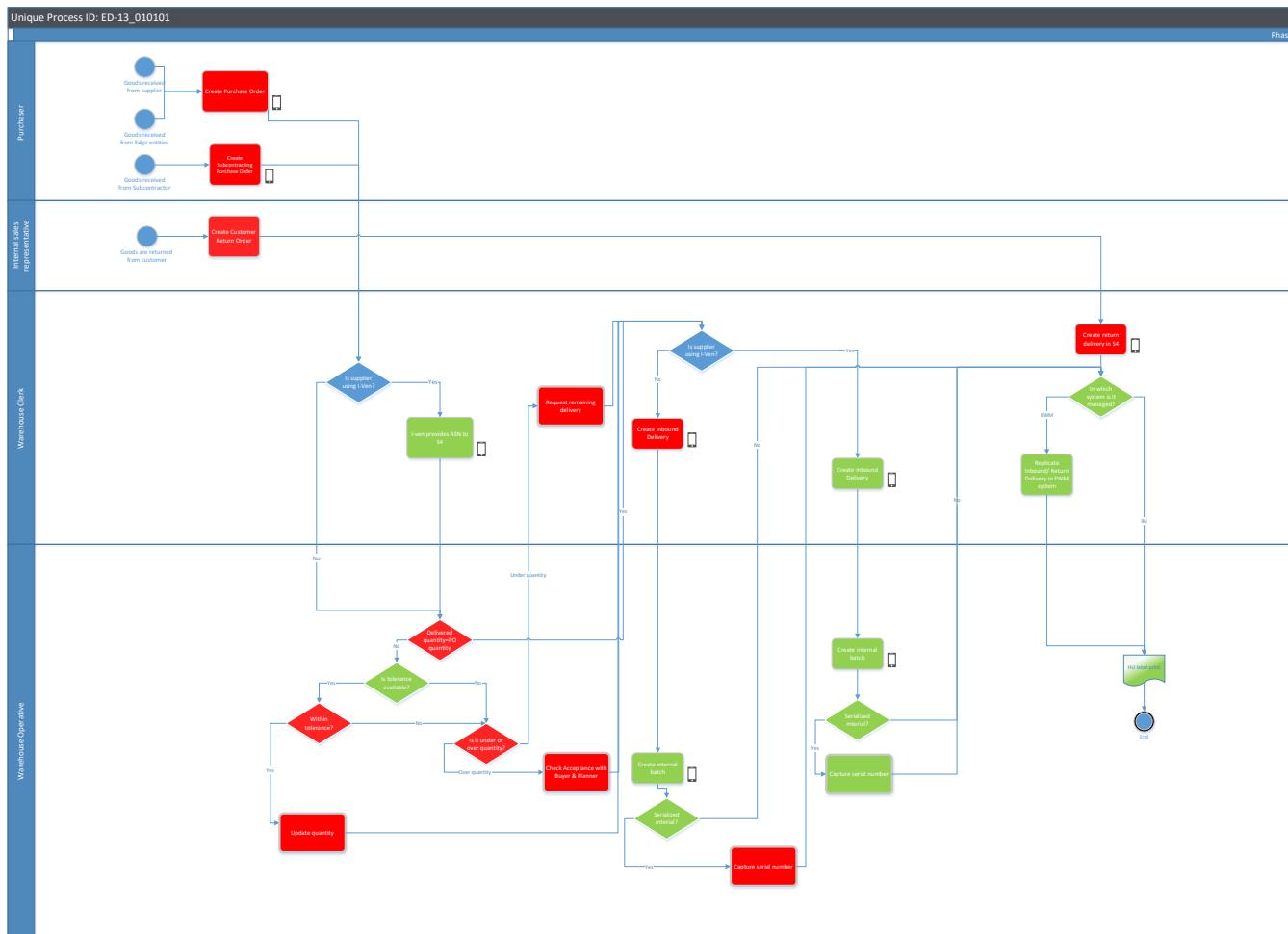
The printing of the labels happens after the information is updated in the inbound delivery as defined in above processes.

Following is the HU Label Template based on Inbound Delivery:

Figure 1: HU label based on the delivery will have the Delivery Number in place of GR (use of HHT for GR)

Entity Logo HALCON	Goods receipt number 202210030915	GR Date 10/03/2022
Material number 9386274361	Material text Wing cover coated small	
Batch number 36253984	Drawing number DN9386274361-01-02	Expiry date 10/03/2042
Vendor batch 4009	Material number barcode 	
National stock number 2734234706234	Quantity 5	UoM pcs
Inspection lot number 837492423	Quality inspector N.N.	
HU Number 376285539889	HU Barcode 	

3.1.1.2 Process Diagram



3.1.1.3 Activity List and Job Role Mapping

Process Step	BPH ID	Process Step Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_010101	Start	Buyer		NA	NA
P210	ED-13_010101	Is supplier using I-VEN?	Warehouse Clerk	Human Triggered	NA	NA
P220	ED-13_010101	I-VEN provides ASN to S4	Warehouse Clerk	Automated	/SCWM/MON	Yes
P610	ED-13_010101	Create Inbound Delivery	Warehouse Clerk	Partially Manual	/SCWM/MON	Yes
P613	ED-13_010101	Create internal batch	Warehouse Operative	Partially Manual	/SCWM/MON	Yes
P614	ED-13_010101	Serialized material?	Warehouse Operative	Human Triggered	NA	NA
P615	ED-13_010101	Capture serial numbers	Warehouse Operative	Automated	NA	NA

P620	ED-13_010101	Create Inbound Delivery Manually	Warehouse Clerk	Partially Manual	F1705	Yes
P621	ED-13_010101	Batch material?	Warehouse Operative	Automated	NA	NA
P622	ED-13_010101	Create internal batch	Warehouse Operative	Partially Manual	/SCWM/MON	Yes
P623	ED-13_010101	Serialized material?	Warehouse Operative	Human Triggered	NA	NA
P624	ED-13_010101	Capture serial numbers	Warehouse Operative	Human Triggered	NA	NA
P700	ED-13_010101	Create Customer Return Order	Internal sales representative	Human Triggered	F1708	Yes
P800	ED-13_010101	Create return delivery in S4	Warehouse Clerk	Partially Manual	F1705	Yes
P900	ED-13_010101	In which system is it managed (EWM/IM)?	Warehouse Clerk	Human Triggered	NA	NA
P910	ED-13_010101	Replicate Inbound/ Return Delivery in EWM system	Warehouse Clerk	Partially Manual	NA	NA
P910	ED-13_010101	HU label print	Warehouse Operative	Human Triggered		
P2300	ED-13_010101	End	Warehouse Clerk		NA	NA

3.1.1.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Var 1 – ASN of Serialized Goods with Batch & HU info	✗	✗	✗	✓*
Var 2 – ASN of Non-Serialized Goods with Batch & HU Info	✗	✗	✗	✓*
Var 3 – ASN of Serialized Goods with Batch but missing HU details	✗	✗	✗	✓
Var 4 – ASN of Non-Serialized Goods with Batch but missing HU details	✗	✗	✗	✓
Var 5 – ASN of Serialized Goods with Batch, and HUs are not applicable	✓	✓	✓	✓
Var 6 – ASN of Non-Serialized Goods with Batch, and HUs are not applicable	✓	✓	✓	✓
Var 7 – HU Managed Serialized Goods Received without I-VEN	✗	✗	✗	✓

Var 8 – HU Managed Non-Serialized Goods Received without I-VEN	X	X	X	✓
Var 9 – Non-HU Managed Serialized Goods Received without I-VEN	✓	✓	✓	✓
Var 10 – Non-HU Managed, Non-Serialized Goods Received without I-VEN	✓	✓	✓	✓

- Entity Specific Exceptions

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	* Certain Goods are repacked before GR and therefore HU information on the ASN is not relevant for GR. HU information has to be updated on Inbound Delivery before receipt.

3.1.2 Performing Goods Receipt

3.1.2.1 Process Description

Goods Receipt processing could be managed through the different variants listed below:

Var No	Variant Description	Action on Goods Receipt	Hardware
1	Var 1 – ASN of Serialized Goods with Batch & HU info	Scan HU labels	HHT
2	Var 2 – ASN of Non-Serialized Goods with Batch with Batch & HU Info	Scan HU labels	HHT
3	Var 3 – ASN of Serialized Goods with Batch but missing HU details	Scan HU labels	HHT
4	Var 4 – ASN of Non-Serialized Goods with Batch but missing HU details	Scan HU labels	HHT
5	Var 5 – ASN of Serialized Goods with Batch, and HUs are not applicable	Perform Goods Receipt through Desktop System	Desktop
6	Var 6 – ASN of Non-Serialized Goods with Batch, and HUs are not applicable	Perform Goods Receipt through Desktop System	Desktop

7	Var 7 – HU Managed Serialized Goods Received without I-VEN	Scan HU labels	HHT
8	Var 8 – HU Managed Non-Serialized Goods Received without I-VEN	Scan HU labels	HHT
9	Var 9 – Non-HU Managed Serialized Goods Received without I-VEN	Perform Goods Receipt through Desktop System	Desktop
10	Var 10 – Non-HU Managed, Non-Serialized Goods Received without I-VEN	Perform Goods Receipt through Desktop System	Desktop

Receiving goods through HU information provided by the Vendor (with I-VEN ASN) – (Variant 1 - 6)

- An inbound delivery arrives in EWM through the S/4HANA interface. The system simultaneously creates the HUs, ***where the vendor has sent the HU data (ASN)***. At this time the system is triggered on the HU information from the inbound delivery. This requires HU level contents information from the supplier.
- For entities that are using HU-Management (Halcon in the case of EDGE), master data must be maintained accordingly to allow for manual creation of HUs.
- Item handling units always have a 1:1 relation to a material and batch. Therefore, it is not possible to have one item HU with different materials whereas there can be multiple HU's with same material and batch.

Goods will be physically received in the receiving area/zone of the warehouse, while the HU Labels are printed and pasted on the goods. Goods will be always received through scanning of HUs via the handheld device.

- In case, where the HHDs are not available or not functional, the WO can perform the goods receipt through the S4H desktop interface as an exception scenario.
- A Receipt notification confirmation will be generated through S4H and passed on to the I-VEN system to complete the open delivery loop, consequently the vendor will also be informed automatically via the I-VEN portal.

Receiving goods through Entity-created HUs (without I-VEN) - (Variant 7 – 10)

- An inbound delivery arrives in EWM through the S/4HANA interface. The Warehouse clerk provides the packaging details of the items received (for HU managed items), along with item serial numbers (if they are available). The system is triggered to create HU information by updating the inbound delivery.
- Goods will be physically received in the receiving area/zone of the warehouse, while the HU Labels are printed and pasted on the goods.

- Goods will be always received through scanning of HUs via the handheld device. In case, where the HHDs are not available or not functional, the WO can perform the goods receipt through the S4H desktop interface.
- In both cases above, receiving through the HHD or through the S4H desktop interface; a Goods Receipt Note will be generated and will be available for printing to follow the physical proof of transaction trace requirements. This physical printed Goods Receipt note can later be sent for physical archiving after the respective duration of physical document retention is completed. (A specific requirement for NIMR, should be available for all entities.)

Receiving Non-HU Managed Items (Variant 5, 6, 9 and 10)

- GR for unpacked goods / non-HU managed items is carried out directly on the S4H desktop application or the Handheld Application.
- Goods will be physically received in the receiving area of the warehouse, without any HU Label.
- Goods Receipt note will be generated and will be available for printing irrespective of the receipt being performed through the HHD or through the desktop interface.

Receiving Serialised Goods (Variant 1, 3, 5, 7 and 9)

Serialised Materials will have the QR code of serial number printed on the Putaway label. If a packaging contains multiple serial numbers, they will be printed on multiple Put Away Labels.

The following two scenarios can arise when handling receipt ASN coming from I-VEN or when receiving goods directly:

- Receiving Serialised Goods through ASN in I-VEN

In case Serialised Goods are received through the I-VEN, the serial information is transferred from I-VEN to the Inbound Delivery and it is confirmed at the time of goods receipt.

- Receiving Serialised Goods without ASN – without I-VEN

In case Serialised Goods are received directly on the warehouse without ASN or I-VEN integration, the user will have the option to either scan the serials or type in the serial numbers from both the handheld device and the S4H Desktop Application.

In either case, the serial information is captured before the Goods Receipt and therefore the stock of serialised goods will be created at the time of goods receipt.

Receiving Non-Serialised Goods (Variant 2, 4, 6, 8 and 10)

Non Serialised goods will not require any entry of the serial numbers, and it will not carry any label.

Printing process of Handling Unit (HU) Labels

EWM can automatically print lists or labels according to the customized settings when we work with handling units (HUs). HU-Label should also be manually printable using the warehouse monitor.

Printing of HU documents is based on Adobe Forms with design as per the HU label design specified in KDD – Warehouse Label Forms.

The printing of the HU labels happens after the information is updated in the inbound delivery as defined in above processes. And the sequencing of steps in the process have been set out to facilitate Goods Receipt by scanning of these labels (Figure 5 and 6) through the Handheld devices. However, the following **exception process** will be followed in case where the HHTs are not available or in case the items are Non-HU managed:

- Labels will not be printed out prior to posting the goods receipt.
- The information points defined above for updating the batch, packaging and serial information will remain the same.
- The goods receipt will be performed through the S4H desktop interface.
- After the goods receipt is posted to the system, the HU or the Non-HU Serial label will be printed out in reference to the Goods Receipt Number.
- The layout of these labels is presented below in Figure 7 and 8
- The Goods Receipt Note will be generated and will be available for printing consistent to the processes defined above.

Figure 5: HU label based on the GR

Entity Logo HALCON	Goods receipt number 202210030915	GR Date 10/03/2022
Material number 9386274361	Material text Wing cover coated small	
Batch number 36253984	Drawing number DN9386274361-01-02	Expiry date 10/03/2042
Vendor batch 4009	Material number barcode -	
National stock number 2734234706234	Quantity 5	UoM pcs
Inspection lot number 837492423	Quality inspector N.N.	
HU Number 376285539889	HU Barcode	

Goods receipt process via the Handheld Device

The following two scenarios are possible while receiving goods on the handheld device:

- Goods Receipt by Scanning HUs
- Manual Entry using the Handheld Device

The above two scenarios are created to facilitate the HU managed items (as in the case of HALCON). The following paragraphs detail the operational aspects of the process in handling the above two processes:

Goods Receipt by Scanning HU Labels (Variant 1, 2, 3, 4, 7 and 8)

The scenarios giving rise to receiving goods by scanning both HU labels will be in the case of serialized goods, irrespective if the HU is created through I-VEN or manually.

This is a handheld device operation whereby the Warehouse Operative (WO) will perform goods receipt in the following sequence:

- Log on to the Handheld Device App with user specific secure credentials
- Select the Option of Receiving with HU on the Handheld Device App

- The WO will scan one HU label from the physical goods and this HU will be selected from the list (if it's on the list) and the app will drill down to a pre-selected item serial numbers.
- Once an HU is scanned and physically verified, the WO proceeds on to the next HU.
- The WO repeats the operation on all the HUs while the scanned data remains in the App memory.
- After completing all HUs to be received, the WO will perform the Goods Receipt Post option available on the App.
- Goods Receipt is posted in the system and GR number is generated from SAP and displayed on the APP.
- If the inbound delivery is completely received, it is removed from the APP list of inbound deliveries.

Manual Goods Receipt from the S4H desktop system or the Handheld Application (Variants 5, 6, 9 and 10)

In cases where handheld devices are not used for the goods receiving process, the WO will use the direct system entry option from the desktop application. The direct system entry will be done as per the material handling protocol set out in the material master, that's as follows:

- If the material is HU enabled, the HU information will be manually fed to the system
- If the material is NON-HU, the item quantities will be directly input using the system interface
- If the material is serial managed, each serial number will be copied from the inbound delivery and confirmed against the total quantity on the item being received.

Digital Routing of the Goods Receipt Document

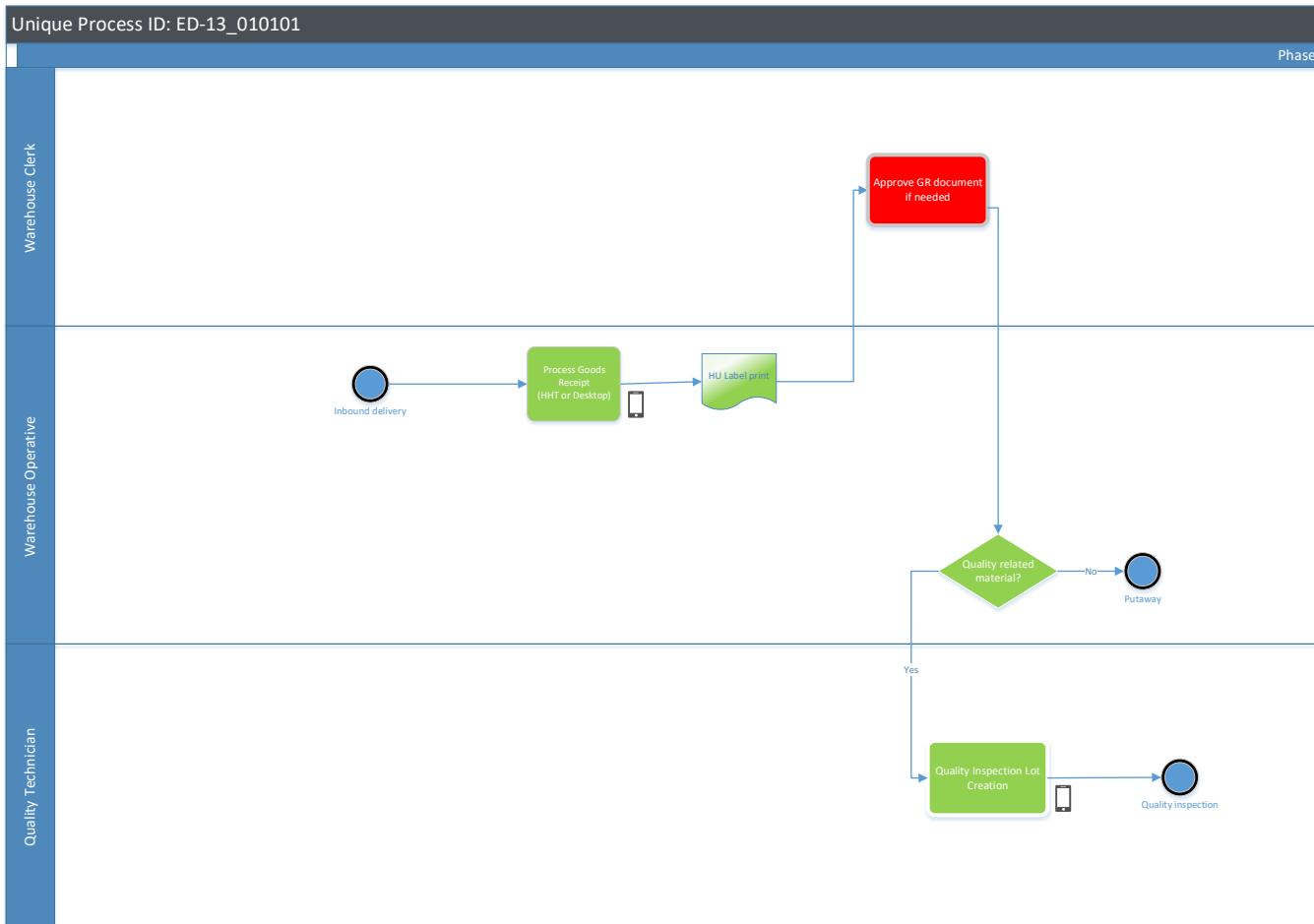
NIMR requires an integrated workflow and a connected document repository for the digital notification and attachments addition to the Goods Receipt Note. The same process requirement was considered value added by other entities.

The following process will follow:

- Upon performing the goods receipt through the handheld device or the S4 desktop interface, a FIORI based notification will be routed to the Warehouse Clerk requiring an action at his end.
- The possible actions at the part of the WC are "Reviewed" or "Mark Dispute". While review option will follow the forward process protocol, the Dispute option will mark the Goods Receipt Document with a "Caution" of Dispute, requiring an explanatory note from the Warehouse Clerk.
- The further process for Disputed Goods Receipts will be physical verification of the source transaction, and check if a reversal is required. In case of Reversal, it will follow the Reverse logistics process. And in case no further action is required on the Disputed document, then the Warehouse Clerk will have the authority to remove the "dispute caution" from the document with an update on the explanatory note. Both the original dispute comment, and the explanatory note on the removal of the dispute will remain traceable in the system with date and time stamp.
- The forward process on the "Reviewed" option will follow the following steps:
 - Reviewed will require the Warehouse Clerk to upload scanned documents as attachments to the Goods Receipt document. The following Attachments options will be available.
 - Supplier Delivery Note
 - Goods Receipt Document signed printout (optional) / if applicable
 - Additional Attachments (in case required to upload further documents)

- After successful upload of attachments, this will complete the actionable loop of the goods receipt process, the WC will submit these documents and a notification will be generated for the related stakeholders: designated users from procurement and finance.
 - This notification will land in the users' FIORI Inbox and will have an accessible link to the system document for Goods Receipt along with the attachments uploaded by the WC. The process is completed with this notification.
 - The uploaded attachments will remain accessible against the goods receipt document.

3.1.2.2 Process Diagram



3.1.2.3 Activity List and Job Role Mapping

Process Step	BPH ID	Process Step Description	Role	SAP Automation *	Fiori App ID	Fiori
P0500	ED-13_010101	Start	Warehouse Operative			
P1000	ED-13_010101	Process Goods Receipt (EWM)	Warehouse Operative	Automated	/SCWM/PRDI	Yes
P1100	ED-13_010101	HU label print (if HHT not used)	Warehouse Operative	Automated	NA	NA
P1100	ED-13_010101	Approve GR document if needed	Warehouse Clerk	Human Triggered		
P1200	ED-13_010101	Quality related material?	Warehouse Operative	Automated	NA	NA
P1210	ED-13_010101	Quality Inspection Lot Creation	Quality Technician	Automated	/SCWM/PRDI	Yes

3.1.2.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Var 1 – ASN of Serialized Goods with Batch & HU info	✗	✗	✗	✓*
Var 2 – ASN of Non-Serialized Goods with Batch & HU Info	✗	✗	✗	✓*
Var 3 – ASN of Serialized Goods with Batch but missing HU details	✗	✗	✗	✓
Var 4 – ASN of Non-Serialized Goods with Batch but missing HU details	✗	✗	✗	✓
Var 5 – ASN of Serialized Goods with Batch, and HUs are not applicable	✓	✓	✓	✓
Var 6 – ASN of Non-Serialized Goods with Batch, and HUs are not applicable	✓	✓	✓	✓
Var 7 – HU Managed Serialized Goods Received without I-VEN	✗	✗	✗	✓
Var 8 – HU Managed Non-Serialized Goods Received without I-VEN	✗	✗	✗	✓
Var 9 – Non-HU Managed Serialized Goods Received without I-VEN	✓	✓	✓	✓
Var 10 – Non-HU Managed, Non-Serialized Goods Received without I-VEN	✓	✓	✓	✓

- Entity Specific Exceptions

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
Goods Receipt Handling Variant 1 and 2	NA	NA	NA	* Certain Goods are to be repacked at the time of GR or after GR.
Digital Approvals of Goods Receipt Documents	NA	NA	Goods Receipt Document is required to be routed for approval as explained in the	NA

			section: "Digital Routing of the Goods Receipt Document"	
--	--	--	--	--

3.1.3 Perform quality inspection

3.1.3.1 Process Description

The quality inspection step is performed if materials are quality related otherwise the items can be putaway in the warehouse to continue the inbound flow. For quality related materials, the system creates an inspection lot for the inbound delivery items if they are relevant for inspection. It is possible to process GR without quality inspection as well if the material is not relevant for QI or if the QI is getting skipped based on the rules set in the system. There can be different settings for the creation of inspection lots. Depending on supplier reliability and criticality of parts dynamic definitions of inspection lots can be set. After GR, entire quantity will be posted to quality stock, QC will perform the quality check by sampling and

- approve or reject the stock of the entire delivery
- approve or reject a partial stock of delivery

If material is posted to stock type "blocked" a red putaway label will be printed to indicate that the material is not ready to use. The label will be printed on red paper and a separate printer. The reason of Rejection will be visible on the Rejection Label.

Figure 6: Example for putaway label (blocked/quality)

Rejected Labels – With Packaging

Entity Logo		Warehouse Task No	WT Barcode
HALCON		1240128401	
Rejected Code	Rejection Reason	Inspection Lot No	
90	Reason Long Text	980152815	
Package Number	Queue Number	Date & Time	
111002412412 Single Item Package / Multiple Items Package *	Q01-WHS1	31.05.2023 4 : 35 PM	
Entity Material Number	Ref PO / Production Order		
1110786412412	21958120581		
Entity Batch Number	Material Description		
ABC12412421	XYZ MATERIAL - up to 40 Characters of Print Space		
Source Bin	Quantity - UOM		
WM1-AB001-0001	5 - Pieces		
Print Date	Print Time	Printed by	Confirmation *
31.05.2023	5 : 35 PM	Mr XYZ	DATE & TIME STAMP

Rejected Labels – Without Packaging

Entity Logo		Warehouse Task No	WT Barcode
HALCON		1240128401	
Rejected Code	Rejection Reason	Inspection Lot No	
90	Reason Long Text	980152815	
Entity Material Number	Entity Batch Number	Queue Number	Date & Time
111002412412	AABC45124	Q01-WHS1	31.05.2023 4 : 35 PM
Material Description		Ref PO / Production Order	
XYZ MATERIAL - up to 40 Characters of Print Space		21958120581	
		Quantity - UOM	
		5 - Pieces	
Source Bin	Destination Bin		
WM1-AB001-0001	WM1-AB001-0001		
Print Date	Print Time	Printed by	Confirmation *
31.05.2023	5 : 35 PM	Mr XYZ	DATE & TIME STAMP

GR triggers the creation of warehouse tasks to move the goods to the quality inspection centre for a physical inspection. In case of multiple pallets delivery only the samples or sample pallets are transferred to the QC area. The final configuration is depending on the physical environment of the entity. The inspection lot is now available in the worklist of the quality technician. The technician inspects the delivered goods and records the inspection

results. Based on these inspection results, the quality engineer makes a usage decision. It is possible to enter partial decisions for a partial quantity of this stock.

Material master configuration determines if a warehouse task to quality inspection area (QI area) is going to be created automatically or not. Parts can also be inspected directly in the GR-zone if large parts are to be inspected or due to the environmental conditions of the QI-area.

As a result of the quality inspection, it gets determined if the goods fulfil the quality standards for storage in the warehouse or not. If the goods are not accepted, they will be handed over to the MRB (material review board). This is the point where the entity decides how to proceed with the goods. Until decision has been taken the stock remains in quality stock. There are 4 possible options to handle the rejected stock:

- Scrap
- Reprocess
- Return to vendor
- Concession

After the decision, the creation of warehouse tasks to move the handling units or the items to the corresponding area in the warehouse are triggered automatically. The process ends with the confirmation of the warehouse tasks.

Concessional materials are materials that are not fully compliant but can still be used for specific purposes (e.g.: prototypes, ...). Once the concessioned materials are identified by the quality, a concessioned ID is added to the batch characteristics, these materials are subject to relabelling and repackaging before creation of warehouse tasks.

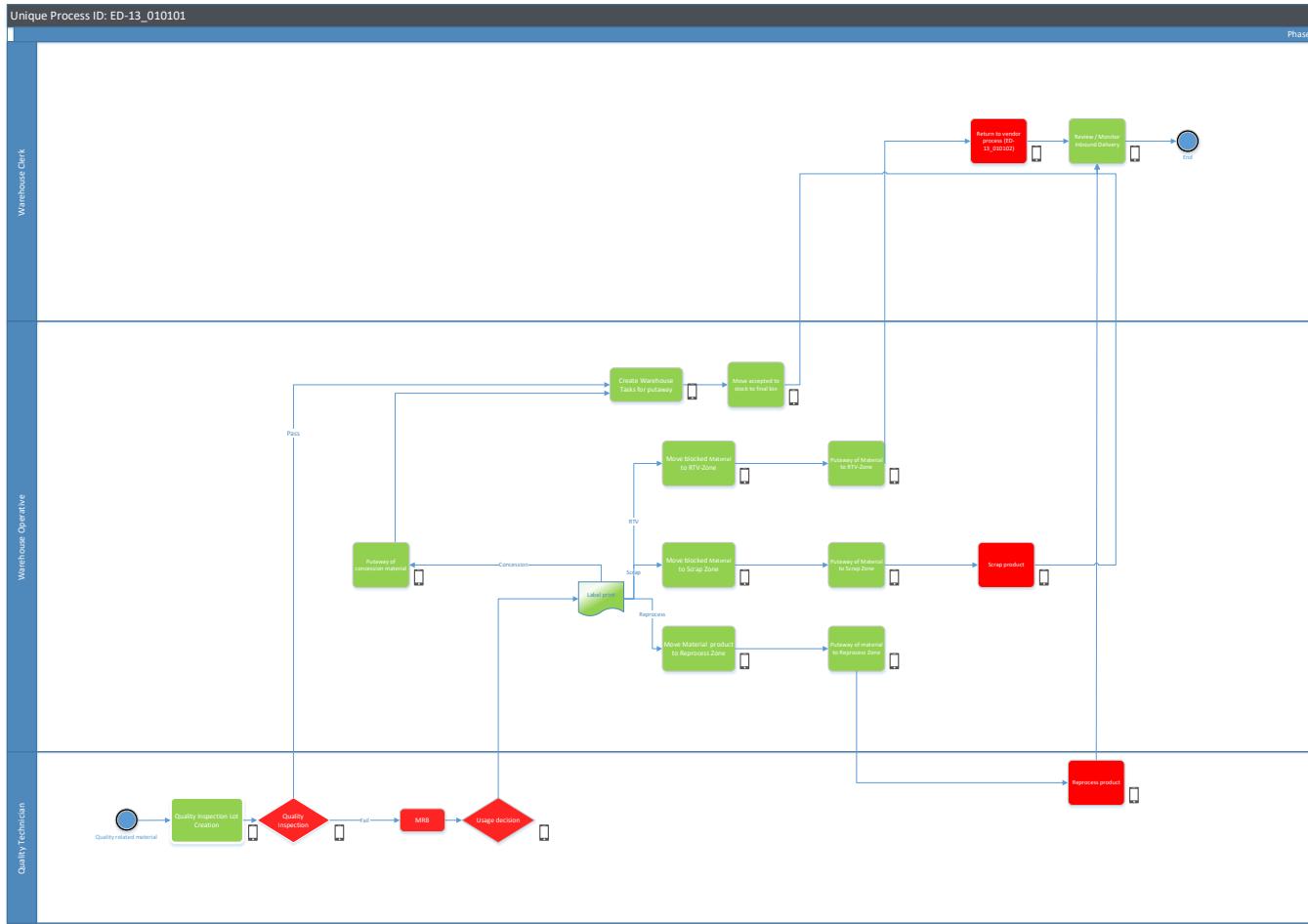
Quality Documents:

Once the warehouse operator performs the goods receipt based on the system rules, quality inspection documents are created automatically for each line item in QM.

The inspection rules are usually set-up either at:

1. Delivery level
2. Product/HU level

3.1.3.2 Process Diagram



3.1.3.3 Activity List and Job Role Mapping

Process Step	BPH ID	Process Step Description	Role	SAP Automation *	Fiori App ID	Fiori
P1000	ED-13_010101	Start	Warehouse Operative			
P1200	ED-13_010101	Quality related material?	Warehouse Operative	Human Triggered	NA	NA
P1210	ED-13_010101	Quality Inspection Lot Creation	Quality Technician	Partially Manual	/SCWM/PRDI	Yes
P1220	ED-13_010101	Quality Inspection	Quality Technician	Human Triggered	F2180	Yes
P1330	ED-13_010101	Create Warehouse Tasks for putaway	Warehouse Operative	Partially Manual	/SCWM/RFUI	Yes
P1340	ED-13_010101	Move accepted to stock to final bin	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1400	ED-13_010101	MRB	Quality Technician	Human Triggered	NA	NA
P1500	ED-13_010101	Usage decision	Quality Technician	Human Triggered	F2180	Yes
P1600	ED-13_010101	Label print	Warehouse Operative	Automated	NA	NA

P1700	ED-13_010101	Move blocked product to Scrap Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1710	ED-13_010101	Putaway of product to Scrap Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1720	ED-13_010101	Scrap product	Warehouse Operative	Human Triggered	/SCWM/ADGI	Yes
P1800	ED-13_010101	Move blocked product to Reprocess Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1810	ED-13_010101	Putaway of product to Reprocess Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1820	ED-13_010101	Reprocess product	Quality Technician	Human Triggered	F2180	Yes
P1900	ED-13_010101	Move blocked product to RTV-Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1910	ED-13_010101	Putaway of product to RTV-Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P2000	ED-13_010101	Putaway of concession products to dedicated zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P2100	ED-13_010101	Return to vendor process (ED-13_010102)	Warehouse Clerk	Human Triggered		
P2200	ED-13_010101	Review / Monitor Inbound Delivery	Warehouse Clerk	Automated	/SCWM/PRDI	Yes
P2300	ED-13_010101	End	Warehouse Clerk		NA	NA

3.1.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Quality inspection for receiving process (when applicable for the incoming goods)	✓	✓	✓	✓
Concession Materials	NA	NA	✓*	NA

- Entity Specific Exceptions

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
Concession Materials	NA	NA	Batch Characteristics identifier for Concession Materials is required on the Putaway Label for NIMR.	. NA

3.1.4 Putaway of a product

3.1.4.1 Process Description

Putaway warehouse task (WT) are triggered automatically on the Goods Receipt in order to move the product/HU to quality work centre and further on to warehouse.

A destination bin will be pre-determined on the Putaway WT if information is available in the system against the applied Putaway strategy. In this case, the system will validate putaway search sequence configuration and strategy to determine the final bin based on:

- Mixed storage (different materials & their batches in same bin location), which is required for NIMR, HALCON and ADASI that are using adding to existing stock putaway strategy. The standard recommended practice is putaway strategy on the basis of bin capacity resulting from its dimensions. However, in case bin capacity (weight and dimensions) are not maintained in the system, the Warehouse Operator will manually change the Storage Bin as per availability.
- For AL TARIQ, there is no mixed storage required and products are putaway based on the next empty bin strategy with a 1:1 material, its batch and the storage bin relationship. The next empty bin will still be determined based on the bin and product / HU dimensions.

The system will allow manual bin selection if required in absence of the dimensions of either product or the storage bins.

Regarding the confirmation of the putaway WT to move the Product/HU to final bin, the recommended approach is to confirm warehouse task by HANDHELD device after execution of physical movement by warehouse operative. This will update the stock in the respective storage bin. NIMR, ADASI and AL TARIQ have decided to let this transaction remain on the digital trace, while HALCON has decided to print out putaway labels and physically place them on the package. In case, the handheld operation cannot be performed due to any reason, warehouse clerk will have option to confirm the warehouse task on desktop remotely.

The Putaway operation on the HHD will be performed in the following sequence:

- 2.01 - Log on to the Handheld Device App with user specific secure credentials
- 2.02 - Select the Option of System Guided Put Away on the Handheld Device App where Queues are maintained (as in the case of NIMR) or select the option of Manual Selection for manually selecting a Put Away Warehouse Task.

- 2.05 - If the item is HU managed, the WO will scan one HU label from the physical goods and this HU will be selected from the list (if its on the list) and the app will drill down to a pre-selected items' serial numbers (if item is serial managed).
- 2.06 - If the item is non-HU, the WO can put in data manually on the HHT.
- 2.07 - Once an HU is completely scanned, the WO proceeds on to the next HU on the WT
- 2.09 - The WO repeats the operation on all the HUs while the scanned data remains in the App memory.
- 2.10 - After completing all HUs to be put away or all items to be put away, the WO will firm / select the respective bin to perform the Put Away
- 2.11 - After selecting the location, the WO will select Post the Put Away option available on the App.
- 2.13 - If the Warehouse Task is completed, it is removed from the System Guided Put Away list.

Figure 7: Example for putaway label (with packaging)

"Entity Logo" HALCON	Warehouse Task No 1240128401	"WT Barcode" 	
Package Number 111002412412 Single Item Package / Multiple Items Package *	Queue Number Q01-WHS1	Date & Time 31.05.2023 4 : 35 PM	
Entity Material Number 111002412412	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space	Ref PO / Production Order 21958120581	
Entity Batch Number ABC12412421		Quantity - UOM 5 - Pieces	
Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001		
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Confirmation * DATE & TIME STAMP

Figure 8: Example of put away label (without packaging/multiple units)

"Entity Logo" HALCON		Queue Number Q01-WHS1	"WT Barcode" 45000024124	
Entity Material Number 111002412412	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space			Material Number Date & Time 31.05.2023 4 : 35 PM
HS CODE AABC45124			Ref PO / Production Order 21958120581	
Expiry Date				
Batch Number 	Inspection Lot Number 1240124128098	Quantity 5	UOM Pieces	
Quality Inspector Name				
WBS CODE PJ.001.000124	Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001		
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Destination Storage Type:	

Figure 9: Example of put away label (without packaging/serialized material)

"Entity Logo" HALCON		Queue Number Q01-WHS1	"WT Barcode" 45000024124	
Entity Material Number 111002412412	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space			Material Number Date & Time 31.05.2023 4 : 35 PM
HS CODE AABC45124			Ref PO / Production Order 21958120581	
Expiry Date				
Batch Number 	Inspection Lot Number 1240124128098	Quantity - UOM 1 - Piece	Serial Number 	
Quality Inspector Name				
WBS CODE PJ.001.000124	Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001		
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Destination Storage Type:	

HANDHELD execution

All physical movements of the goods will be executed via mobile devices in the system. The following functions must be available on the mobile device:

- Execution of GR from supplier or subcontractor by warehouse operative
- Print of labels for incoming goods (HU level) by warehouse operative
- Print of Put Away Labels for incoming goods by warehouse operative
- Repackaging of received goods by warehouse operative (if required)
- Executing warehouse tasks (2 steps confirmation for putaway) by warehouse operative
- HU info scan by warehouse operative

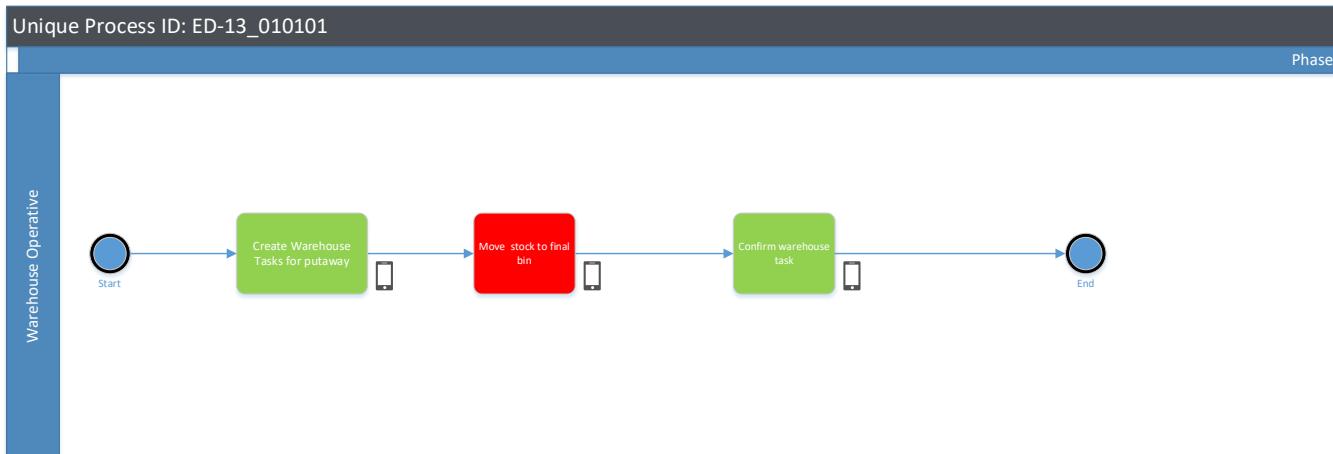
This is the recommended solution, however, the system should enable to use desktop as well for warehouse tasks confirmation.

Defined and approved labels related to the process

Label / Form	Type	Trigger	Print/ Digital	Format	NIMR	HALCON	AI TARIQ	ADASI
HU label: delivery based	Label	HU creation transaction after delivery	Print	A6	Ok	Ok	Ok	Ok
HU label: GR based	Label	HU creation transaction at Goods Receipt	Print	A6	Ok	Ok	Ok	Ok
Goods Movement Document - Receipt	Form	MIGO – Goods Receipt	Digital/Print	A4	OK	-	-	-
Goods Movement Form - Issuance	Form	MIGO – Goods Receipt	Print	A4	Ok	Ok	Ok	Ok
Put Away label	Label	Warehouse Task	Print	A6	-	Ok	-	-
Rejected label	Label	Warehouse Task / Inspection Lot UD Confirmation	Print	A6	Ok	Ok	Ok	Ok

*Final decision has to be made regarding the use of item label (shown in 9.Appendix)

3.1.4.2 Process Diagram



3.1.4.3 Activity List and Job Role Mapping

Process Step	BPH ID	Process Step Description	Role	SAP Automation *	Fiori App ID	Fiori
P1000	ED-13_010101	Start	Warehouse Operative			
P1330	ED-13_010101	Create Warehouse Tasks for putaway	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1340	ED-13_010101	Move stock to final bin	Warehouse Operative	Partially Manual	/SCWM/RFUI	Yes
P1400	ED-13_010101	Confirm warehouse task	Quality Technician	Human Triggered	NA	NA
P2300	ED-13_010101	End	Warehouse Clerk		NA	NA

3.1.4.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Mixed storage strategy	✗	✓	✓	✓
Next empty bin strategy	✓	✗	✗	✗

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.2 Perform goods receipt reversal (ED-13_010102)

In this chapter will be covered the following reversal processes of inventory management:

Main steps	Brief description	Forms & labels	Hardware use	Integration
3.2.1 Goods receipt reversal	Cancelation of Goods Receipt	NA	Desktop/HHT	MM/IM/EWM
3.2.2 Return to vendor	Final customer return and replacement <i>Return to vendor process should normally be considered in outbound PDD but as no L4 has been identified at the BPH level, it is covered in this section.</i>	Material issuance form	Desktop/HHT	MM/IM/EWM
3.2.3 Rework process: internal & external rework	Rework process: including internal and external rework of faulty materials <i>Rework process should normally be considered in outbound PDD but as no L4 has been identified at the BPH level, it is covered in this section.</i>	NA	NA	IM/EWM/QM/MM

3.2.1 Goods receipt reversal

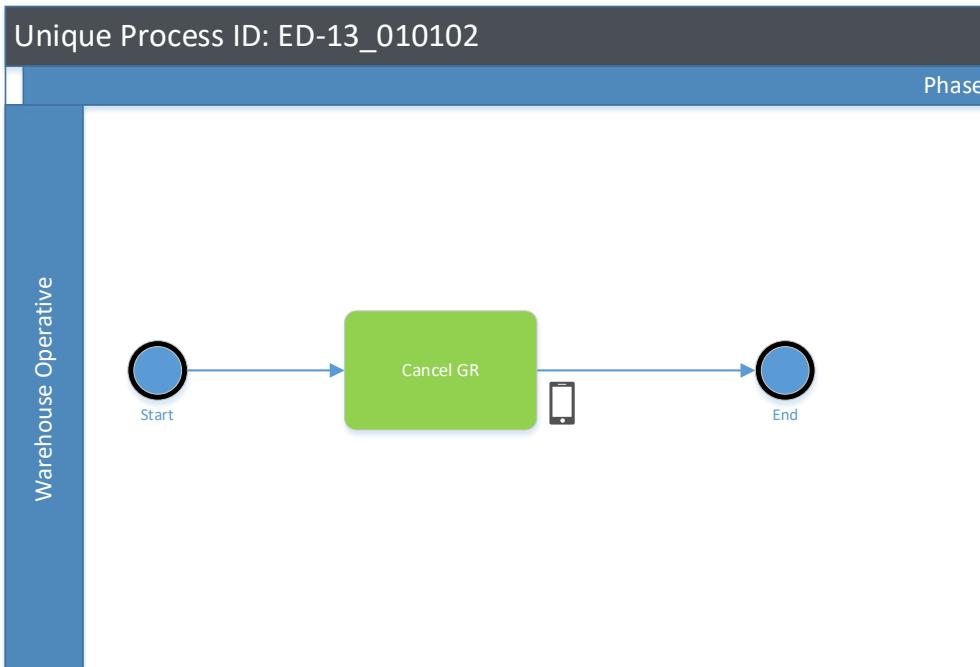
3.2.1.1 Process Description

After inbound delivery, business can need to cancel goods receipt. This process is named reversal process and can be needed for the following reasons:

- Wrong quantity: If the wrong quantity of goods has been received, it may require the cancellation of the goods receipt and the creation of a new one with the correct quantity.
- Wrong batch or serial number: If the wrong batch or serial number has been received, it may require the cancellation of the goods receipt and the creation of a new one with the correct batch or serial number
- Wrong material: If the wrong material has been received, it may require the cancellation of the goods receipt and the creation of a new one with the correct material
- Invoice cancellation: If the invoice for the goods has been cancelled, it may require the cancellation of the goods receipt
- Other issues: There could be other issues such as problems with the quality of the goods or incorrect pricing, problem with documentation, VAT problem, wrong supplier assigned to PO, error during creation which may require the cancellation of the goods receipt as well.

System should allow GR cancelation when needed.

3.2.1.2 Process Diagram



3.2.1.3 Activity List and Job Role Mapping

Process Step	BPH ID	Process Step Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_010102	Cancel GR	Warehouse Operative	Human triggered	NA	NA

3.2.1.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Goods receipt reversal	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.2.2 Return to vendor process: final return and replacement

3.2.2.1 Process Description

If at any point of time a decision is taken to return the goods to vendor, the process to follow is detailed below:

A quality notification is triggered by quality manager and a decision is taken:

- reject,

- rework,
- return,
- Scrap Process.

The quality decisions are detailed in Quality PDD, manage non-conformance (ED-11_020401).

The return to vendor process is triggered by a task from quality assigned to S2P, then 2 different scenarios are expected based on the status of invoicing:

Scenario1: invoicing is already done.

In this process new documents need to be created as PO is closed. The process starts with the creation of Return Purchase order, for further details see S2P PDD (ED-01_030305). Then a return delivery is created which is replicated in EWM in case the stock is EWM managed.

The remaining steps follow standard outbound process with picking and packing.

If transportation is managed by the entity, the process goes through TM before completing goods issue.

Scenario 2: invoicing is not done yet.

As for this case purchase order is still open, a related return delivery can be created directly. The following process is from here same as scenario 1.

To inform the supplier of the returned goods, the system will send all info of the return delivery directly to the I-VEN portal, if supplier is using the portal. The supplier will find info about the quantity, batches and serial numbers rejected by EDGE. If the supplier is not using I-VEN portal, information will be communicated through email.

For the case of replacement, the goods are returned through return to vendor process and the incoming goods, with different serial number, are received from the supplier through normal inbound process.

While issuing the goods to the supplier, a material issuance document will be generated by the system to accompany the goods in the return process.

"Entity Logo"
HALCON

Goods Movement Document

Movement Type: Material Issuance

"Goods Movement Barcode"



Material Document #

9 0 5 1 3 8 5 0 9 1

Date DATE_FIELD

Time TIME_STAMP

Ref Doc Type OUTBOUND DELIVERY

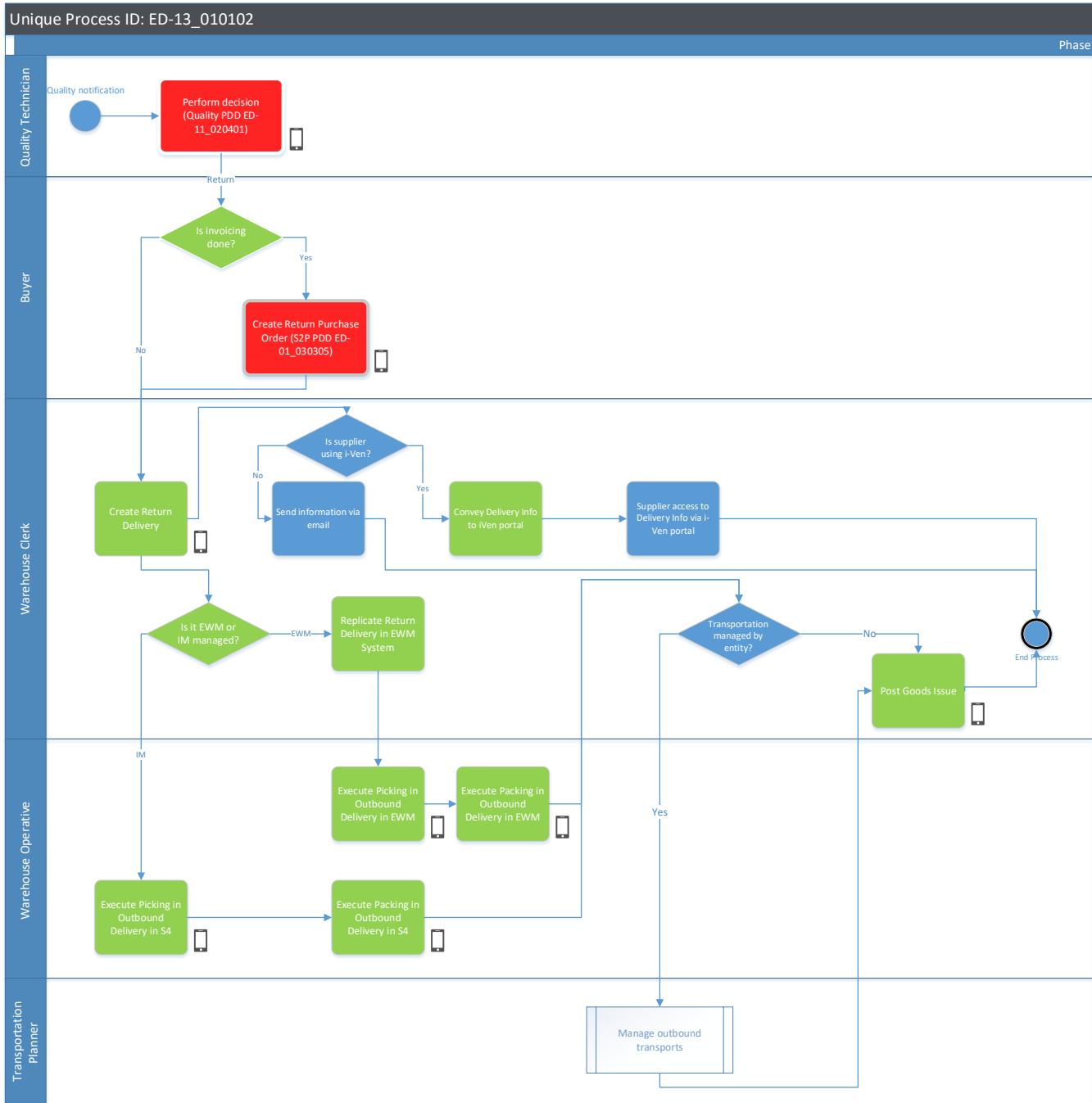
Ref Doc Number 95351135

S No	Material Number	Material Description	Handling Unit	Batch	Serial Number	Quantity	UOM	Accounting Element	Source Location	Destination Location
1	93821414	Wing Cover Coated Small	9842194102	ABC1234	421124125	1	PC	WBS / Cost Centre	Storage Location	Storage Location
2	93821414	Wing Cover Coated Small	9842194102	ABC5432	421124126	1	PC	WBS / Cost Centre	Storage Location	Storage Location
3	93851335	Wing Cover Small	NA	XYZ123	NA	190	PC	WBS / Cost Centre	Storage Location	Storage Location
TOTAL		2 MATERIALS				192	PC			

"Footer"

Created by	Issued to	Date & Time	Security Check	Received by
USER_NAME_FIELD	Receiver Name / Responsible person	Issued DATE & TIME		
Printed by USER_ID_NAME on PRINT_DATE PRINT_TIME				

3.2.2.2 Process Diagram



3.2.2.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_010102	Quality notification	Quality Technician	Partially Manual	NA	NA
P200	ED-13_010102	Perform decision (Quality PDD ED-11_020401)	Quality Technician	Automated	F2180	Yes
P300	ED-13_010102	Is invoicing done?	Buyer	Automated	NA	NA
P400	ED-13_010102	Create Return Purchase Order (variants detailed in S2P PDD ED-01_030305)	Buyer	Automated	F0348A	Yes
P500	ED-13_010102	Create Return Delivery	Warehouse Clerk	Automated	F0867A	Yes
P600	ED-13_010102	Is supplier using I-VEN?	Warehouse Clerk	Human Triggered	NA	NA
P610	ED-13_010102	Convey Delivery Info to I-VEN portal	Warehouse Clerk	Automated		
P611	ED-13_010102	Supplier access to Delivery Info via I-VEN portal	Warehouse Clerk	Automated	NA	NA
P620	ED-13_010102	Send information via email	Warehouse Clerk	Automated	NA	NA
P700	ED-13_010102	Is it EWM or IM managed?	Warehouse Clerk	Human Triggered	NA	NA
P710	ED-13_010102	Replicate Return Delivery in EWM System	Warehouse Clerk	Automated	NA	NA
P711	ED-13_010102	Execute Picking in Outbound Delivery in EWM	Warehouse Operative	Automated	/SCWM/RF UI	Yes
P712	ED-13_010102	Execute Packing in Outbound Delivery in EWM	Warehouse Operative	Automated	/SCWM/RF UI or /SCWM/PR DO or /SCWM/PA CK	Yes
P720	ED-13_010102	Execute Picking in Outbound Delivery in S4	Warehouse Operative	Automated	/SCWM/RF UI	Yes
P721	ED-13_010102	Execute Packing in Outbound Delivery in S4	Warehouse Operative	Automated	/SCWM/PA CK	Yes
P800	ED-13_010102	Transportation managed by entity?	Warehouse Clerk	Human Triggered	NA	NA
P900	ED-13_010102	Execute TM sub-process for transportation	Transportation Planner	Automated	/SCMTMS/F RE_ORDER	Yes
P1000	ED-13_010102	Post Goods Issue	Warehouse Clerk	Automated	/SCMTMS/A SR	Yes
P1100	ED-13_010102	End Process	Warehouse Clerk		NA	NA

3.2.2.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Scenario 1 – Return Goods to Vendor while goods are already invoiced	✓	✓	✓	✓
Scenario 2 – Return Goods to Vendor while there is no further action / subsequent document on the PO	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.2.3 Rework process: internal & external rework

3.2.3.1 Process Description

During the quality inspection, if the goods received by the supplier are damaged and a decision of rework is made, 3 scenarios can be expected:

a- Internal rework

A faulty component was delivered by a supplier but can be used after reworking it internally. The process is triggered and led by production planning that creates the rework order. In the warehouse, goods are moved physically from restricted to unrestricted quality stock and then moved to production to perform the rework. Once the rework is completed, the goods are received from production and putaway in the warehouse.

b- External rework: rejected items

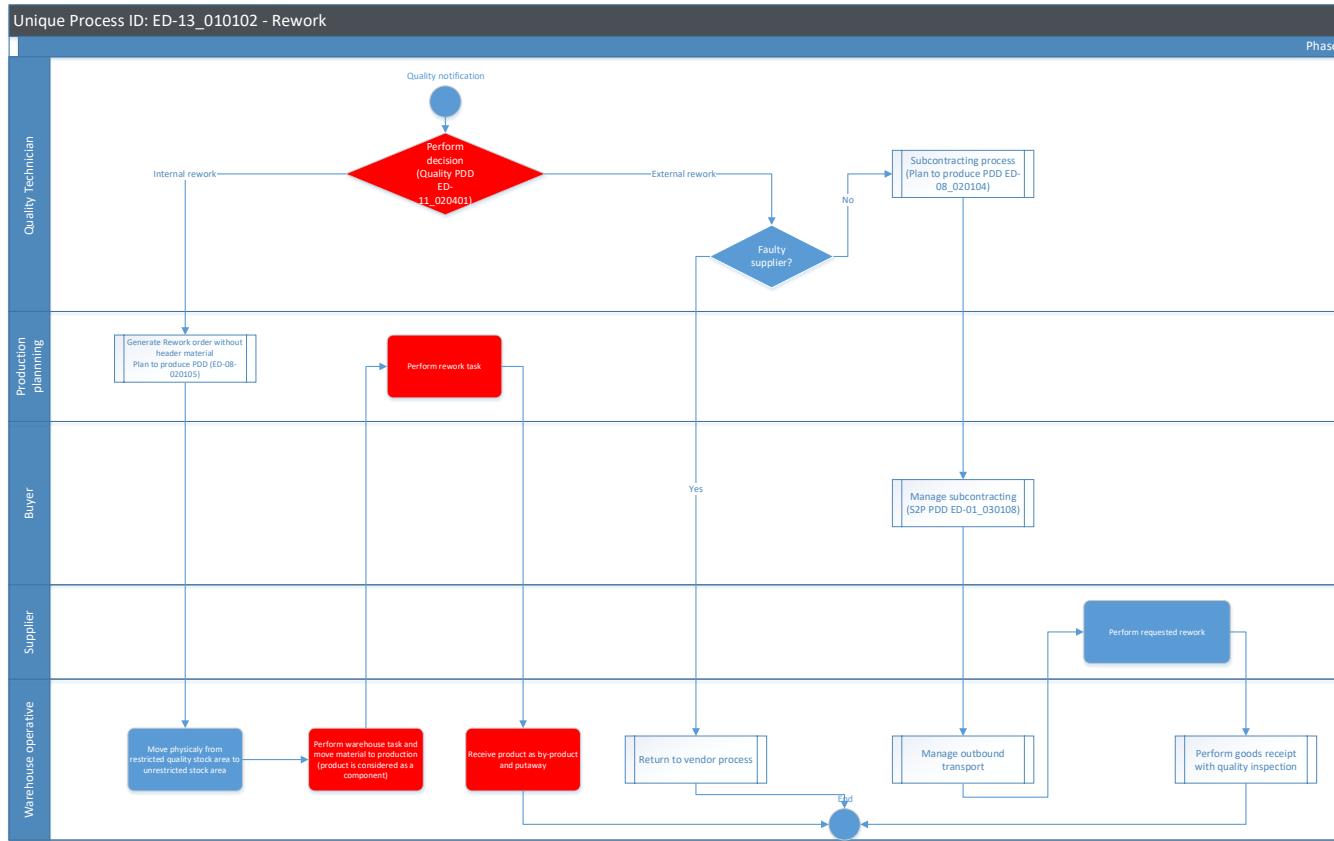
If the goods need rework as they were sent faulty from the supplier, the goods are sent back through the “return to vendor process”. The supplier can replace with new materials or can rework on the items (if that's acceptable to the EDGE entity), the new incoming goods are received in the inbound process like new ones.

c- External rework: subcontracting

If the goods need rework by the supplier, whereas it is not by his fault. Entities can request a subcontracting process to perform the rework. The goods are then shipped to the supplier through normal outbound process and received through inbound process after completion of rework.

For further details, please refer to rework process in P2P PDD - (ED-08_020105)

3.2.3.2 Process Diagram



3.2.3.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_010102	Quality notification (start)	Quality technician	Partially Manual		
P200	ED-13_010102	Perform quality decision (Quality PDD ED-11_020401)	Quality technician	Partially Manual		
P210	ED-13_010102	Generate Rework order without header material Plan to produce PDD (ED-08-020105)	Production planning	Partially Manual		
P211	ED-13_010102	Move physically from restricted quality stock area to unrestricted stock area	Warehouse operative	Partially Manual		
P212	ED-13_010102	Perform warehouse task and move material to production (product is considered as a component)	Warehouse operative	Partially Manual		
P213	ED-13_010102	Perform rework task	Production planner	Partially Manual		
P214	ED-13_010102	Receive product as by-product and putaway	Warehouse operative	Partially Manual		

P310	ED-13_010102	Faulty supplier?	Quality technician	Partially Manual		
P311	ED-13_010102	Return to vendor process	Quality technician	Partially Manual		
P312	ED-13_010102	Subcontracting process	Quality technician	Partially Manual		
P312	ED-13_010102	Manage subcontracting	Buyer	Partially Manual		
P313	ED-13_010102	Manage outbound transport	Warehouse operative	Partially Manual		
P314	ED-13_010102	Perform requested rework	Supplier	Partially Manual		
P315	ED-13_010102	Perform goods receipt with quality inspection	Warehouse operative	Partially Manual		
P400	ED-13_010102	End				

3.2.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Internal Rework	✓	✓	✓	✓
Rejected Item – External Rework	✓	✓	✓	✓
External Rework - Subcontracting	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.3 Manage inbound transports (ED-13_010201)

3.3.1 Process Description

The scope of handling inbound transports is required for handling of all inbound receipts. However, the cost of these inbounds transports being borne by the EDGE entities depends entirely on the incoterms set with the suppliers. Based on the incoterms with the suppliers, the following three categories of inbound transports are possible considering all EDGE entities:

- One Leg Transport – Local Last Mile Receipt
- Two Leg Transport – Air / Sea + Local Last Mile Receipt

- Three Leg Transport – Foreign Pickup + Air / Sea + Local Last Mile Receipt

Suppliers of EDGE can be classified into two broad categories for appropriate handling of communication channel for inbound transport handling:

- Receipt Information coming through I-VEN
- Receipt Information not coming through I-VEN

Suppliers operating through I-VEN

This process describes managing the communication with suppliers/vendors through ASN, happening through the I-VEN.

Suppliers operating through I-VEN will provide ASN leading to transportation schedules and carrier communication for the shipment details of inbound purchasing process. In case, the freight forwarders are booked by EDGE, then the same information for pickup of goods will be provided by EDGE to the suppliers for appropriate handling of the pickup operation.

Carriers can be informed about the hazardous goods information, with the shipping instructions and UN-Code. This is also applicable for other restrictions regarding the packaging in dimensions or weight to avoid issues in the unloading process on site.

If needed multiple carriers can be assigned to one delivery as referred above in the one-, two- and three-legged delivery transport modes depending on the incoterms.

Receipt information not coming through I-VEN

This process describes managing the communication with suppliers/customers through email when they are not operated through the I-VEN. This can happen in the following two business scenarios:

- Returns coming from customers
- Suppliers not active through I-VEN

The trigger for the Inbound Delivery in such cases will not be an ASN, instead it will rely solely on formal email chain to trigger the inbound logistics function as per the communicated schedules.

For handling returns from customers, a returns order will be booked, and the inbound delivery will carry the reference of the returns order for all inbound logistics and transportation operations.

After inbound delivery creation

Entities have the following routes after inbound delivery creation:

- Assign own vehicles for pick up and inbound operations
- Engage a Freight Forwarder for pick up and inbound operations

- Make a combination of own or multiple freight forwarders depending on the requirements

The process requires a system-based freight document indicating the choice from the above route along with further details as follows:

- Reference to the Purchase order
- Selected Inbound Deliveries for inbound operations
- Supplier's invoice number
- Supplier information (name, contact, email address)
- Delivery address
- Mode of shipment / freight
- Shipment terms (incoterm)
- Insurance (if required)
- Import license (if required)
- Project name and code
- If need of airfreight: reason for the request
- Shipment instructions
- Freight volume and weight: based on suppliers packaging details

Documentation needed to execute the transportation process:

- Supplier's invoice
- Certificate of conformance
- Delivery note
- PO copy
- Packing list
- Certificate of origin (per material), if applicable
- Material Safety Data Sheet (MSDS), if applicable (for chemicals)
- Export permit license, if applicable
- IATA regulations certificate, if applicable
- Service report/Completion report, if applicable
- Design validation/validation plan, if applicable
- Advanced product quality planning, if applicable
- Third party load certificate, if applicable
- First Article Inspection Report, if applicable
- PPAP submission as per SSR, if applicable
- Material/Test certificate, if applicable
- Control Plan/Q-Record, if applicable

In addition to above details, time and schedule of the shipment should be maintainable. The following shipment events are required to be captured:

- Shipment Start – Date & Time of Pickup from Source
- Arrival time – On EDGE Site
- Unloading Start – On EDGE Site

- Unloading End – On EDGE Site
- Shipment Complete – Date & Time of completion of the physical movement
- Shipment End – Date & Time of completion of Shipment Documentation

Consequently, actual date and time of the above events will also be captured and recordable on the same freight document against the planned date and time of each event.

In case EDGE entities are using internal fleet, vehicles are assigned as per availability out of system and no cost tracking is performed. However, if a 3rd Party freight forwarder is engaged, freight cost must be booked to the freight document. The freight units on the Freight Document will be converted to a Freight Order against the freight service.

Freight Quotations

In case of engaging a third-party freight forwarder company for handling the inbound transport, freight quotations will be taken by the Transportation Planner for the freight service required. This will be done through the following channels:

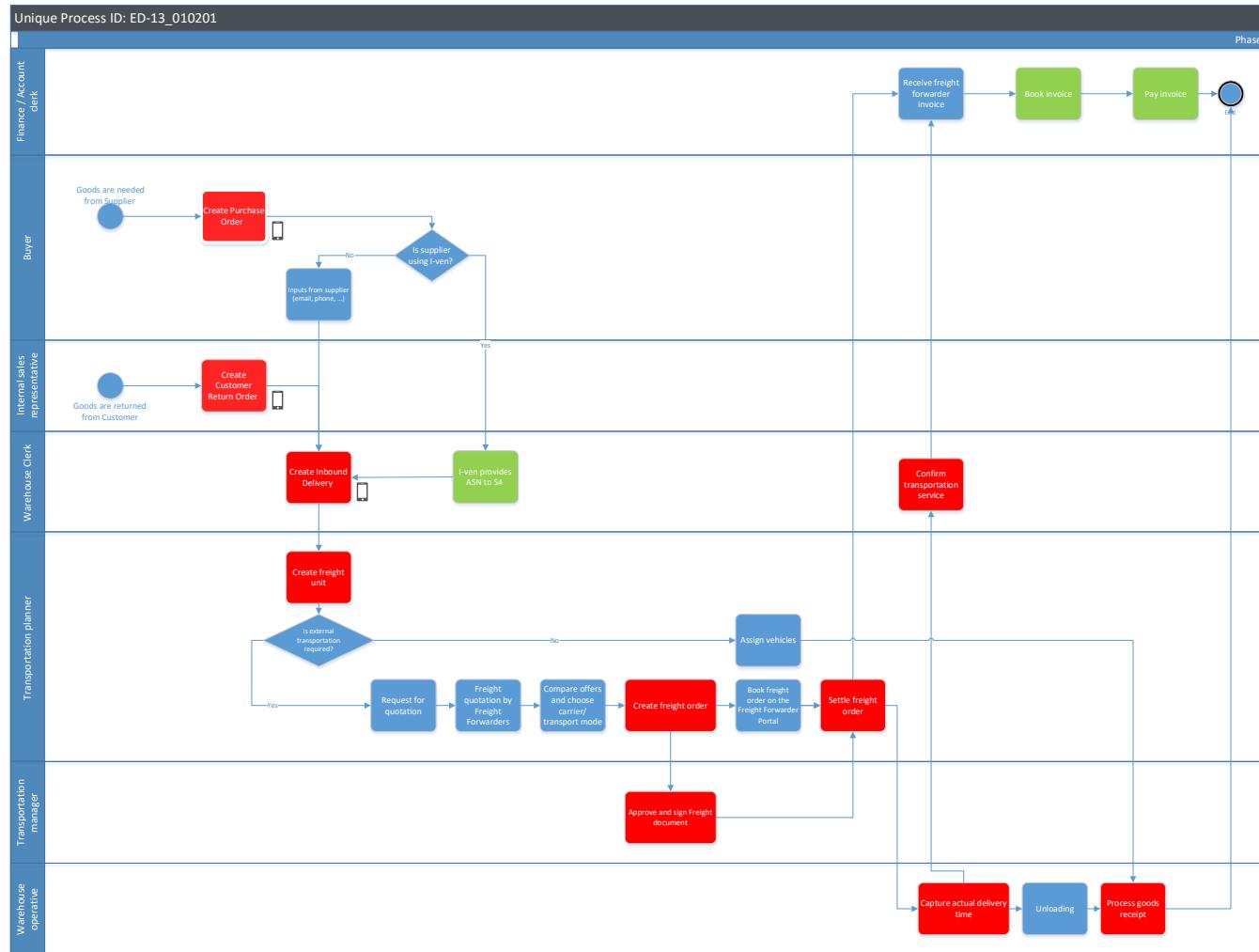
- By logging in to the Freight Forwarder's portal and building up quote based on source and destination locations
- By emailing an RFQ to the Freight Forwarder for providing a quote for the Freight service

Consequent to the above, the freight quotations are received from carriers/freight forwarders and compared to select the best offer in terms of price and lead time. The offers vary depending on the service provider and transport mode as well (e.g. Airfreight's cost can be lower than sea freight in some cases).

Once the carrier/freight forwarder is selected, the transportation planner will update the freight order and ask for transportation manager's approval. Then the transportation booking can be placed, and the freight order is placed to the freight forwarder.

When the service is conducted and goods are delivered by the carrier/freight forwarder, warehouse operative records the actual delivery time and warehouse clerk confirms the transportation service which will enable Finance to process the invoice when received.

3.3.2 Process Diagram



3.3.3 Activity List & Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_010201	Goods are needed From Supplier	Buyer	Partially Manual	NA	NA
P200	ED-13_010201	Goods are returned from Customer	Internal Sales Representative	Partially Manual	NA	NA
P300	ED-13_010201	Create Purchase Order	Buyer	Partially Manual	F0348A	Yes
P400	ED-13_010201	Is supplier using I-VEN?	Buyer	Human Triggered	NA	NA
P410	ED-13_010201	I-VEN provides ASN to S4	Warehouse Clerk	Automated	/SCWM/MON	Yes

P420	ED-13_010201	Inputs from supplier (email, phone, ...)	Buyer	Human Triggered	NA	
P500	ED-13_010201	Create Inbound Delivery	Warehouse Clerk	Automated	/SCWM/MON	Yes
P600	ED-13_010201	Is external transportation required?	Transportation planner	Human Triggered		
P700	ED-13_010201	Assign vehicles	Transportation planner	Partially Manual		
P800	ED-13_010201	Create Customer Return Order	Warehouse Clerk	Human Triggered	F0348A	Yes
P900	ED-13_010201	Prepare Freight Unit	Transportation planner	Partially manual		
P1000	ED-13_010201	Ask for freight quotation in company portals/emails	Transportation planner	Human Triggered		
P1100	ED-13_010201	Freight quotation by Freight Forwarder	Transportation planner	Partially Manual		
P1200	ED-13_010201	Compare offers and choose carrier/transport mode	Transportation planner	Human Triggered		
P1300	ED-13_010201	Book freight order on the Freight Forwarder Portal	Transportation planner	Partially Manual		
P1400	ED-13_010201	Update Freight Order	Transportation planner	Human Triggered		
P1500	ED-13_010201	Approve and sign Freight document	Transportation manager	Human Triggered		
P1600	ED-13_010201	Update Freight Order	Transportation planner	Human Triggered		
P1700	ED-13_010201	Capture actual delivery time	Warehouse Clerk	Human Triggered		
P1800	ED-13_010201	Unloading	Warehouse Clerk	Partially Manual		
P1900	ED-13_010201	Process Goods Receipt	Warehouse Clerk	Human Triggered		
P2000	ED-13_010201	Confirm transportation service	Warehouse Clerk	Human Triggered		
P2100	ED-13_010201	Settle Freight Order	Transportation Planner	Automated		
P2200	ED-13_010201	Receive freight forwarder invoice	Accounts Clerk	Partially Manual		
P2300	ED-13_010201	Book invoice	Accounts Clerk	Automated		
P2400	ED-13_010201	Pay invoice	Accounts/Finance Manager	Automated		

3.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
One Leg Transport – Internal Freight	✓	✓	✓	✓
One Leg Transport – External Freight	✓	✓	✓	✓
Two Leg Transport – Internal & External Freight	✓	✓	✓	✓
Two Leg Transport – External Freight	✓	✓	✓	✓
Three Leg Transport – Internal & External Freight	✓	✓	✓	✓
Three Leg Transport – External Freight	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

4. DETAILED SOLUTION DESIGN

Final update of solution design chapter will be done after considering the results of SIT/UAT

Manage master data

Master Data	Application	Primary	Secondary
Business Partner	S4H	S/4	
Product Master	S4H	S/4	
Warehouse Product	EWM	EWM	
Plants – Location	TM	TM	
Shipping Point -Location	TM	TM	
Resources	EWM, TM	TM	EWM
Resources for EWM	EWM	EWM	
Warehouse	EWM	EWM	
Purchase Organization	S/4, TM	S/4	TM
Purchasing Group	S/4, TM	S/4	TM
Locations & Transshipment Location	TM	TM	
Transportation Zone	TM	TM	
Transportation Lane	TM	TM	
Freight Agreements	TM	TM	
Calculation Sheets	TM	TM	
Rate Tables	TM	TM	
Scales	TM	TM	
Schedules	TM	TM	
Default Routes	TM	TM	
Packaging Specification	EWM	EWM	
Storage Bin, Staging Area, Door, Check Point	EWM	EWM	
Stock Type	EWM	EWM	
Packaging Material Type	EWM	EWM	
HU Type	EWM	EWM	
Bin Assignment	EWM	EWM	

Print, Label Condition	EWM	EWM	
Task/Order condition	EWM	EWM	
Work Center	EWM	EWM	
Consolidation Group	EWM	EWM	
User Master (Resource, Queue Assignment, Tolerance Group)	EWM	EWM	
Bin sorting	EWM	EWM	
PSA declaration	EWM	EWM	
QC set up	EWM	EWM	
Slotting	EWM	EWM	
Batch-Class and characteristic	S4, EWM	S4	EWM

Below mentioned master data objects would be maintained for the EDGE system:

Business partner (BP): A person, organization, group of persons, or group of organizations in which a company has a business interest. Each BP gets identified with a unique business partner number (BP number). The specific data for a BP role can be created and managed once a specific role has been assigned to the BP.

Organizational management: A means for creating and managing the organizational and staffing structures in a company that uses an organizational model as its basis. Below type of organizations can be created:

- Corporate organization: This organization unit is optional and serves as a single-entry point into the organizations structure in SAP TM.
- Company organization: This organization unit corresponds to the ERP company code containing the local currency.
- Purchase organization and group
- Planning and execution organization and group

Transportation network: In this component, transportation network related data is setup in the system.

Following are the network data elements:

- Transportation zone
- Transportation locations with transshipment locations
- Transportation zones with hierarchy
- Transportation lane

These data objects provide visibility of movements between the plants, shipping points, distribution centers, hubs, ports, vendors and customers.

Product: A tangible or intangible good that is part of the business activities of a company. It can be traded, and it contributes directly or indirectly to the value chain.

Transportation charges: Charge management uses agreements and related master data to calculate freight costs to invoice the carriers and service providers.

High-Level Warehouse Master Data

Master data is the core data of an enterprise that exists independently of specific business transactions and is referenced in business transactions. It builds the foundation for the smooth execution of business processes and well-informed business decisions. Master data represents business objects rather than business transactions and is rarely changed over a long period of time.

Plant, shipping point, customer master and vendor master data are used by ERP and by EWM in general. The EWM system have below master data of its own.

Warehouse product master:

The warehouse product is a warehouse-number-dependent view of the product master data. The warehouse product comprises all the properties of a product that relate to its storage in a certain warehouse within the framework of EWM, such as the putaway control indicator.

Packaging specification (Pack Spec):

Packaging Specifications are the EWM specific master data to maintain palletization such as the main product, packaging material, packing quantity.

Packaging specifications will be used in the following processes:

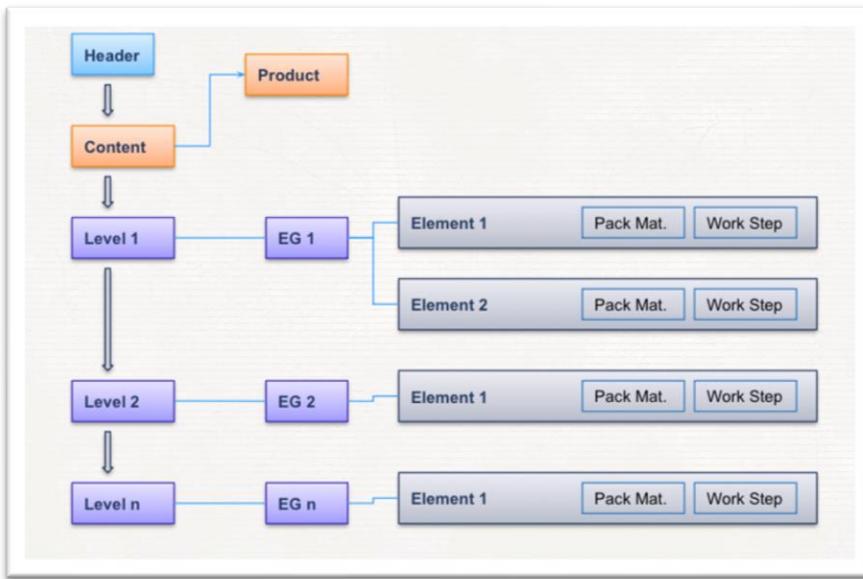
- Good Receipt
System will use the packaging specification master data to create HUs. The packaging specification will be created based on pallet standardization agreed with the respective supplier.
- Warehouse Task
Using the palletization data maintained in the pack spec the system creates the warehouse task divides the receipt stock into multiple of palletization and create number of warehouse task.

The packaging specification defines all the necessary packing levels for a product in order, for example, to putaway or transport the product. For a product, a packaging specification mainly describes in which quantities of the product can be packed into which packaging materials in which sequence.

In printed form, a packaging specification is a set of instructions for the employee in the warehouse. More specifically, the work steps that are entered in a packaging specification are intended as information for the employee. In this way the employee receives exact instructions as to where to place the label on a box, or how a product should be stacked onto a pallet.

Structure

Figure 10: Structure of packaging specification



Header: Attributes such as the name of the packaging specification, username of the creation user, status, and so on.

Contents: A packaging specification contains a product. Some packaging specifications contain more than one product or refer to other packaging specifications.

Level: Various packing levels can be mapped in a packaging specification. Each level contains a target quantity, which defines how many times the previous level can be packed into this level.

Element group: For each level there is exactly one element group. Element groups can be reused in several packaging specifications.

Elements: Elements consist of a packaging material and/or a work step.

Step: A text with an identification, which can be used in one or more packaging specifications.

Packaging material: A product that is defined as a packaging material type in the product master.

Storage bin

A storage type consists of a selection of storage spaces, which are called storage bins in Extended Warehouse Management (EWM). The storage bin is the smallest spatial unit in a warehouse. Therefore, the storage bin represents the exact position in the warehouse where products are and/or can be stored. Since the address of a storage bin is frequently derived from a coordinate system, a storage bin is often referred to as a coordinate. For example, the coordinate 01-02-03 could be a storage bin in aisle 1, stack 2, and level 3.

In all entities the bin capacity can be calculated on key figures. The advantage of key figures will be that there is no need to maintain the correct weight and volume for all materials since the key figures are dimensionless.

Resource group / Resource:

A resource is an entity representing a user or equipment, which can execute work in the warehouse.

Warehouse User:

Warehouse user master data is created in EWM to enable warehouse worker to log on via HANDHELD presentation devices and execute HANDHELD transactions.

Production Supply Area

An area in production or in the warehouse where products are staged or withdrawn.

4.1 Perform quality inspection at goods receipt, Solution steps and elements.

4.1.1 Solution prerequisites

All manufactured items/direct materials would go through quality check for all entities. The RM/SG goods should have the prerequisites below.

- Inbound Delivery with/without ASN
- Batch Management should activate at Plant/Material level in Plant Data/Storage 1
- Serial Number profile should be maintained at Plant Data/Storage 2
- Material should be maintained with Quality view for Goods Receipt
- IOT 4: Q-Inspection Product/Batch for Inbound Delivery should be activated
- Packaging Information

Business Benefits

- Manage stock on a storage bin level
- Inspect the products received from external suppliers in an inbound process
- Integrate seamlessly between quality management and warehouse management in S/4HANA
- Make use partial quantity decisions
- Enable warehouse processes with HANDHELD/mobile

4.1.2 Process predecessor and successor

Predecessor: Planning Process where system will trigger MTO Purchase Requisition, Purchase Order, ASN and Inbound Delivery

Successor: Material Document, Inspection Lot, Warehouse Task, Warehouse Order

4.1.3 Master data prerequisites

- Product Master having PACI (Putaway Control Indicator)
- Serial Number Profile
- Batch Master
- Packaging Material Master Data
- Supplier Master

4.1.4 Organizational structure requirements

Required organization elements are updated in KDS file:


EDGE_KDS_EWM
V1.2.xlsx

ERP Spec. Org. Master Data	ADASI	NIMR	HALCON	AL TARIQ
Company Code	2900	3400	4300	4600
Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
SLOC	EDGE_KDS_EWM_V1.2.xlsx (ey.com)	EDGE_KDS_EWM_V1.2.xlsx (ey.com)	EDGE_KDS_EWM_V1.2.xlsx (ey.com)	EDGE_KDS_EWM_V1.2.xlsx (ey.com)
ERP WH Number	291, 292	341, 342	431	461
Receiving Plant	2901	3401	4301	4601

WM Specific Org. Master Data:	ADASI	NIMR	HALCON	AL TARIQ
Supply Chain Unit	2901	3401	4301	4601
EWM Warehouse Number	2901,2902	3411,3412	4301	4601
Custodian	NA	NA	NA	NA
Party Entitled to Dispose	2901	3401	4301	4601
GR Office	2901	3401	4301	4601

WM Specific Org. Master Data:	ADASI	NIMR	HALCON	AL TARIQ
Storage Type	EDGE_KDS_EWM V1.2.xlsx (ey.com)	EDGE_KDS_E WM V1.2.xlsx (ey.com)	EDGE_KDS_EW M V1.2.xlsx (ey.com)	EDGE_KDS_EW M V1.2.xlsx (ey.com)

4.1.5 Detailed solution design Perform Quality Inspection at Goods Receipt; Solution steps and elements (Level 5-6)

Inbound Warehouse Processes covers overall activities required to execute complete receiving and putting away of product in the warehouse from the different sources. The warehouse activities trigger with the inbound delivery execution followed by multiple sub-processes:

- Process Inbound delivery creation
- Process Unloading
- Process Goods Receipt
- Quality Management
- Process Putaway into Warehouse

Process Inbound delivery creation

The process triggers with the automatic or manual creation of an inbound delivery in S/4HANA against the Advance Shipping Notification (ASN) received from I-VEN portal. I-VEN Portal is a Supplier relationship portal used as a medium for communication and negotiations with an external supplier. Supplier updates the following details in the I-VEN portal

- Item details
- Quantity
- Delivery date
- Vendor Batch
- Shelf-Life Expiration Date (SLED)
- Manufacturing date
- Serial Numbers
- Packaging details

I-VEN and S/4HANA are integrated to communicate each other, with this integration, S/4HANA receives ASN, triggers to create Inbound delivery with the Custom document type 'ZEL', followed by the creation of Inbound delivery in EWM with the document type 'ZINB'.

Following are created during the inbound delivery creation and are replicated to EWM:

Internal Batches - I – VEN Interfaces: are automatically created using the BAPI, it is integrated in the interface program.

The system records the following details from I-VEN to create internal batch:

- Manufacturing date
- SLED
- Supplier batch
- Country of Origin

Internal Batch Non I-VEN : Batch numbers will be automatically assigned to material when receiving takes place in warehouse. System will check if the material master is activated with Batch. Batch will be maintained in both plant and material level. Internal Batch number will automatically assign when system validates the required Batch characteristics configure in the system. For RM and SFG, there are separate internal batch numbers. Warehouse clerk records the following details while receiving the goods:

- Manufacturing date
- SLED
- Supplier batch
- Country of Origin

Handling Units (HU): are automatically created using the BAPI, it is integrated in the interface program from I-VEN. HUs are received as non-mixed HUs i.e., HUs are packed with the same material and batch. There is no specific requirement regarding the number ranges for Handling unit ID. Hence, they are created with internal number ranges.

In the case of manual creation of the inbound delivery in S/4HANA, HUs are created in EWM, they will be automated using the master data Package specifications (Pack Spec). Pack Spec are the EWM master data to capture the packaging instructions such as main material, packaging material and the quantity to pack the main material.

HALCON is the only entity using HU during receiving process. NIMR, HALCON and ADASI are not going to use HU during receiving process.

Serial Numbers from I-VEN Interface: are automatically created using the BAPI, it is integrated in the interface program from I-VEN. Serial numbers are created associated with HU & internal batches.

Serial Numbers Non I-VEN Interface: When IBDs are created manually respect to PO confirmation from Supplier, no Serial numbers are manually added up in S4 ERP. During receipt of goods respect to IBD, Supplier will provide the serial number details in delivery note document which will be entered manually by Warehouse Clerk in S4 during receiving of goods. If there are more line items to receive having more quantity with serial numbers, than during receipt serial number upload features will be used in receiving process. The upload will be through the Std S4 template to upload the serial numbers.

Process Unloading

The truck arrives at the warehouse location, will be routed to the available door. The physical unloading of pallets or cartons to the GR-ZONE area. Complex unloading process is not recorded in the EWM.

Process Goods Receipt

The unloaded goods will be verified with the preliminary quality check such as damaged pallets, damaged products, physical counting etc. The warehouse Clerk posts the Goods Receipt (GR) against the inbound delivery in EWM using Fiori Apps. The stock is received in quality stock category 'Q'.

The system determines the EWM specific settings, such as the document type, Item type, warehouse process type, staging area, availability group, stock type etc. and creates a material document posting in S4 ERP through PPF action. Inspection Lot is created automatically for the quality managed product against the GR. The GR posted in EWM will synchronously post the GR in S/4HANA. 100 % quality inspection is applicable for RM, SFG, Consumables (HALCON for packing of Missiles).

SAP EWM does not maintain the S/4 HANA plant and storage location in the EWM quant data. Instead, it uses availability groups to determine an SAP EWM stock type. The availability group together with the S/4HANA stock-type is the link between stock types of EWM and the S/4HANA plant and storage location.

Process-Oriented Storage Control (POSC) is activated for inbound process; hence the system creates simultaneously the warehouse task (WT) for Quality Inspection Area and for Final Bins respectively. The WT for the final bins is inactive

until the quality inspection activity is performed completely. The system will automatically activate the WT for the final bins.

A quality work center will be created to represent the quality inspection area in EWM. Once the stock is moved to the quality inspection area, the stock will be visible in the Quality work center in EWM.

Number of warehouse Task created based on number of HUs. In the case of non-HUs, the system uses palletization data saved in pack spec to create the number of warehouse tasks.

The system prints the putaway labels and HU label for HU managed storage or putaway labels only for non-HU managed storage. Sample specimens for HU label, putaway label, and the Rejected Label are showcased in respective process design.

Resource Management is activated in the putaway process.

Quality Management

The operator will physically move full or partial stock based on the sampling procedure to quality area and confirm the related WT using HANDHELD device. The quality department will perform the quality inspection with reference to the inspection lot which was created previously and submit the usage decision. Quality Management is integrated to EWM, and the usage decision will activate the WT created for final bins.

Different cases are foreseen during the quality acceptance:

Partial Rejection:

The stock received against the inbound delivery can be rejected partially. The partially rejected stock should transfer to the quarantine area by printing and labelling with the rejected label. System will create another WT to move the partially rejected stock to the quarantine area.

Process Putaway into Warehouse

The final bins WT are activated and are listed as open task in the HANDHELD device. The operator will physically pick the pallets associated with the open task and place them in the final bin and complete the transaction.

Putaway Strategy

Putaway strategies are used in EWM to determine the final bins. The putaway strategy drives the system to select the bins based on criteria such as selecting the new bin for every receipt of the pallet/carton or adding the stock to the same bin with existing batches etc., Selection of bins is depending on the mixed stock behavior.

Putaway Strategy is executed with three sequential steps:

Storage type search:

The first step to determine the destination storage bin in WT is to identify the destination storage type. The storage type search sequence is used to determine the storage type. The scope of storage types is maintained in the search sequence with priorities such as first, second, third etc. The storage type search sequence is determined based on the storage type indicator maintained in the Warehouse product master

Storage section search:

The second step to determine the destination storage bin in WT is to identify the destination storage section within the selected storage type. The storage section search sequence is used to determine the storage section. The scope of storage section is maintained in the search sequence with priorities such as first, second, third etc. The storage section search sequence is determined based on the storage section indicator maintained in the Warehouse product master

Storage bin type:

Storage bin types are assigned to both product and storage bins. Warehouse Products with the mentioned storage bin type will only be putaway into the bins of the same storage bin type.

Different putaway strategies are proposed for four entities based on the process design:

Entity	Putaway Strategy	Bin Capacity	Mixed Storage
NIMR	Addition to existing stock	Capacity using Key figures	Yes
AL TARIQ	Next Empty Bin	NA	No
HALCON	Addition to existing stock	Capacity using Key figures	Yes
ADASI	Addition to existing stock	Capacity using Key figures	Yes

Bin Capacity

Bin capacity is an important attribute, it will calculate the actual physical placement in the bin. In EWM, there are options to calculate the bin capacity such as calculation by weight/volume or by Key figures.

Since the entities do not maintain the weight/volume for all the materials, the proposal is to calculate the bin capacity based on Key figures.

Key figures are the dimensionless number maintained at Bin master and the material master. The capacity of the bins is calculated accordingly.

Note: Except HALCON, none of the entities are adopted HU management in their business processes the reason being they wanted to do the day-to-day activities in an efficient way without HU. Business doesn't want the tracking of HUs in the warehouse.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
F0842A	Manage Purchase Order	Desktop	Purchaser	S/4HANA
F0232A	Check ERP Inbound Delivery reference to ASN (Automatic)	Desktop/ Tablet	Warehouse Clerk	S/4HANA
F1705	Create EWM Inbound Delivery (Automatic)	Desktop/ Tablet	Warehouse Clerk	S/4HANA
/SCMTMS/FRE_UNIT	Freight Unit/s Created Automatically in TM system against IBD	Desktop/ Tablet	Transportation Planner	S/4HANA
/SCMTMS/FRE_ORDER	Plan Freight Unit/s to create Freight Order	Desktop/ Tablet	Transportation Planner	S/4HANA
/SCMTMS/FRE_ORDER	Carrier Subcontracting and Assignment	Desktop/ Tablet	Transportation Planner	S/4HANA
/SCMTMS/FRE_ORDER	Communicate Freight Details to Carrier	Desktop/ Tablet	Transportation Planner	S/4HANA
/SCMTMS/ASR	Process Goods Receipt	HANDHELD Gun	Warehouse Operative	S/4HANA

/SCMTMS/FRE_ORDER	Capture Event for Arrival	Desktop/ Tablet	Transportation Planner	S/4HANA
/SCMTMS/FRE_ORDER	Calculate Freight Costs	Desktop/ Tablet	Transportation Manager	S/4HANA
/SCMTMS/TCM_SFIR	Create and Post Freight Settlement Document	Desktop/ Tablet	Transportation Manager	S/4HANA
	HU Label Print – (Automatic) - Only HALCON for P2			Zebra Printer
/SCWM/RFUI	Pack/Unpack Goods (Optional)	HANDHELD Gun	Warehouse Operative	S/4HANA
/SCWM/MON	Create Warehouse Task (Automatic)	Desktop/ Tablet	Warehouse Clerk	S/4HANA
/SCWM/MON	Check Warehouse Order (Optional)	Desktop/ Tablet	Warehouse Clerk	S/4HANA
/SCWM/RFUI	Move handling units to quality inspection centre	HANDHELD Gun	Warehouse Operative	S/4HANA
F1685	Record Inspection Results	Desktop/ Tablet	Quality Technician	S/4HANA
F2345	Make Usage Decision	Desktop/ Tablet	Quality Technician	S/4HANA
	Putaway Form Print			Zebra Printer
/SCWM/RFUI	Option 1: Putaway of handling units to final storage bin	HANDHELD Gun	Warehouse Operative	S/4HANA
/SCWM/RFUI	Option 2: Move handling units to blocked stock area	HANDHELD Gun	Warehouse Operative	S/4HANA
F0232A	Check inbound delivery (optional)	Desktop/ Tablet	Warehouse Clerk	S/4HANA
	Material Review Board (MRB) - Manual		Quality Technician	
F2345	Make Usage Decision	Desktop/ Tablet	Quality Technician	S/4HANA
	Quality Certificate Print			Zebra Printer
/SCWM/RFUI	Option 1: Transfer Blocked components to Scrap Zone	HANDHELD Gun	Warehouse Operative	S/4HANA
	Scrap Component – Manual	HANDHELD Gun	Warehouse Operative	S/4HANA
/SCWM/RFUI	Move blocked product to Reprocess Zone	HANDHELD Gun	Warehouse Operative	S/4HANA
/SCWM/RFUI	Putaway of product to Reprocess Zone	HANDHELD Gun	Warehouse Operative	S/4HANA
F2345	Reprocess product	Desktop/ Tablet	Quality Technician	S/4HANA

/SCWM/RFUI	Move blocked product to RTV-Zone	HANDHELD Gun	Warehouse Operative	S/4HANA
/SCWM/RFUI	Putaway of product to RTV-Zone	HANDHELD Gun	Warehouse Operative	S/4HANA
/SCWM/MON	Deliver to Vendor	Desktop/ Tablet	Warehouse Clerk	S/4HANA
/SCWM/MON	Review / Monitor Inbound Delivery	Desktop/ Tablet	Warehouse Clerk	S/4HANA

4.2 Perform Goods Receipt Reversal

4.2.1 Solution prerequisites

All manufactured items/direct materials would sometimes have deviation. The exception can be of any type like Quantity deviation, Delivery Paper is mismatching, ASN/Delivery is missing, Damage in packaging. The below prerequisites for Goods Reversal Process. Its possible to return the goods to vendor from Blocked Stock type.

- Return PO
- Return Delivery – Outbound Return Delivery
- Receiving and Return Batch number should be match
- Same Serial Number should go in the return delivery while receiving
- Return Packaging details with Label in place

4.2.2 Process Predecessor and Successor

- Predecessor
ASN and Inbound Delivery
- Successor
Return PO, Return Delivery, Warehouse Task, Warehouse Order

4.2.3 Master data prerequisites

- Product Master
- Serial Number Profile
- Batch Master
- Packaging Material Master Data
- Supplier Master

4.2.4 Organizational structure requirements

Please refer to the updated KDS file for the required Organization structure.

ERP Spec. Org. Master Data	ADASI	NIMR	HALCON	AL TARIQ
Company Code	2900	3400	4300	4600

Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
SLOC	EDGE KDS EWM V1.2.xlsx (ey.com)			
ERP WH Number	291, 292	341, 342	431	461
Supplying Plant	2901	3401	4301	4601
Shipping Point	2901	3401	4301	4601

P2 entities there is always a deviation in process during receipt from Supplier and management of handling of components in warehouse by the warehouse Clerk, Manager or Picker. There is a high chance of mismatch with the actual documents, quantity or damage of package while receiving from external vendor. To handle all possible exceptions during receipt of goods from supplier and within the warehouse, there processes can be handled by best practice solutions or sometimes through modifications to system to handle the deviations. One of the such process is Reversal of Goods Receipt.

Quantity Mismatch - If there is a quantity mismatch, the situation can be handled through EWM Process codes during receipt of goods. Standard S4 has provides multiple option to handle the situation through process codes. It's entity who will decide what suits to their business.

➤ **Option 1: I001 – Delivery difference, Adjust Document**

Quantity of the delivery document in EWM will be adjusted, these changes will reflect in S4 ERP system when a PPF action is triggered (i.e. Goods Receipt in Inbound delivery is done)

- EWM IBD delivery document use the process code (Process code should always be at Item level)
- Quantity more or less should be under defined tolerance which is defined in Purchase Order and simultaneously in EWM as well.
- Without tolerance check system can receipt undefined quantity which is not a good practice.
There is an option to check that manually while creating an Inbound Delivery. The below are the manual check options.
 - Tolerance checks ref document.
 - Over delivery tolerance
 - Unlimited
- To avoid the situation, SAP has provided the solution in EWM in configuration.
- ***Logistics Execution—>SAP EWM Integration—>Extended Inbound Delivery Processing—>EWM Tolerance Check Indicator Based on Purchasing Documents***

* Note: For Manufacturing orders, reference document is Inbound delivery, so this settings is also relevant for "Setting Up Tolerance check" against Manufacturing order

- ***Check the status Profile in customizing and activate DTL-Check tolerance. In Standard system it is remain Inactive***
- ***Check the Quantity offsetting Profile in customizing***

- **Cross-Process Settings → Delivery Processing → Quantity Offsetting → Define Quantity Roles and Quantity Types. Check if PQ and PQTOT is active or not.**
- **Once this configuration are in place, during Receipt from external supplier, user can perform accept with tolerance using BBD/Tolerance -> Approve Tolerance Violation Item header of EWM Inbound Delivery.**

➤ **Option 2: I003 Delivery Difference, No Adjustment**

When this process code is used, there is no quantity adjustment in S4 ERP or EWM but the quantity difference is saved in EWM along with the process code for documentation purpose and future reference

➤ **Option 3: I004 Reject Inbound Delivery**

When this process code is used the IBD is rejected and quantity is zeroed out in EWM, this change is reflected in ERP system immediately.

Wrong batch or serial number:

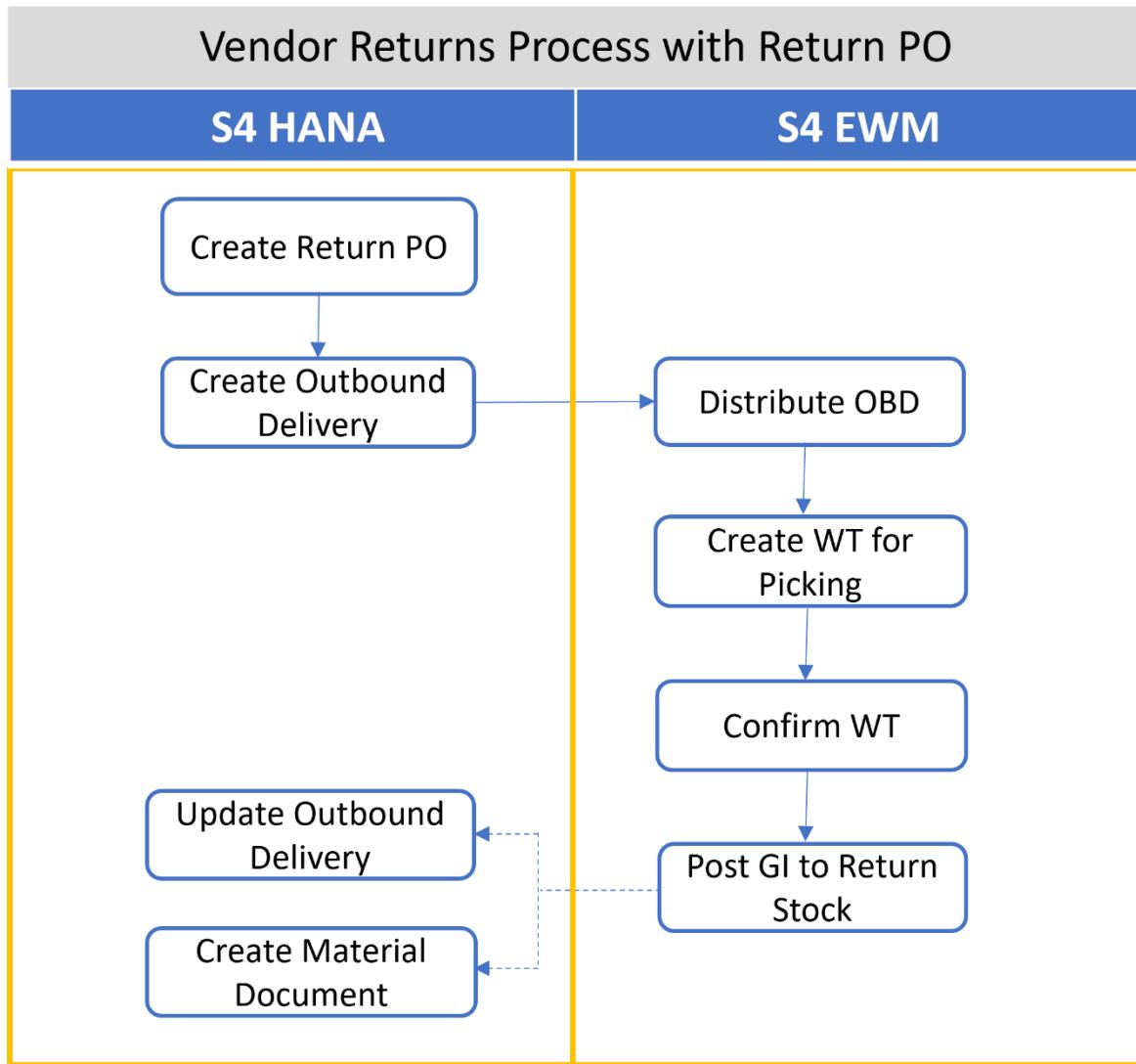
Batch : Supplier Batch Number will be maintained as it is in EWM during receipt of goods. All the receipt of goods will assign internal batch numbers hence no wrong of batch numbers will be assigned to material during receipt of goods.

Serial Numbers: Serial Numbers can be mismatched in both I-VEN and non I-VEN deliveries. In case of I-VEN IBDs, if there is a mismatch of Serial Numbers to actual serial numbers, the Outbound Interface from S4 to I-VEN will communicate back to Vendor with serial number mismatch. Vendor will provide the correct serial number to post the GR for the line item having an issue. The receipt of the issue line items with mismatch of serial numbers will be kept in quarantine SLOCs which will be EWM managed. The stock type would be blocked stock and once movement happened from Quarantine SLOCs to receiving SLOCs, stock type will change from Blocked stock to normal stock.

Non I-VEN IBDs will be managed same way like I-VEN IBDs but the correction of Serial Numbers will be notified to Vendor through e-mail and Vendor will resend the issue serial number through e-mail back again.

Wrong Material: Receiving a wrong material via I-VEN and non I-VEN for IBDs. In case of I-VEN IBDs, if there is a mismatch of Product to actual ordered product, the Outbound Interface from S4 to I-VEN will communicate back to Vendor with product number mismatch. Vendor will prepare the right product for dispatch and provide the correct Product number via a new ASN. The Product which is wrongly sent will be kept in quarantine SLOCs which will be EWM managed. The stock type would be blocked stock. Engineering and Planning department will take an action to use the product as it is, return to Vendor or scrap.

Non I-VEN IBDs will be managed same way like I-VEN IBDs but the correction of right Product will be notified to Vendor through e-mail and Vendor will resend the new product with a new delivery date. The Product which is wrongly sent will be kept in quarantine SLOCs which will be EWM managed. The stock type would be blocked stock. Engineering and Planning department will take an action to use the product as it is, return to Vendor or scrap.



4.2.5 Solution prerequisites

The receipt from Supplier takes place with Quality Inspection. Failed in Quality inspection for partial or complete lot.

Process Predecessor and Successor

- Predecessor
 - Quality Inspection Document and EWM Inbound Delivery and Packing Spec (Optional)
- Successor
 - Return PO, Return Delivery, Warehouse Task, Warehouse Order

4.2.6 Master data prerequisites

- Product Master

- Serial Number Profile
- Batch Master
- Packaging Material Master Data (Optional)
- BP - Supplier Master

4.2.7 Organizational structure requirements

Please refer to the updated KDS file for the required Organization structure.

ERP Spec. Org. Master Data	ADASI	NIMR	HALCON	AL TARIQ
Company Code	2900	3400	4300	4600
Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
SLOC				
ERP WH Number	291	341, 342	431	461
EWM WH Number	2901	3411, 3421	4301	4601
Supplying Plant	2901	3401	4301	4601
Shipping Point	2901	3401	4301	4601

The below master data set up should be in place before the ARM process will execute in system.

1. In Sales Org 2 view of Material Master, valid Item category group should be maintained.

The Item category group should exist in table T184L with delivery type RL.

2. In BP – Vendor/Supplier, the following entries should be maintained

- Return to Vendor should be flagged
- RMA is applicable

Once these two fields are checked, the below data should be maintained

- Customer Number – CVI (Customer Vendor Integration) mapping is applicable to ensure the required documents triggered from system to dispatch the return items along with documents.
- Account Group
- Shipping Condition – 01

Pre-Requisite

1. IMG: SPRO > Logistic Execution > Shipping > delivery > Define Item Category Determination in Deliveries. Against RL Delivery type, Item Category LEER should be maintained.
2. Ensure return indicator enabled in the Supplier Master (in the purchasing view) with the indicator "Ret. with shipping proc."
3. Create Supplier as Customer for creating a return delivery and link Customer number in the supplier master

Configuration Steps

Step 1:- Define shipping-specific data for returns to vendor, which is the return delivery of goods to an external vendor.

SPRO – Materials Management – Purchasing – Purchase Order – Returns Order – Returns to Supplier

Step 2: Activate Advanced Returns Management for Purchase Order Types

SPRO – Materials Management – Purchasing – Purchase Order – Returns Order -Advanced Returns

Step 3: Activate and Re-name Follow-Up Activities

SPRO – Materials Management – Purchasing – Purchase Order – Returns Order -Advanced Returns Management – Activate and Rename Follow-Up Activities

Step 4: Define Number Ranges for Advanced Returns Process IDs

SPRO – Materials Management – Purchasing – Purchase Order – Returns Order -Advanced Returns Management – Define Number Ranges for Advanced Returns Process IDs

Step 5: Define Return Reasons for Supplier Returns

SPRO – Materials Management – Purchasing – Purchase Order – Returns Order -Advanced Returns Management – Define Return Reasons for Supplier Returns

Execution Steps

1. Create a returns purchase order using the Fiori App: Create Purchase order App

Select Document type as NB2 (Std SAP), Enter the RMA number in the Returns Tab. Return against the Original PO is updated in the Reference Document in the return tab. Follow up activity “Ship To Supplier” is populated. Select the check box if Parts Replacement is applicable. All of the EDGE entities required part replacement henceforth this should be selected as well.

2. Release returns purchase order (optional)

If you have specified an approval procedure for returns purchase orders - based on a release strategy that defines the conditions for an approval - you either release or reject a pending returns purchase order. In case of rejection you can specify a rejection reason. You can configure that the entry of a rejection reason is mandatory for the rejection.

3. Create an Outbound delivery

With reference to the returns purchase order using the Fiori app: My Purchase order. Select the Picking tab and maintain the Return Quantity in Pick

4. Enter results of a material inspection

Enter the results of a Material inspection that is performed. You record inspection results with respect to the outbound delivery.

5: Outbound Delivery will distribute to EWM

Validate the OBD in EWM and Perform the pick quantity, assign batch and Serial Number/s in HHD. Perform Packing if it's applicable.

6. Post goods issue

Post the goods issue in EWM for the outbound delivery related to the returns purchase order.

7. Enter results of a material inspection

Enter the results of a Material inspection that is performed. You record inspection results with respect to the outbound delivery.

8. Create purchase order for replacement materials from supplier

If you receive replacement materials from a vendor instead of a credit memo, you create a purchase order and a corresponding inbound delivery for the replacement materials.

9. Create inbound delivery for replacement materials from supplier

The system automatically creates the inbound delivery related to the purchase order for replacement materials.

10. Post goods receipt for replacement materials

You post the goods receipt for the inbound delivery created for the replacement materials.

11. Enter credit memo (from supplier)

You enter the credit memo received from the vendor for the returns purchase order. You can use the ERS procedure to create credit memos automatically. You must select the ERS checkbox for returns in the supplier master data in connection with goods-receipt-based invoicing.

12. Create combined credit memo for returned materials and invoice document for replacements (optional)

When you post the goods receipt for replacement materials, the system creates a document in Invoice Verification that reflects a credit memo with value zero for the returned materials and an invoice of value zero for the replacement materials.

13. Define logistical follow-up activities for replacement materials

You define logistical follow-up activities for the replacement materials of the created inbound delivery. You can also split inbound delivery items to specify different logistical follow-up activities. When you confirm these activities, the system creates the relevant follow-up documents automatically.

14. Monitor supplier returns

In addition to the options available with each document, you have a specific *Returns Overview* transaction for purchasing documents that also allows you to check the overall processing status, the logistical processing status, and the refunding status.

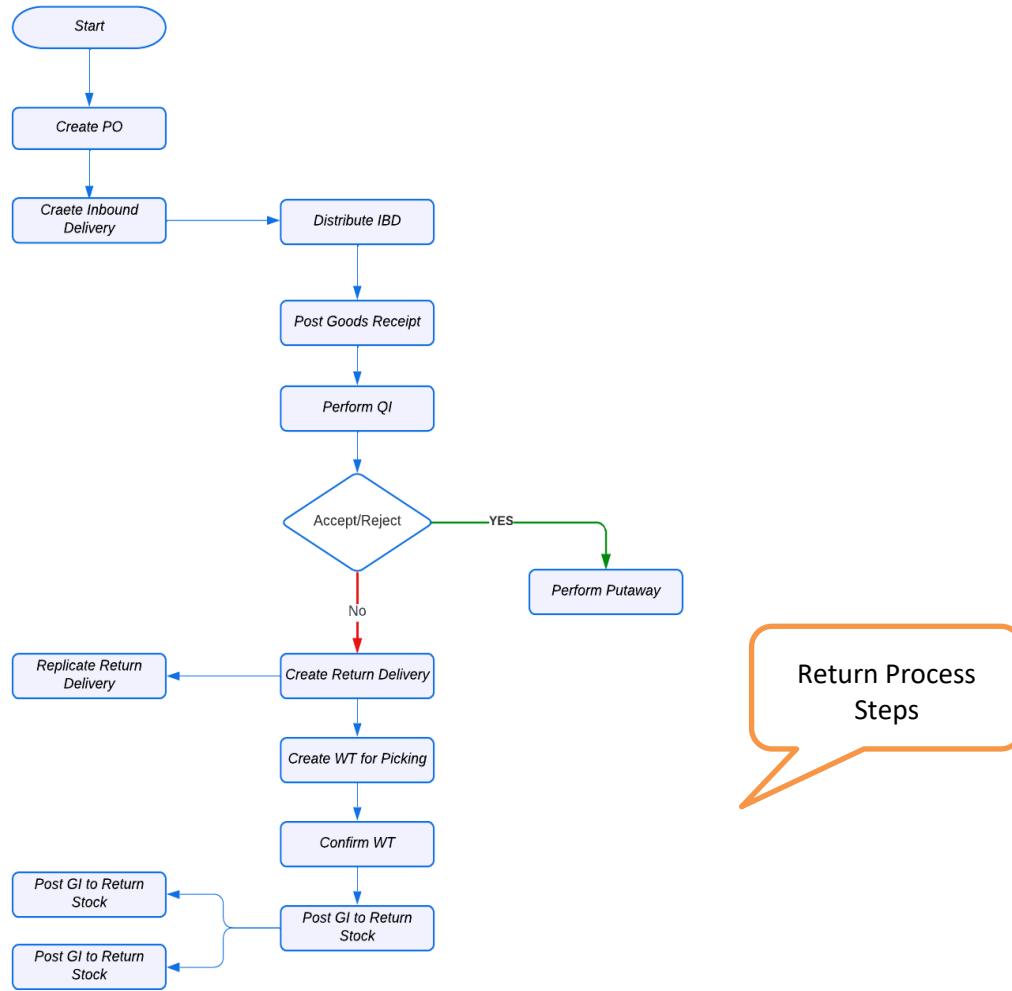
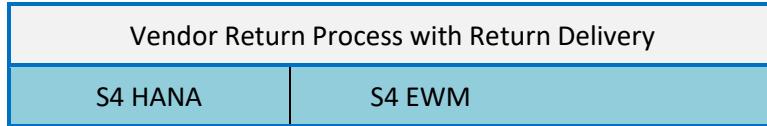
Track Supplier Returns

App ID- MSC_TRC_I

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
F0842A	Create Return Purchase Order	Desktop	Buyer/Warehouse Clerk	S/4HANA
F1996	Create Return Delivery	Desktop	Warehouse Clerk	S/4HANA
F1996	Create Return Delivery – Maintain Inspection Results	Desktop	Warehouse Clerk	S/4HANA
/SCWM/PRDO	Maintain Outbound Delivery – Maintain Batch and Serial Number	Desktop	Warehouse Clerk	S/4 HANA EWM
/SCWM/RFUI	Scan the Pick warehouse task in to pick the required quantities	HHD	Warehouse Picker	S4 HANA EWM
/SCWM/RFUI	Validate the Batch, Serial Number, Quantity, Source Bin and Destination Bin	HHD	Warehouse Picker	S4 HANA EWM

/SCWM/RFUI	Confirm Warehouse Task	HHD	Warehouse Picker	S4 HANA EWM
	Print Return Delivery Note	Automatic		S/4HANA EWM
/SCWM/RFUI	Post Goods Issue	HANDHELD Device	Warehouse Picker	S/4HANA

Note : Transportation Management steps are not included here



The above process is not a recommended solution as Std SAP Return Delivery doesn't work seamlessly in ERP side and inconsistencies observed between ERP and EWM.

4.3 Manage Inbound Transports

4.3.1 Solution prerequisites

To start Inbound Transport process, the below are the prerequisites

- Inbound Delivery with ASN
- Valid Long Term/Short Term Contract with Carrier/Freight Forwarder/Logistics Service Provider
- One time contract with Carrier based on the shipment

4.3.2 Process Predecessor and Successor

Predecessor: Valid Rate Contract/Shipment Based Contract

Successor: Cost Settlement with Carrier and Carrier Payment

4.3.3 Master data prerequisites

BP - Component Supplier

Supplier Location

BP - Carrier

Shipping Point Location

GL Account

Cost Center

Freight Agreement

4.3.4 Organizational structure requirements

ERP Spec. Org. Master Data	NIMR	HALCON	AL TARIQ
Company Code	3400	4300	4600
Pur. Org	3401	4301	4601
Plant	3401	4301	4601
SLOC	3411, 3421, 3423	4101	4613
TM Pur.Org	103401	104301	104601
Shipping Point	3401	4301	4601

4.3.5 Detailed solution design

EDGE entities are procured components from suppliers within UAE and outside of UAE. Manufactured components are shipped to entities premises by Carriers/Freight Forwarder/Logistics Service Providers who have a Rate Contract prior to start the transportation service. Transportation Service Providers are agreed upon with the rate and the term and conditions before they start the service.

The transportation demand (freight units) is built from purchase orders considering transportation constraints. The transportation demands are planned in the transportation cockpit. Charges for transporting the cargo are calculated based on rates maintained in the carrier freight agreement. The freight order is subcontracted end-to-end to the carrier.

Afterwards the inbound delivery creation is triggered from the freight order based on the consolidation information. Freight costs in the freight order are broken down; the aggregated freight costs are shared to the delivery item level based on its gross weight.

At the receiving point the statuses arrival, checked-in and ready for warehousing is set. After the truck/railcar is unloaded, it is checked-out and departed. Now the freight order can be confirmed for accruals posting. The system automatically posts the freight costs to financial accounting as accruals. During the posting process freight orders can be monitored for any errors.

The next steps are the putaway of material and the posting of the goods receipt. The creation of a supplier invoice for the material costs concludes the purchasing process.

Finally, the carrier invoice is verified against the costs calculated in the freight order. The invoice can be entered in the system either manually or received via electronic interface from the carrier.

application incl. devices and inputs such as forms/labels.
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Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
F0842A	Manage Purchase Order		Purchaser	S/4HANA
F0232A	Manage Inbound Delivery		Warehouse Clerk	S/4HANA
/SCMTMS/FRE_UNIT	Check Freight Units		Transportation Planner	S/4HANA
/SCMTMS/FRE_ORDER	Plan Freight Units/Create FO		Transportation Planner	S/4HANA
/SCMTMS/TCM_SFIR	Create Cost Settlement Document		Transportation Manager	S/4HANA
F2502 /SCWM/RFUI	Process Goods Receipt		Warehouse Operative	S/4HANA
/SCMTMS/TCM_SFIR	Post Cost Settlement Document		Transportation Manager	S/4HANA

Associated Fiori Apps

Fiori Application Name	Transactional/Application or Fact Sheet	Fiori Application Description	Desktop/Tablet
Create Deliveries - Batch Report	SAP GUI	Create Deliveries - Batch Report	Desktop, Tablet
Returns Delivery (S/4HANA)	Fact sheet	Returns Delivery (S/4HANA) for Shipping Specialist	Desktop, Smartphone, Tablet
Analyze Delivery Logs	Transactional	Analyze Delivery Logs	Desktop, Smartphone, Tablet

Schedule Delivery Creation	Transactional	Schedule Delivery Creation	Desktop, Tablet
Transportation Costs	Analytical	Cost Analysis - Overview Page, Transportation Costs - Overview Page	Desktop, Smartphone, Tablet
Freight Order: Quantity drl-VEN operational Business	Analytical	Freight Order Quantity Analysis - Overview Page	Desktop, Smartphone, Tablet
Freight Booking: Quantity drl-VEN operational Business	Analytical	Freight Booking Quantity Analysis - Overview Page	Desktop, Smartphone, Tablet
Freight Order Quantities - ALP	Analytical	Freight Order Quantities - ALP	Desktop, Tablet
Transportation Costs - ALP	Analytical	Transportation Costs - ALP for Transportation Manager	Desktop, Tablet
Transportation Invoice Blocked - ALP	Analytical	Transportation Invoice Blocked - ALP	Desktop, Tablet
Analyze Delivery Performance - Shipped as Planned	Analytical	Analyze Delivery Performance - Shipped as Planned	Desktop, Tablet
Manage Freight Agreement RFQs	Transactional	Manage freight agreements for Logistics Service Provider Representative	Desktop, Smartphone, Tablet
Create Delivery without a Reference (Quick Create)	Transactional	Create Delivery without a Reference (Quick Create)	Desktop, Smartphone, Tablet
Export Master Data	Transactional	Export Data for master data specialist	Desktop, Tablet
Explain Scheduling Results	Transactional	Explain Scheduling Results	Desktop, Smartphone, Tablet
Create Freight Unit	Transactional	Freight Unit Creation	Desktop
Create Freight Order	Transactional	Freight Order Creation	Desktop
Edit Freight Unit	Transactional	Freight Unit Editing	Desktop
Edit Freight Order	Transactional	Freight Order Editing	Desktop
Display Freight Unit	Transactional	Freight Unit Display	Desktop
Display Freight Order	Transactional	Freight Order Display	Desktop

Display Freight Agreement	Transactional	Freight Agreement Display	Desktop
Edit Freight Agreement	Transactional	Freight Agreement Editing	Desktop
Create Freight Agreement	Transactional	Freight Agreement Creation	Desktop
Display Calculation Sheet	Transactional	Calculation Sheet Display	Desktop
Edit Calculation Sheet	Transactional	Calculation Sheet Editing	Desktop
Create Calculation Sheet	Transactional	Calculation Sheet Creation	Desktop
Display Rate Table	Transactional	Rate Table Display	Desktop
Edit Rate Table	Transactional	Rate Table Editing	Desktop
Create Rate Table	Transactional	Rate Table Creation	Desktop
Display Default Route	Transactional	Default Route Display	Desktop
Edit Default Route	Transactional	Default Route Editing	Desktop
Create Default Route	Transactional	Default Route Creation	Desktop
Display Schedule	Transactional	Schedule Display	Desktop
Edit Schedule	Transactional	Schedule Editing	Desktop
Create Schedule	Transactional	Schedule Creation	Desktop
Display Freight Settlement Document	Transactional	Freight Settlement Document Display	Desktop
Edit Freight Settlement Document	Transactional	Freight Settlement Document Editing	Desktop
Create Freight Settlement Document	Transactional	Freight Settlement Document Creation	Desktop

Warehouse (EWM)

Fiori Application Name	Transactional/Application or Fact Sheet	Fiori Application Description	Desktop/Tablet
Post Goods Receipt for Purchasing Document	Transactional	Post Goods Receipt for Purchasing Document	Desktop, Smartphone, Tablet
Overdue Materials - Goods Receipt Blocked Stock	Analytical	Overdue Materials - GR Blocked Stock	Desktop, Smartphone, Tablet

Post Goods Receipt for Inbound Delivery	Transactional	Post Goods Receipt for Inbound Delivery	Desktop, Smartphone, Tablet
Post Goods Receipt without Reference	Transactional	Post Goods Receipt without Reference	Desktop, Smartphone, Tablet
Create Inbound Delivery	Transactional	Create Inbound Deliveries - Deliveries	Desktop, Tablet
Change Inbound Delivery.	Transactional	Change Inbound Deliveries - Deliveries, Change Inbound Deliveries - Production	Desktop, Tablet
Process Warehouse Tasks - Putaway	Transactional	Process Warehouse Tasks - Putaway	Desktop, Tablet
Process Warehouse Tasks	Transactional	Process Warehouse Tasks	Desktop, Tablet

Reporting Overview

This section will brief about the SAP standard reports which can be leveraged by EDGE entities for its analysis and others decision areas. The main objective to integrate reports in SAP Fiori is to improve the user experience and work seamlessly across devices like smart phone, tablet or desktop.

- **Freight Order Worklist:** This app can be used as a report to monitor the shipments based on the actual and planned shipments based on date/time, mode of transport, mode of transport Vs carrier, location of discharge and take key business decisions accordingly.
- **Average Delay Time:** This app can be used to display the key indicator about the average deliveries that arrived with a delayed POD
- **Dangerous Goods:** This app can be used to report the percentage of transportation orders created with dangerous good.
- **Delayed Freight Orders in Transit:** This can be used to report the FO's which have delayed status or have an overdue POD (Proof of delivery) status. It also gives a clear picture of FO's which are in transit.
- **Transportation Orders with Discrepancies:** This can be used to collate orders that have discrepancies within the current fiscal year.
- **Transportation Cost:** The analytical app displays the Key Performance Indicator (KPI) Transportation Cost, to view the cost for transportation for the year to date. As the system contains invoices for different countries in different currencies, currency (and exchange rate) can be chosen to use to display the cost figure.

- **Transported Volume:** Can be used to check the total transported volume within a year.
- **Average Vehicle Resource Utilization** – To view the average percentage utilization of the vehicle resources by the transportation orders created to date in the current year
- **Adjust Operational Supplier Evaluation Score** - With this app, the operational supplier evaluation score can be adjusted for a supplier. The operational score can be updated by modifying the individual scores that contribute to the operational score. These include the quantity, time, price, and quality scores on the purchase-order item level for a gl-VEN supplier.
- **Purchasing Spend** - With the *Purchasing Spend* app, the spend for a gl-VEN set of comparison filters to the total spend can be compared. Filter includes supplier, material group, purchasing group, supplier country, and purchasing organization. This app can be used to compare the purchasing spend between the total spend of a data set with a sub-set of that data set by using the comparison filters.
- **Tendering Analysis Overview Page** – This app can be used to identify and work with the carriers who perform the best. Performance of carriers can be assessed with peer-to-peer requests for quotation (freight RFQs) and with all the tendering types. The best tendering type for an individual carrier can be identified, to investigate further why a carrier that the system proposed was manually replaced with another carrier.
- **Tendering ALP** – Following analysis can be done using this application:
 - Transportation cost analysis with overview pages (OVP) and analytical list pages (ALP)
 - Freight order quantities analysis with OVP and ALP
 - Freight booking quantities analysis with OVP and ALP
 - Freight order execution analysis with OVP and ALP
 - Freight booking execution analysis with OVP and ALP
 - Tendering analysis with OVP and ALP
 - Business share analysis with OVP and ALP
 - Allocation analysis with OVP and ALP
- **Warehouse Management Monitor**
 - Provides reporting of all types of warehouse activities, as well as stock and Storage bin lists.
 - Advanced analytics, dashboard and reporting are possible using SAP business intelligence (BI) content
 - EWM uses the easy graphics framework (EGF) to create visual representation of warehouse layouts.
 - Fiori app “Warehouse KPIs – Operations” to display KPIs

5. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

5.1 Role/Skill Class Inventory

Role	Skills	Knowledge
Buyer	SAP – S2P	Know how to create customer return Purchase order
Shipping Specialist	SAP-O2C	Know how to create Return Delivery
Warehouse Clerk	SAP – D2S	Perform Goods receipt, put away, Picking, Packing, Goods issue, Physical inventory, Scrapping, Internal goods movement, replenishment, creating return Purchase order, create inbound delivery, return sales Order for customer returns, Create Return Delivery.
Warehouse Operative	SAP – D2S	Execute goods movement and confirm warehouse task.
Quality technician	SAP – P2P	Inspection lot creation, Perform Quality Inspection, Reject, Return, Scrap, Rework. Record inspection results, Usage Decision, Reprocess Product.
Transportation planner	SAP – D2S	Know how to create to plan the freight and align with carrier to perform tendering and assignment. Know how to work with freight documents to report events to track freight execution and work with shipping & transportation documents.
Transportation Manager	SAP – D2S	Know how to work with freight charges, post the freight costs. Check the freight PO, Service Entry Sheet

5.2 Security Roles as per Process Design

Stream	Sub-Module	Master Role	Master Role Description	Warehouse Clerk	Warehouse Operative	Transportation Planner	Transportation Manager	Quality Technician	Buyer
D2S	EWM	YSHM:D2SEWM:XXXX:EWM_SHIPRECEVE	EWM - Shipping and Receiving	X	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM_WORK_SCHEDL	EWM - Work Scheduling	X	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM_EXEC_OFc	EWM - Work	X	X				

			Execution Office					
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _MD_WHSE	EWM - Warehouse Setup	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _SET_ADDL	EWM - Additional Settings	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _RCVG_PRODN	EWM - Receiving from Production	X	X			
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _POSTG_CHG	EWM - Posting Changes	X	X			
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _INT	EWM - Data Exchange	X				
D2S	EWM	YSHM:D2SEWM:XXXX:OUT B_ADVNC	EWM - Outbound Processing (Extended)	X	X			
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _MD_PROD	EWM - Product-Related Master Data	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _PRODN_SC	EWM - Production Staging and Consumption	X	X			
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _MON	EWM - Monitoring	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _PI	EWM - Physical Inventory Processing	X	X			
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _SET_PI	EWM - Physical Inventory Settings	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _QMGMT	EWM - Quality Management	X	X			
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _SET_RF	EWM - HANDHELD Settings	X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM _INB_ADVNC	EWM - Inbound	X	X			

			Processing (Extended)						
D2S	EWM	YSHM:D2SEWM:XXXX:EWM_OUTB_BSC	EWM - Outbound Processing (Basic)	X					
D2S	EWM	YSHM:D2SEWM:XXXX:EWM_INB_BSC	EWM - Inbound Processing (Basic)	X					
D2S	EWM	YSHM:D2SEWM:XXXX:WORK_EXEC_F	EWM - Work Execution Floor (Basic)		X				
D2S	EWM	YSHM:D2SEWM:XXXX:EWM_EXEC_F_ADVN	EWM - Work Execution Floor (Extended)		X				
D2S	TM	YSHM:D2STM:XXXX:FRS,YSHM:D2STM:XXXX:STLM	Transportation - Freight Settlement, Transportation - Settlement			X	X		
D2S	TM	YSHM:D2STM:XXXX:FRM	Transportation - Freight Order Management			X	X		
D2S	TM	YSHM:D2STM:XXXX:ADM	Transportation - Application Administration			X	X		
D2S	TM	YSHM:D2STM:XXXX:FRM,YSHM:D2STM:XXXX:OM	Transportation - Freight Order Management			X			
D2S	TM	YSHM:D2STM:XXXX:FRM	Transportation - Freight Order Management			X			
D2S	TM	YSHM:D2STM:XXXX:FRS_FO_Mgmt	Transportation - Freight			X			

			Settle & FO Mgmt.					
D2S	TM	YSHM:D2STM:XXXX:IDM_TPL	Transportation - Planning		X	X		
D2S	OM	YSHM:D2SOM:XXXX:OB_DELIVERY_DISPLAY	Logistic Execution - Outbound Deliveries Display	X				
D2S	OM	YSHM:D2SOM:XXXX:OUTBOUND_DELIVERIES	Logistic Execution - Outbound Deliveries	X				
D2S	OM	YSHM:D2SOM:XXXX:OD_ANALYTICS	Logistic Execution - Outbound Delivery Analytics	X				
P2P	QM	YSHM:PTPQM:XX:0000:QLT_MGR	PTP-QM-Quality Manager				X	
P2P	QM	YSHM:PTPQM:XX:0000:QLT_TECH	Quality Technician Master Role				X	
S2P	Procurement	YSHM:STPMM:XX:0000:CRE_PRC_ORD	STP-Buyer					X

6. PROCESS FITNESS & GAP ANALYSIS

6.1 Process Variation (legal, geographical or business-led)

A sub process variation can be led by a business / geography or could be mandated by legal regulations or compliance requirements. Some of these variations can cut across sub process/ processes and will lead into integration requirements. Further additions

6.1.1 Sub-Process Variation

BPH	Business Partner	Decision	Sub Process
Variations covered above			

6.1.2 Business Unit Level

All the business processes are harmonized across ADASI/AL TARIQ/HALCON/NIMR entities.

6.1.2.1 Geography/Legal Entity Led

All the business processes will be as per the requirement of ADASI/AL TARIQ/HALCON/NIMR entities. The legal entity will be as per UAE rules.

6.2 GAP Register

Country/ Region/ Business Impacte d	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	WRICEF No.	Ref. to Req. id.
ADASI NIMR HALCON AL TARIQ	<p>Receive Customer Provided Material (CFM) at Warehouse to recognise as Customer Stock</p> <p>Requirement- Business needs a Intercompany subcontracting process for the traceability of the customer stock and to receive Customer Provided Material (CFM) at Warehouse to recognise as Customer Stock</p> <p>Limitations in Standard S4- This feature is currently not available in standard S4</p>	N	M	new	Under discussion	GAP_D2S_P2_024
ADASI NIMR HALCON AL TARIQ	Concession Material - During Receipt of Goods, if a Product is failed in Quality but MRB (Material Review Board) modified it and add a new product code to it which eventually will be used in production.	N	H	New	Confirmed	

	During Production Staging, Concession Material is the first priority to pick.					
--	---	--	--	--	--	--

6.3 Process Fitness

Req ID	Short Description	Long Description	Req. Type	Reusable Assets
NA	NA	NA	NA	NA

6.4 WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Assign system / SAP component
1	Form	Transportation Label Print (Format, Layout) (Sticker)	Low	NA	TM
2	Enhancement	Receive Customer Provided Material to Warehouse (CFM) to recognise the Customer Stock	Low	NA	EWM
3	Enhancement	Communicating the carrier for the Freight Document details like planned loading, departure, arrival & unloading dates, products, its quantity & weight with the hazardous/ dangerous goods information like UN-Code, etc. (if required) (via IDOC/ XML/ email message or, Portal)	High	NA	TM
4	Form	Transportation label/ Copy Form in TM Freight Document, for printing dangerous goods information and loading, unloading & shipping instructions	High	NA	TM
5	Label	Put away label – with HU	High		EWM
6	Label	Put away label – W/O HU	High		EWM
7	Label	HU Label	High		EWM
8	Form	Pick List – Outbound - Pre-Confirmation	High		EWM
9	Form	Pick List – Outbound - Post Confirmation	High		EWM
10	Form	Packing List	High		EWM
11	Form	Delivery Note	High		EWM
12	Form	Goods Movement Form - Issuance	High		EWM
13	Label	Rejected Label	High		EWM

7. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

7.1 Integration points

Generic integration touch points are highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies integration Issues.

Process ID (L4 process)	Type (legacy system, DT Ops, functional integration)	Related technical scope item (if required)	Leading stream	Business process Integration with domain	Description	In	out
ED-13_010100	S4/HANA, SAP ECC, Maximo, MS GP		D2S	P2P	Perform quality inspection at goods receipt EWM-QM Integration covers the following topics 1) Inbound Delivery with Usage decision 2) Customer Return delivery with Usage decision -For Product/Item -For HU/Batch	1) Receiving from Supplier During receive product/s should evaluate for Quality check 2) Receiving from Customer as part of Customer Return During receive product/s should evaluate for Quality check QC Follow up activities for above situations with full or Partial a) To move Un Restricted for further usage b) To move for SCRAP c) To move for Re-Work	
ED-13_010100	S4/HANA, SAP ECC, Maximo, MS GP		D2S	P2P	Managing dynamic quality inspection lots (path from full inspection to sample testing)	Before receiving at warehouse, sample testing can be performed for Edge trusted vendor/s	
ED-13_010100	S4/HANA, SAP ECC, Maximo, MS GP		D2S	S2P, P2P	EHS Integration for Inbound process. Specific to Dangerous, Hazardous goods	Goods (Dangerous/Hazardous) receive at warehouse to be notified through EHS	Open -To be discussed
ED-13_010300	NA		D2S	LBN – Logistics Business network	Communicating the carrier for the Freight Document details	FO Details	Carrier gets FO Details

7.2 Inbound Communication

The Inbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Inbound communication includes any required emails, forms or handoffs between parties that are required to initiate the sub process.

Activity	Type	Automatic/Manual	Source	Destination	Description
Advanced shipping notification (ASN)	EDI	Automated	ERP System of Supplier		Supplier generated ASN initiates the inbound delivery creation
Supplier label	Form	Manual	ERP System of Supplier		Supplier provides (HU-) labels according to EDGE standards and can be used directly for logistic operations without exchanging them with internal (HU-) labels

7.3 Outbound Communication

The Outbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Outbound Communication includes any emails, forms, handoffs between parties that result from the sub process. Typically, these are output results and documentation that result from the process.

Activity	Type	Automatic/Manual	Source	Destination	Description
Receipt Confirmation for ASN	EDI	Automatic	S4HANA	ERP System of Supplier	Sent confirmation to supplier system for ANS receipt.

7.4 Other Issues

8. KUT FEEDBACK AND NEW REQUESTS (IMPLEMENTATION TO BE DECIDED ON COMPLIANCE/CUSTOMER/BUSINESS CASE/USABILITY)

S No	Topic	NIMR	HALCON	AL TARIQ	ADASI	Possible in standard in SAP	SI comment
1	The receipt of goods would be directed to Quality Inspection first from there to respective bin and PSA					<input checked="" type="checkbox"/>	
2	NIMR receipt is always quantity based not HU based	x				<input checked="" type="checkbox"/>	The receipt should be done from the desktop and not via the HHD
3	Rejection Material will go to Quarantine from Quality and the concession Material will be assigned by Quality					<input checked="" type="checkbox"/>	
4	External Batch Number - Manual Batch Number (Al Tariq for PSS)			x		<input checked="" type="checkbox"/>	At the time of GR of incoming goods, operator need to select manually the batch number already created - standard solution (semi-finished goods)
5	The receipt from Vendors would be undergone QI and if the parts are passed in 3 consecutive times will be dropped from QI and further if any rejection happens for the same Vendor, it will go for 3 times QI	x				<input checked="" type="checkbox"/>	As per QM team it's possible in standard
6	Unloading information to	x				<input checked="" type="checkbox"/>	With handling unit unloading info can be captured using

	capture during receipt						HHD, w/o HU cases can be captured via Terminal only
7	Ordering UoM to Stock Keeping Unit (During PO creation, system)					<input checked="" type="checkbox"/>	This is according to the agreement with vendor, Procurement will take a call on this.
8	Serial Number should be external					<input checked="" type="checkbox"/>	Possible, serial number is limited to 18 char only
9	Allow repacking activity at the time of inbound delivery		x			<input checked="" type="checkbox"/>	Possible, new functionality to be enabled
10	Inbound transportation: clarify the process with EBS	x				<input type="checkbox"/>	To be clarified with EBS
11	Print different sizes of the labels	x	x	x	x	<input type="checkbox"/>	Enhancement /New forms
12	What is the trigger of unloading --> IBD is prerequisite to unload the Goods	x				<input type="checkbox"/>	IBD is prerequisite to unload the Goods

9. APPENDIX

Figure 11: Item label based on delivery

Entity Logo	Delivery Number 1240128401	Delivery Date 31.05.2023	Label 1 of 2 **
Package Number 111002412412		*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space	
Entity Material Number 56000213124			
Entity Batch Number ABC12412421	National Stock Number 12412421	WBS Assignment PJ.001.001	
Expiry Date 31.05.2026	Supplier Batch Number ABC12412421	Quantity 16	Units Pieces

Entity Logo	Delivery Number 1240128401	Delivery Date 31.05.2023
Package Number 111002412412		*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space
Entity Material Number 56000213124		
Entity Batch Number ABC12412421	Supplier Batch Number 38021412	National Stock Number 56000213124
Expiry Date 31.05.2026	Quantity 1	Units Piece

Figure 12: item label based on GR

Entity Logo	Delivery Number 1240128401	Delivery Date 31.05.2023	Label 1 of 2 **
Package Number 111002412412		*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space	
Entity Material Number 56000213124			
Entity Batch Number ABC12412421	National Stock Number 12412421	WBS Assignment PJ.001.001	
Expiry Date 31.05.2026	Supplier Batch Number ABC12412421	Quantity 16	Units Pieces

Entity Logo	Delivery Number 1240128401	Delivery Date 31.05.2023
Package Number 111002412412		*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space
Entity Material Number 56000213124		
Entity Batch Number ABC12412421	Supplier Batch Number 38021412	National Stock Number 56000213124
Expiry Date 31.05.2026	Quantity 1	Units Piece

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY
13 LOGISTICS AND TRANSPORTATION
13.3 INTRA-LOGISTICS

TABLE OF CONTENT

Table of Content.....	2
1. Introduction	4
1.1 Change History	4
1.2 Approval Details	5
1.3 Other Related Documents.....	5
2. Business Process (Level 2)	6
2.1 To-Be Process Overview and Context	6
2.2 Key Value Drivers for the Business Process.....	6
2.3 Key Design Decisions	7
2.4 Standard KPI and reports	7
2.5 Extreme automation	7
3. Process Design.....	8
3.1 Perform intercompany stock transfer (ED-13_030101).....	9
3.1.1 Process Description.....	9
3.1.2 Process Diagram.....	10
3.1.3 Activity List & Automation	10
3.2 Manage internal transportation within TIP / outside TIP (ED-13_030201)	11
3.2.1 Process Description.....	11
3.2.2 Process Diagram.....	12
3.2.3 Activity List & Automation	12
4. Detailed Solution Design	13
4.1 Manage Inter and Intra company Transportation.....	17
4.1.1 Solution prerequisites	18
4.1.2 Master data prerequisites.....	18
4.1.3 Detailed solution design	18
4.2 Perform intercompany stock transfer; Solution steps and elements (Level 5-6)	18
4.3 Manage Internal transportation (within TIP);	18
4.3.1 Reporting Overview	18
4.4 Role/Skill Class Inventory	19
4.5 Security roles as per process design.....	19
5. Process Fitness & Gap Analysis	20
5.1 Process Variation (legal, geographical or business-led).....	20
5.1.1 Sub-Process Variation	20
5.2 GAP Register.....	20
5.3 Process Fitness	20
5.4 WRICEF Register	20
5.4.1 Business Unit Led	20
6. Integration Points.....	21
6.1 Integration points.....	21
6.2 Inbound Communication.....	21
6.3 Outbound Communication.....	21
6.4 Other Issues.....	21

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	4.10.2021	First draft	Martin Posarnig
V0.3	9.10.2021	Business Process descriptions	Sunil Kumar / Martin Posarnig
V0.4	14.10.2021	Content added (master data, Fiori, reporting)	Sunil Kumar / Martin Posarnig
V1.0	07.11.2021	Approval GPO	Martin Posarnig
V1.1	13.12.2021	Update Feedback Content	Sunil Kumar / Martin Posarnig
V2.0	20.12.2021	Ready for BO Approval	Martin Posarnig
V2.1	26.01.2022	Incorporated Feedback 2.0 / Editing process flows and activity lists	Sunil Kumar/Martin Posarnig
P2_v0.1	5.08.2022	Update into new PDD format	Moritz Waubke
P2_v0.2	16.10.2022	Update HU Management, Business process description, Activity lists, Flow charts, remove automated warehouse and validate logistics concept for product launch	Martin Posarnig
P2_v0.3	11.12.2022	Incorporate SI Feedback	Martin Posarnig
Change of versioning numbering policy			
V0.7	09.03.2023	Incorporating open points from Feedback Tracker, OPL (Deliverables list) and entity feedback	Martin Posarnig / Zakia El Houary / Azam Hussain Syed / Sateesh Natarajan / Shakti Prasad
V0.8	22.03.2023	Quality review	Dr. Piotr Rykaczewski
V0.9	29.03.2023	GPO approval (V0.8 → V0.9)	
V0.9	19.06.2023	Update of the process: Manage internal transportation within TIP/outside of TIP	Zakia El Houary / Faraz Quddusi
V0.9	04.08.2023	Quality review of the updates	Dr. Piotr Rykaczewski
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See cover sheet			

1.3 Other Related Documents

Please insert links/References to related Documents (issues, data entities, extreme automation, etc.)

Related Document	Comment

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

Intra logistics are dealing with the transport of material and according to processes within different entities of EDGE group. Another part is logistic operations between two or more facilities of one entity. If this is handled with internal resources only, this is considered in warehouse management. If an external service provider is needed, it is assigned to intra logistics.

Orientation within business process hierarchy:

Demand to Supply → 13 Logistics and Transportation → 13.3 Intra Logistics

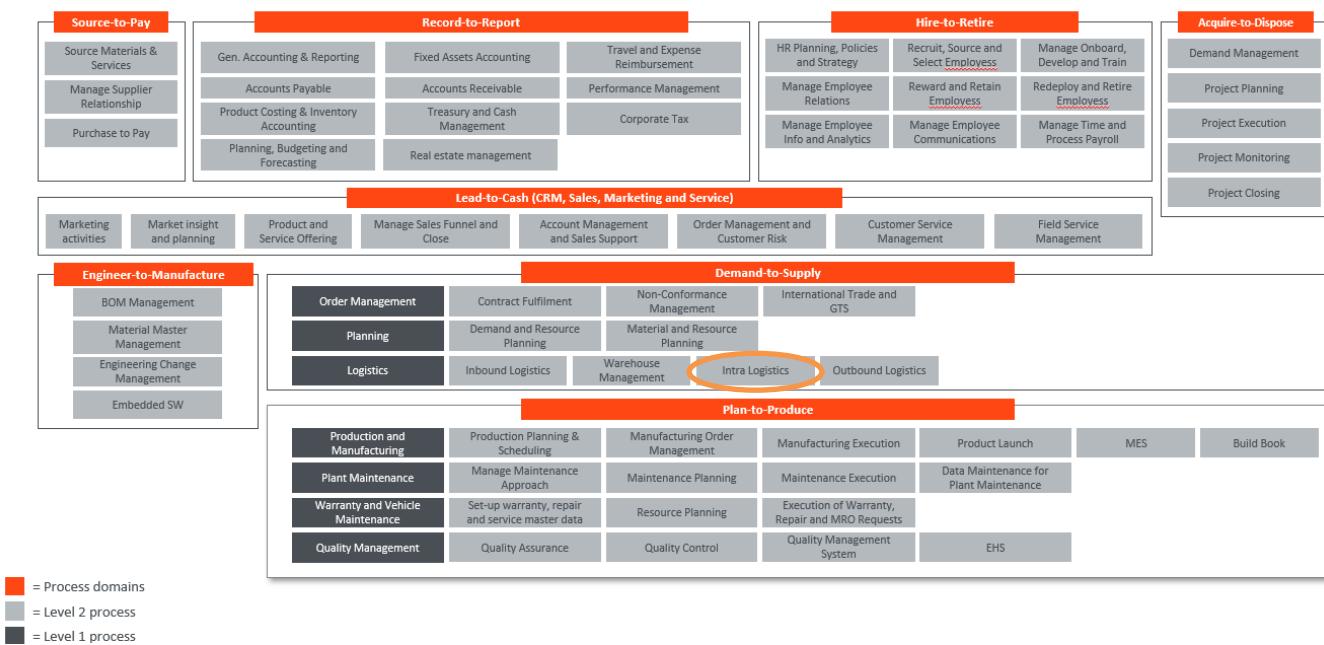


Figure 1: EDGE Business Processes Overview

Intra logistic operations can be divided into following categories:

- Perform intercompany stock transfer
Move material between entities within the EDGE Group.
- Manage internal transportation (within TIP/outside of TIP)
Move material within Tawazun Industrial Park and outside TIP (e.g. Al Ain)

2.2 Key Value Drivers for the Business Process

The implemented solution will support operations in following points:

- Visibility of stock movements and status
- Automated calculation of transport units
- System guided complementary processes like billing or posting

2.3 Key Design Decisions

Process ID	KDD ID	Type	Description

2.4 Standard KPI and reports

2.5 Extreme automation

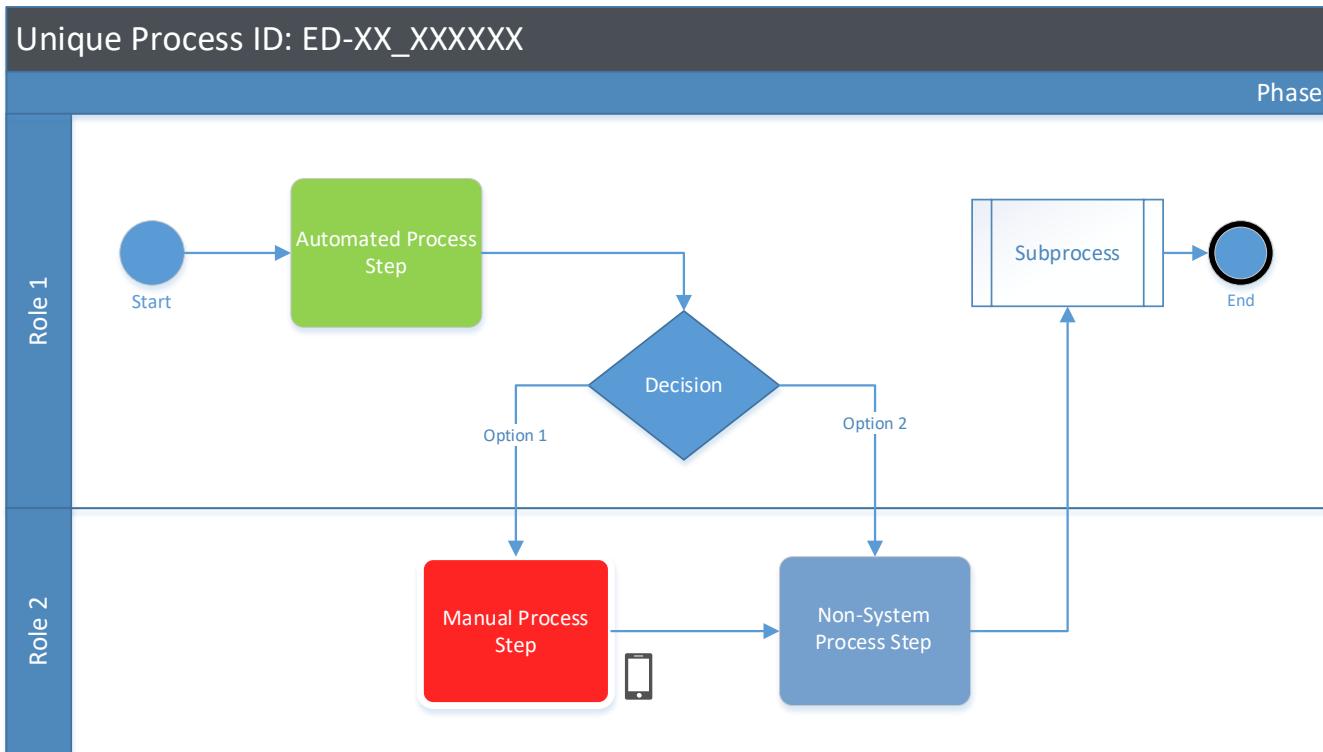
All the relevant use cases under consideration for extreme automation are updated (with EBS input if required) in before the initiation of validation phase.

Detailed key-stroke level process details will be captured through walkthrough sessions in the Extreme automation PDD section. ERP PDD's and ERP training manuals shall be leveraged to capture information that is readily available for the identified automations

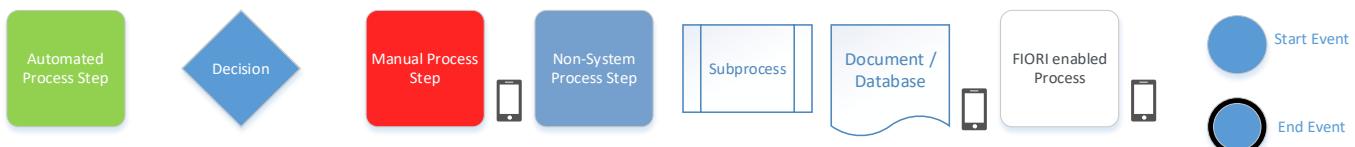
3. PROCESS DESIGN

In the following chapters processes are described in swimlane flow diagrams, in which the swimlanes represent responsible roles and the flow is shown in process steps of different kinds (see legend).

Example for swimlane flow chart:

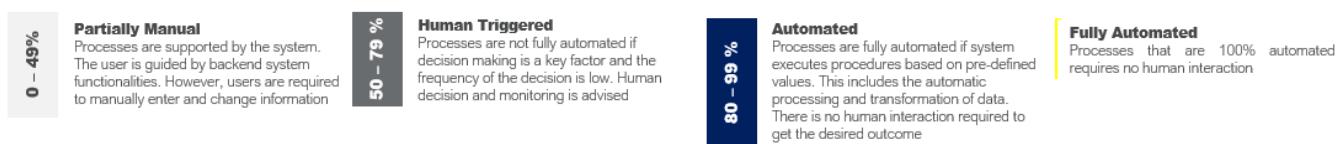


Legend



For each swimlane flow diagram, a corresponding activity list exists, with additional details:

- Process Step - Number of process step (Pxxx)
- BPH ID - BPH ID of L4 process
- Description - Short description of the step
- Role - Responsible role for executing the step
- SAP-Automation - Options: Partially Manual, Human Triggered, Automated, Fully Automated, Sub-Process/Non-System (blank); details on definition see below
- Tcode - SAP Transaction Code (SAP EWM in Italic letters)
- Fiori - Y, if Fiori App is available



3.1 Perform intercompany stock transfer (ED-13_030101)

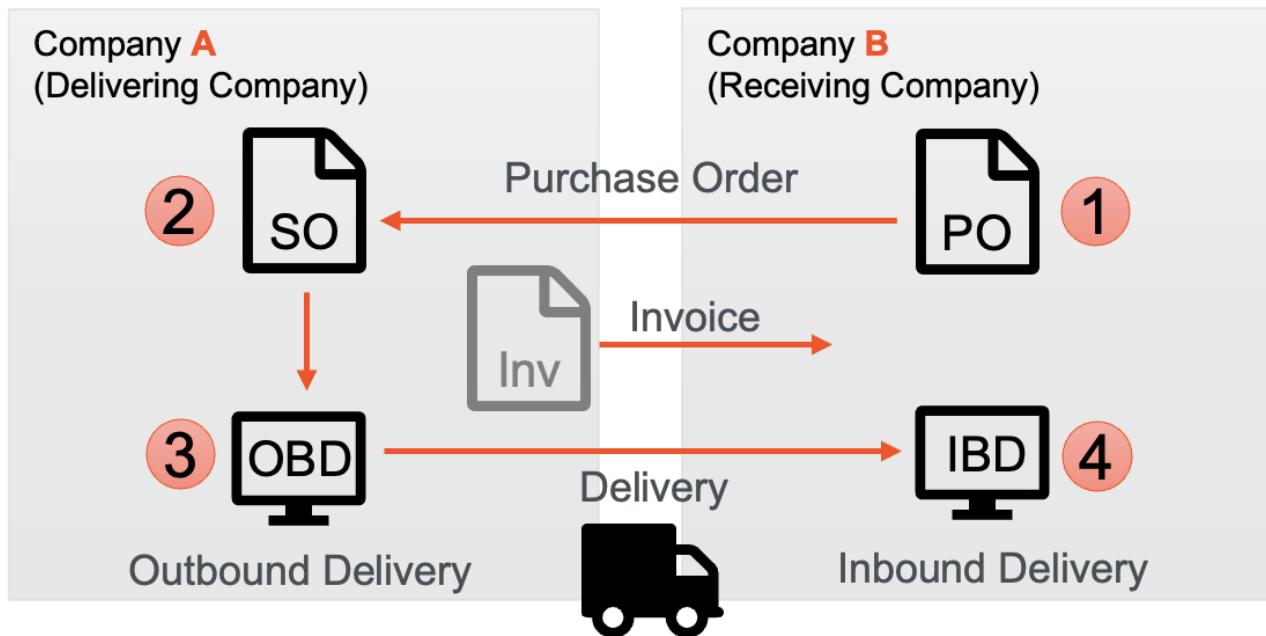
3.1.1 Process Description

When two EDGE entities want to do a stock transfer between each other they must follow the intercompany sales process. Since the plants belong to different company codes, the following points must be considered from the sales point of view:

- Delivery: the procedure for delivering based on a purchase order from another plant should be like delivering based on a sales order from a customer
- Billing: the delivering plant will be charging the receiving plant for the material

Intercompany material can be considered for inbound quality check as it is usually done for external suppliers. If there is a need to distinguish between intercompany inbound and supplier delivery, this must be configured in the system depending on supplier.

Figure 2: Clarification of intercompany sales



1. Company B is buying apart from company A, so company B is creating a purchase order.
2. Company A creates the outbound delivery based on a sales order and will execute the picking and post the goods issue.
3. Company B will do the goods receipt.

In the case of movement within TIP, the transportation between the entities is simplified and the assumption is that there is no cost of transportation. This could happen with entity owned vehicles that are not considered as resources in the system.

Since not all entities are located within TIP, we must consider transportation management in this process as following:

- Using an external carrier: refer to outbound/inbound PDD for transportation management
- Using entity owned vehicles

The process starts again with the purchase order from company B, followed by the outbound delivery in company A.

Next step at company B after creating the outbound delivery is the execution of picking and packing. For the picking process a pick list is created. Printing is not mandatory since this process can be executed with the HANDHELD device. For further details regarding handling outgoing goods, please refer to 13.04- Outbound PDD.

The goods are issued from company B, transported and received by company A. The process at company A will follow inbound process as defined in 13.1- Inbound PDD.

3.1.2 Process Diagram

For the intercompany process there are 2 flowcharts relevant that are described in:

- Inbound PDD: Perform goods receipt with quality inspection (ED-13_010101)
- Outbound PDD:
 - Manage outbound transports (ED-13_040101)
 - Deliver dangerous goods/normal goods (ED-13_040102)

3.1.3 Activity List & Automation

For the intercompany process there are 2 activity lists relevant that are described in:

- Inbound PDD: Perform goods receipt with quality inspection (ED-13_010101)
- Outbound PDD:
 - Manage outbound transports (ED-13_040101)
 - Deliver dangerous goods (ED-13_040102)

3.2 Manage internal transportation within TIP / outside TIP (ED-13_030201)

3.2.1 Process Description

Internal transportation can be executed with internal vehicles or with 3rd party logistics providers. In case of entity owned vehicles, tracking of cost is not required in the system. However, in case of 3rd party logistics providers, it must follow the same protocols as defined in outbound and inbound operations covered in the PDDs: 13.4- Outbound PDD & 13.1- Inbound PDD.

There is no requirement to put the entities' vehicles master data in the system. As of current day, most of the internal transportation is managed by internal fleet, and thus the booking or the cost information is not tracked in any system.

3.2.2 Process Diagram

For the internal transportation process there are 2 flowcharts relevant that are described in:

- Outbound PDD:
 - Manage Outbound Transports (ED-13_040101)
- Inbound PDD:
 - Manage Inbound Transportation (ED-13_010101)

3.2.3 Activity List & Automation

For the internal transportation process there are 2 activity lists that are relevant that are described in:

- Outbound PDD:
 - Manage Outbound Transports (ED-13_040101)
- Inbound PDD:
 - Manage Inbound Transportation (ED-13_010101)

4. DETAILED SOLUTION DESIGN

Final update of solution design chapter will be done after considering the results of SIT/UAT

Manage master data

Master Data	Application	Primary	Secondary
Business Partner	S/4	S/4	
Product Master	S/4, EWM	S/4, EWM	
Plants – Location	TM	TM	
Shipping Point -Location	TM	TM	
Warehouse	EWM	EWM	
Purchase Organization	S/4 & TM	S/4	TM
Purchasing Group	S/4 & TM	S/4	TM
Locations & Transshipment Location	TM	TM	
Transportation Zone	TM	TM	
Transportation Lane	TM	TM	
Freight Agreements	TM	TM	
Calculation Sheets	TM	TM	
Rate Tables	TM	TM	
Scales	TM	TM	
Schedules	TM	TM	
Default Routes	TM	TM	
Packaging Specification	EMM	EWM	
Storage Bin, Staging Area, Door, Check Point	EWM	EWM	
Bin Assignment	EWM	EWM	
Print, Label Condition	EWM	EWM	
Task/Order condition	EWM	EWM	
Work Center	EWM	EWM	
Consolidation Group	EWM	EWM	
User Master (Resource, Que Assignment, Tolerance Group)	EWM	EWM	

Bin sorting	EWM	EWM	
PSA declaration	EWM	EWM	
QC set up	EWM	EWM	
Slotting	EWM	EWM	
Batch-Class and Characteristic	S4, EWM	S4	

Figure 3: TM Structure Overview - ADASI



Figure 4: TM Structure Overview - NIMR



Figure 5: TM Structure Overview - HALCON

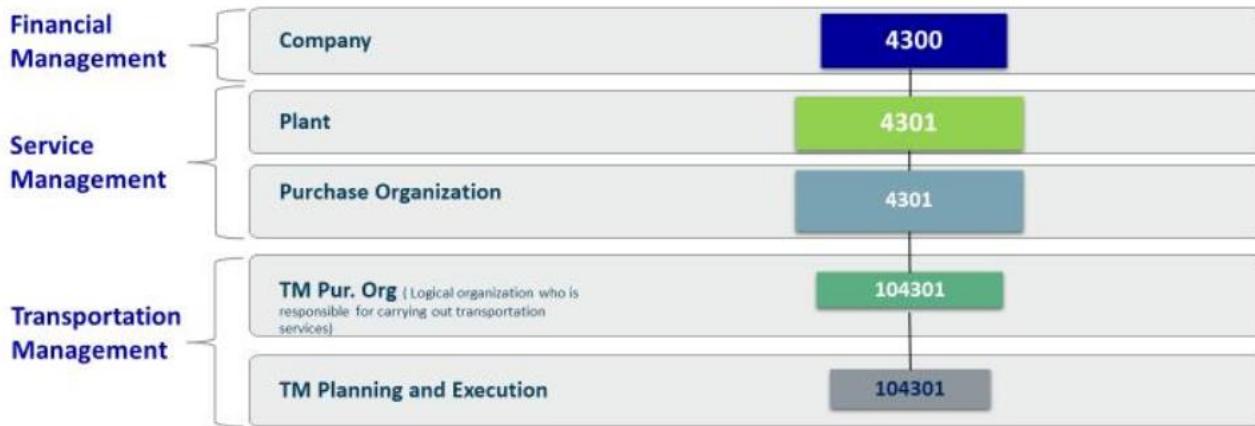


Figure 6: TM Structure Overview - AL TARIQ



Below mentioned master data objects would be maintained for the EDGE system:

Business partner: A person, organization, group of persons, or group of organizations in which a company has a business interest. Each BP is identified with a unique business partner number (BP number). Once a specific role has been assigned to the BP, data can be created and managed.

Organizational management: A means for creating and managing the organizational and staffing structures in the company that uses an organizational model as its basis. Below type of organizations can be created.

- Corporate organization: This organization unit is optional and serves as a single-entry point into the organizations structure in SAP TM.
- Company organization: This organization unit corresponds to the ERP company code containing the local currency.
- Purchase organization and group

- Planning and execution organization and group

Transportation network: In this component, transportation network related data is setup in the system. Following are the network data elements:

- **Transportation Zone:** An object that groups several locations. This business object is used to group locations into transportation zones. The system can partly transfer the properties that are assigned to a transportation zone to all its locations. This function reduces the volume of master data stored in the system.
- **Transportation Locations with Transshipment locations:** A transshipment location is defined by assigning a location to either another location or to a transportation zone (see Transportation Zone). When a transshipment location is assigned to a transportation zone, it can be used as a transshipment location by all locations that are part of that transportation zone.
- **Transportation Zones with hierarchy:** A transportation zone hierarchy is needed to model transportation zones. In the transportation zone hierarchy, several locations are assigned, for example customers, to a transportation zone. Using transportation zones has the advantage that the number of transportation lanes that need to be processed can be reduced.
- **Transportation Lane:** A relationship between two locations, two transportation zones, or a combination of locations and zones that expresses the direct reachability of the locations or of all locations within the zones for a specific means of transport.

These data objects provide visibility of movements between the plants, shipping points, distribution centers, hubs, ports, vendors, and customers.

Product: A tangible or intangible good that is part of the business activities of a company. It can be traded, and it contributes directly or indirectly to the value chain.

Transportation charges: Charge Management uses agreements and related master data to calculate freight costs to invoice the carriers and service providers

High-Level TM Master Data

Master data is the core data of an enterprise that exists independently of specific business transactions and is referenced in business transactions. It builds the foundation for the smooth execution of business processes and well-informed business decisions. Master data represents business objects rather than business transactions and is rarely changed over a long period of time.

Plant, shipping point, customer master and vendor master data are used by ERP and by TM in general. However TM system have below master data of its own.

Shipping Point/BP:

Shipping Point/BP is a location which is responsible for Shipping and Receiving of goods.

Transportation Lane: The Transportation Lane is a route from Shipper to Consignee location which helps as execute transportation using different means of transport like Truck Types.

Transportation Locations:

Transportation Location is a location which is required as Shipping/Receiving/Warehousing/Hub/Ports/Sea Harbors/Border Crossing Points/Railway Stations.

Transportation Zone

It is a group of locations which helps to minimize TM master data. One Zone can have multiple locations in a geography.

Resource:

A resource is a transportation equipment like Vehicle, Containers, Trailers which is used for transportation planning.

Calendar is used as a TM resource in addition to the above resources.

Transshipment Location:

Transshipment Locations are interim locations like Ports, Railway Stations, Hubs, DCs, apart from shipping and Receiving Locations which is involved during the Transportation Process.

4.1 Manage Inter and Intra company Transportation

EDGE entities manage to transfer components to other entities in the same EDGE Group. All the entities are geographically located in the same location TIP. Stock transfer between entities happens in below two scenarios

- Intercompany Stock transfer b/w the company codes – This stock transfer will be treated as a normal sales and purchase process b/w the company codes. I.e. Receiving company will create the purchase order and shipping company will create the sales order. This work is the same as inbound and outbound process covered in inbound logistics PDD (Refer section 4.1) and outbound logistics PDD process (Section 4.1). Even though there is involvement of external/Internal carrier, cost is not taken into consideration with Product costing, and it is handled outside of system.
- Intra Company Stock transfer b/w the storage location within the plant. In this Process Stock transfer order is created b/w the storage location of the plant (NIMR). The sending location will create the outbound delivery with reference to STO and Pick the goods in EWM and do the Post goods issue and Receiving location create the inbound delivery with reference to STO and Post the goods receipt, perform quality inspection, and put away in EWM. NIMR is using its internal fleet and Transportation Management is not part of their solution between Ajban to Al Ain. The transportation cost is handled outside of system. Since this is not a Milk Run process, the stock movements between the two facilities are not taken into consideration in TM.

4.1.1 Solution prerequisites

Inter Company Stock Transfer will work with Purchase and Sales Process where S2P - Purchase Order Management and OM – Contract Fulfilment involves. There is no involvement of Transportation Management for cost settlement process.

Predecessor

NA

Successor

NA

4.1.2 Master data prerequisites

NA

4.1.3 Detailed solution design

This solution will facilitate the Sell and Purchase between two of the EDGE entities and will follow the Sell and Purchase Processes of S2P and D2S. There is no involvement of TM requirement to transport the goods between entities.

4.2 Perform intercompany stock transfer; Solution steps and elements (Level 5-6)

NA

4.3 Manage Internal transportation (within TIP);

Internal Transportation is only applicable for HALCON where HALCON's receiving SLOC and Production SLOC is not in the same building rather within TIP (Tawazun Industrial Park). Several shipments moving between receiving Storage location to production location daily are not being captured in the system.

All Production SLOCs are EWM managed in EDGE P2 entities and the process which was adopted for EDGE P2 entities are Advance Production Integration where PMR (Production Material Request) is the document used to carry out the PP-EWM activities. PMR document doesn't have an integration with TM where it can create the required FO, FSD and Settlement posting.

In Std SAP, there is a process called Staging of Pick Order Parts with Two Step Stock Transfer between SLOCs within same plants but not in same building. This Process works with Delivery Based Production Integration where TM can be leveraged to perform end to end process. This Process cannot be used for any one of the entities.

Due to system complications and multiple activities to perform in system, TM solution is not applicable for HALCON for transportation of goods outside of its premises.

4.3.1 Reporting Overview

This section will brief about the SAP standard reports which can be leveraged by EDGE entities for its analysis and others decision areas. The main objective to integrate reports in SAP Fiori is to improve the user experience and work seamlessly across devices like smart phone, tablet, and desktop.

There is no system-based activities which will drive for KPIs and Analytics.

1. Role Definition

The content in this section will serve as input for the training and performance support team's deliverables.

4.4 Role/Skill Class Inventory

There is no system related activities are performed by any of the user due to no use cases of Intra-Logistics per se. No system related role is applicable.

4.5 Security roles as per process design

5. PROCESS FITNESS & GAP ANALYSIS

5.1 Process Variation (legal, geographical or business-led)

A sub process variation can be led by a business / geography or could be mandated by legal regulations or compliance requirements. Some of these variations can cut across sub process/ processes and will lead into integration requirements. Further additions

5.1.1 Sub-Process Variation

5.2 GAP Register

No GAP in terms of TM

5.3 Process Fitness

No process fitness is applicable

5.4 WRICEF Register

No WRICEF requirement is applicable here

5.4.1 Business Unit Led

For Manage Outbound Logistics section, FUBR (freight unit building rule) variations:

NA

As per the business need the Freight unit building rule can be setup, the critical quantity can be based on:

NA

Strategic Freight Procurement can be handled

Reporting Overview

This section will brief about the SAP standard reports which can be leveraged by EDGE entities for its analysis and others decision areas. The main objective to integrate reports in SAP fiori is to improve the user experience and work seamlessly across devices like smart phone, tablet, and desktop

NA

6. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

6.1 Integration points

NA

6.2 Inbound Communication

The Inbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Inbound communication includes any required emails, forms or handoffs between parties that are required to initiate the sub process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description
Transaction/s	Queue	Automatic	S4	EWM	Replication data from S4 to EWM

6.3 Outbound Communication

The Outbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Outbound Communication includes any emails, forms, handoffs between parties that result from the sub process. Typically, these are output results and documentation that result from the process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description
Transportation Order to Carrier		Manual	SAP TM		After Carrier assignment, freight details are communicated to Carrier via email/interface messaging from SAP TM system
Transaction/s	Queue	Automatic	EWM	S4	Replication data from EWM to S4

6.4 Other Issues

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY

07 ORDER MANAGEMENT

7.2 NON-CONFORMANCE MANAGEMENT

TABLE OF CONTENT

Table of Content.....	2
1. Introduction	4
1.1 Change History	4
1.2 Approval Details	4
1.3 Other Related Documents.....	4
2. Business Process (Level 2).....	5
2.1 To-Be Process Overview and Context	5
2.2 Key Value Drivers for the Business Process.....	7
2.3 Key Design Decisions	8
2.4 Standard KPI and reports	8
2.5 Extreme automation	9
2.6 Non Conformance Order Variant	9
3. Process Design.....	10
3.1 Credit Note Scenario (ED-07_020101)	10
3.1.1 Business Process Description	10
3.1.2 Process Diagram.....	11
3.1.3 Activity List.....	12
3.2 Debit Memo Process	13
3.2.1 Process Description.....	13
3.3 Penalty Process.....	13
3.3.1 Process Description.....	13
3.4 Replacement Scenario (ED-07_020102).....	14
3.4.1 Business Process Description	14
3.4.2 Process Diagram.....	14
3.4.3 Activity List	14
3.5 Partial Non-Conformance (ED-07_020103).....	16
3.5.1 Business Process Description	16
3.5.2 Process Diagram.....	16
3.5.3 Activity List	17
3.6 SD-PS Integration with Billing Plan and PoD Variance (ED-07_020104)	17
3.6.1 Business Process Description	17
3.6.2 Process Diagram.....	18
3.6.3 Activity List	18
4. Detailed Solution Design	20
4.1 Solution prerequisites	22
4.1.1 Process predecessor and successor	22
4.1.2 Master data prerequisites.....	22
4.1.3 Organizational structure requirements	22
4.2 Detailed Solution Design	23
4.2.1 Credit Note Scenario; Solution steps and elements (Level 5-6)	23
4.2.2 Replacement Scenario; Solution steps and elements (Level 5-6).....	24
4.2.3 Partial Non-Conformance; Solution steps and elements (Level 5-6).....	25
4.2.4 SD-PS Integration with Billing Plan & POD Variance; Solution steps and elements (Level 5-6)	27
4.2.5 Debit Memo	28

4.2.6 Penalty process (using Credit Note).....	29
4.2.7 Associated Fiori Apps.....	30
4.2.8 Reporting Overview	32
5. Role Definition.....	34
5.1 Role/Skill Class Inventory	34
5.2 Security roles as per process design.....	34
6. Process Fitness & Gap Analysis	36
6.1 Process Variation (legal, geographical or business-led).....	36
6.1.1 Sub-Process Variation	36
6.2 GAP Register	36
6.2.1 Process Fitness.....	37
6.3 WRICEF Register	37
7. Integration Points.....	39
7.1 Integration points.....	39
7.2 Inbound Communication.....	39
7.3 Outbound Communication.....	39
7.4 Other Issues.....	39

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
v0.0	3.08.2021	Template Creation	Dr. Christian König
v0.1	12.10.2021	First Version	Sagar Gurjar
V2.0	25.02.2022	Latest Version	Sagar Gurjar/Anuj Agrawal/Suman Kumar Jha/Sitanshu Deo
P2_v0.1	5.08.2022	Update into new PDD format	Moritz Waubke
P2_v0.2	19.09.2022	Reviewed for Package 2	Sagar Gurjar
P2_v0.3, v0.4, v0.5, v0.6	23.11.2022, 13.12.2022	Reviewed for content	Sagar Gurjar / Rajeev Chandrankutty
V0.7	28.02.2023	Integration of feedback	Sagar Gurjar / Rajeev Chandrankutty/ Noman Ashraf
V0.8	16.03.2023	Quality Check Review	Dr.Piotr Rykaczewski
V0.8	16.03.2023	Integration of feedback of the quality review	Zakia El Houary/Rajeev Chandrankutty
V0.9	17.03.2023	GPO Approval (V0.8→V0.9)	
V0.9	27.03.2023	Solution update: advanced return management	Rajeev Chandrankutty
V0.9	18.04.2023	Update of process model diagram (figure 2)	Syed Kirmani
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See coversheet			

1.3 Other Related Documents

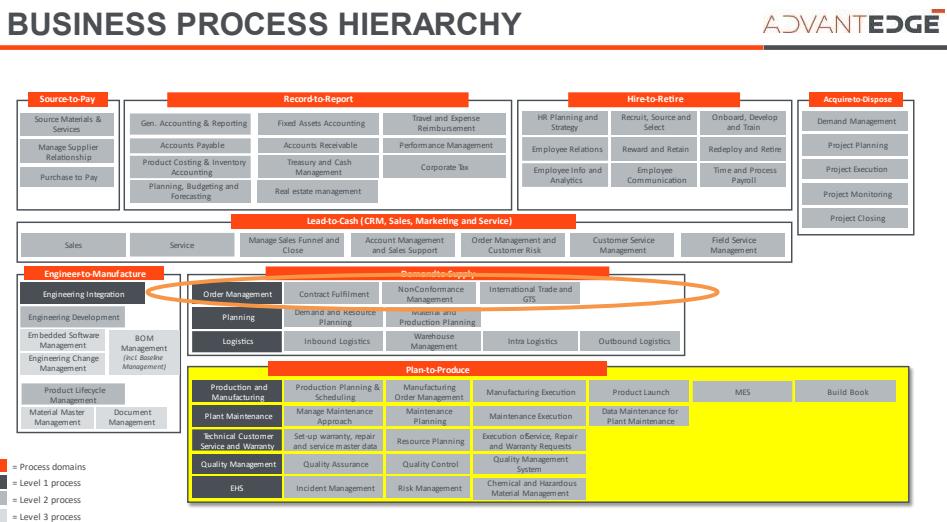
Related Document	Comment
Not Applicable	

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

The order management process in SAP at a high-level covers sales order management & processing, billing & invoicing and sales order monitoring & analytics. Additionally, it also covers claims, returns & refund management processes. This Non-conformance management PDD will focus solely on the return, replacement, and credit note process.

Figure 1: EDGE Business Process Overview

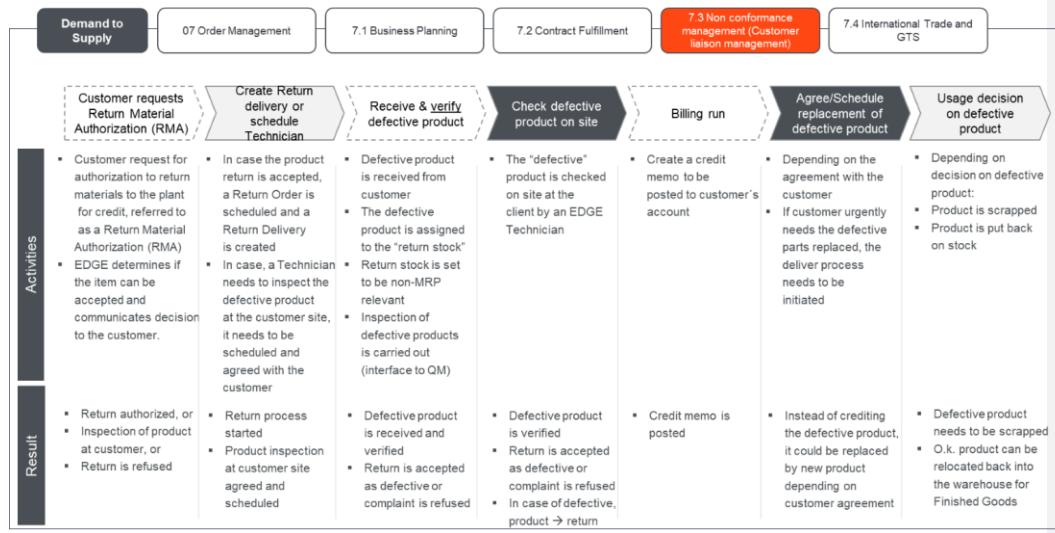


For the most efficient usage of the order management module, three core processes have been defined and aligned over all entities in scope (HALCON, NIMR, ADASI & AL TARIQ) during High-level and Deep-Dive Workshops. Integration points with other streams have also been aligned and agreed upon:

- **Contract Fulfilment** covers all the processes about sales order management and processing for stock and non-stock material in SAP (MTS & MTO scenario).
- **Non-Conformance Management** describes holistically complete returns management process with five scenarios discussed during workshops – Credit Note issue, replacement scenario, partial non-conformance and SD-PS Integration with Billing Plan and POD variance.
- **International Trade and GTS** allow companies to support and define import and export trade processes in SAP S/4HANA. In D2S module we will focus only on Exports GTS processes, import is covered in S2P. GTS reduces the time and costs of complying with global trade regulations and provides visibility into the

supply chain while goods are in transit, which helps to resolve issues that can impede goods from clearing customs in a timely manner.

Figure 2: Process Model of Order Management



The Non-Conformance business process majorly contains below-mentioned sub-processes:

Credit Note Scenario

EDGE P2 entities can create credit memos with reference to the billing document. These credit memos will be used to compensate the customer, and once you release this document to the accounting all the accounting entries for that amount will be affected.

Replacement Scenario

In goods replacement scenario EDGE P2 entities can receive materials that a vendor has sent as part of the customer returns process to replace a returned material.

Partial Non-Conformance

This process deals with situations where goods are under delivered. After the PoD confirmation is received from the customer relating to non-conformance of certain products, EDGE P2 Entities is liable according to the terms of contract to deliver the shortfall of the goods to customer.

SD-PS Integration with PoD Variance

The process encompasses an end-to-end SD-PS integration scenario with a milestone billing plan and WBS element attached at the sales item level.

2.2 Key Value Drivers for the Business Process

The new S/4HANA order management system streamlines complaints and return processes, triggers follow-on actions, such as inspection of returned material, resolution of issues, processing of a refund, or exchange of materials due to damage or incorrect delivery across the EDGE group.

The key value driver for EDGE P2 ENTITIES is to develop an ability to make returns process efficient, cost-effective, and automated using standard and streamlined SAP processes. The returns process at EDGE P2 ENTITIES must have credible processes in place so that it imparts the confidence in the EDGE customer's mind that their investments are secure.

Below are some tangible and intangible benefits of using SAP S/4HANA powered order management system in the context of non-conformance process:

- Reduce customer service and support costs by automating and streamlining returns processes
- Reduce the lead time of the whole service process from getting service requests to delivery of the serviced item back to the customer
- Improve services by using the EDGE P2 Entities gained from successfully resolved complaints

2.3 Key Design Decisions

KDD ID	Type	Description
KDD_D2S_2A_03	Solution	<p>Manual creation of new sales order due to non-conformance/ POD variance.</p> <p>During the Sales Order processing, short receipt by customer is recorded in system as part of Non-conformance or loss in transit. Follow on Sales Order is to be triggered to process the difference quantity (Due to Non-Conformance).</p> <p>-This would address the quantity mismatch issue while creating the follow-on document</p>
KDD_D2S_2A_04	Solution	<p>Credit to the customer against returns will be based on specific Reason codes.</p> <ul style="list-style-type: none"> - Issuance of credit to customer depends on the defined reason codes by the business - For rest of the reason codes in accordance with QA approval, replacement will be provided to the customer.
KDD_D2S_P2_33 *Combined KDD for Order management and Non-Conformance Output)	Solution	<p>In Order management, during Sales processing following outputs (Forms) are required by business:</p> <ul style="list-style-type: none"> - Tax Credit Note (Medium Complexity) - Tax Credit Note Foreign (Medium Complexity) - Commercial Credit Note (Medium Complexity) <p>All the above-mentioned outputs generated by standard SAP are not as per localization requirements and hence manual generations of Forms are recommended to meet the localization requirement.</p> <p>Note: Form Layout is common across all the EDGE P2 ENTITIES.</p>
KDD_D2S_P2_29 *Combined KDD for Order management and Non-Conformance Output)	Solution	<p>Entity Specific number range for credit and debit notes.</p> <p>With the help of this object Debit and Credit Notes number ranges will not be overlap. All entities will have a separate number range while using the same document type.</p>

2.4 Standard KPI and reports

Following is the list of relevant KPIs about the non-conformance process:

D2S KPI Catalog	KPI name	KPI calculation
32	Rate of Returns	(Percentage of returned or exchanged items/percentage of bought items) * 100
36	The cost per return or exchange	(Total costs of returns/Number of returns or exchange) * 100
	The no-fault found rate	(No Fault found/Fault found) * 100

35	Time taken for defect detection to correction	(Total time of all corrected defects/ Total no. of corrected defects) * 100
37	Scrap rate	(No. of scrapped item/ total completed items) * 100
38	Time to resolution	(Total time of all resolved conversation/Total no. of resolved request) * 100

2.5 Extreme automation

No use cases were identified for Extreme Automation during the Explore Phase. Identification effort will be resumed later by the Extreme Automation work stream.

2.6 Non Conformance Order Variant

Variant of Sales Order	Order Type	Creation	Change	Display
Credit Memo Request	ZGA2/ZOCR	SAP S/4	SAP S/4	SAP S/4
Replacement Order	ZOSD/ZSD2	SAP S/4	SAP S/4	SAP S/4
Partial Non Conformance	ZORE	SAP S/4	SAP S/4	SAP S/4
POD Variance Order	ZORE	SAP S/4	SAP S/4	SAP S/4

- **ZGA2** is applicable for creating credit memo request with reference to advance return order.
- **ZSD2** is applicable for FOC with reference to advance return management.

3. PROCESS DESIGN

3.1 Credit Note Scenario (ED-07_020101)

3.1.1 Business Process Description

Scenairo-1 (with Good Return)

Sales Representative team will receive customer request for return the goods. The process will be started by recording the Return order with and without the reference of the original Invoice.

After selection of the appropriate return reason. The return goods will be received in dedicated storage location and will stay in blocked stock until the decision has been made by the Quality Inspection Manager. The quality inspection notification will be generated as follow up action “Email notification” is triggered to authorized users. Based on the quality inspection/ technical inspection result, user can select the subsequent transactions, such as, scrapping the material, rework, reject the return request.

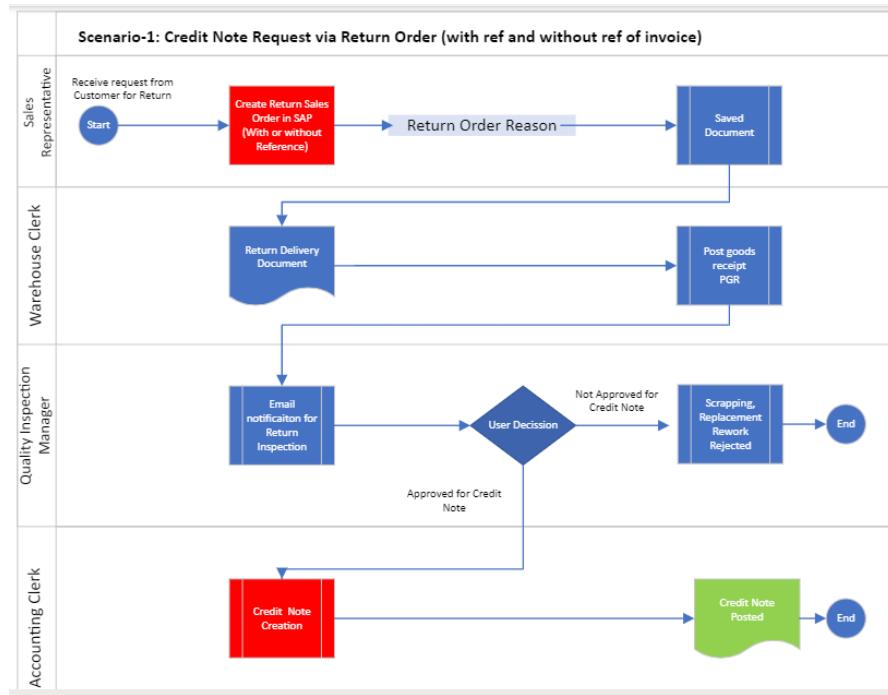
If the material is approved for a return the credit memo will be created by Accounting Clerk will be issued for the customer.

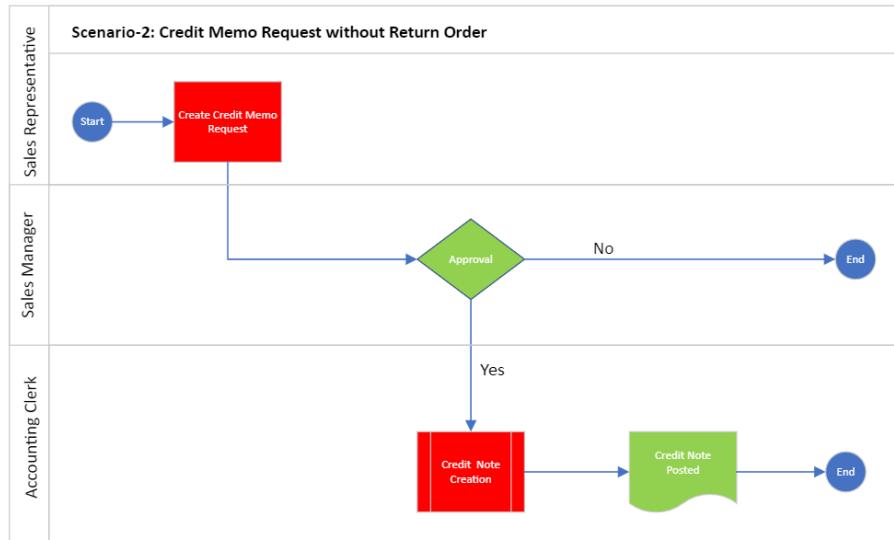
Scenairo-2 (without Good Return)

Credit memo request can also be created, to issue Credit Note to the customer based on Price Difference, Penalty, Discount or for any other reason.

Sales Representative Creates a Credit Memo request in system, Credit Memo request will go for approval from Sales Manager. Once approved Accounting Clerk will then issue Credit note to the customer.

3.1.2 Process Diagram





3.1.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Connector Label	Shape Type	Owner	Automation	Fiori
P100	ED-07_020101	Receive return order request	P200		Start	MS CRM team	Partially Manual	N/A
P200	ED-07_020101	Create Quality notification with reference to sales order	P300		Process	Quality Manager	Partially Manual	Create Quality Notification
P300	ED-07_020101	Take decision for Return/Not Return	P400, P1000	Return, No Return	Decision	Sales Manager	Human Triggered	N/A
P400	ED-07_020101	Create return order with reference to Invoice/Sales order	P500		Process	Internal Sales Representative	Partially manual	Manage Sales Order-F3893
P500	ED-07_020101	Update/Review return sales order	P600		Process	Internal Sales Representative	Human Triggered	Manage Sales Order-F3893
P600	ED-07_020101	Create return delivery	P700		Process	Shipping Specialist	Partially Manual	
P700	ED-07_020101	Perform post goods receipt (If the material is IM managed)	P800		Process	Shipping Specialist	Partially Manual	MIGI_GR
P800	ED-07_020101	List of inspection lots	P900		Process	Quality Manager	Human Triggered	Process Inspection Lots – Worklist
P900	ED-07_020101	Make usage decision on inspection lot	P1000		Process	Quality Manager	Human Triggered	Process Inspection

								Lots – Worklist
P1000	ED-07_020101	Credit memo request creation	P1100		Process	Internal Sales Representative	Partially Manual	Change/Display Sales Order
P1100	ED-07_020101	Take Decision to Remove Billing Block	P1200, P1500	Approved, Rejected	Decision	Sales Manager	Partially Manual	Change/Display Sales Order-F3893
P1200	ED-07_020101	Create billing document (Credit Memo)	P1300		Process	Billing Clerk	Partially Manual	Create Billing Document – F1846
P1300	ED-07_020101	Issue billing document (E- Document Framework Solution)	P1400		Document	Billing Clerk	Automated	Change/Display Billing Document
P1400	ED-07_020101	Accounts receivable	P1600		Process	Accounting Clerk	Automated	Display Accounting Document
P1500	ED-07_020101	Credit Memo Request Rejected	P1600		Process	Sales Manager	Partially Manual	Change/Display Sales Order
P1600	ED-07_020101	End			End	Accounting Clerk		

3.2 Debit Memo Process

3.2.1 Process Description

Because of any reason if the company needs to charge excess amount from the customer, we need to create the Billing Document “Debit Memo” for which the reference Sales document is “Debit Memo Request”. This is a standard process where Debit Memo Processing is one type of complaint handling processing facilitated by SAP to charge the customer with new account receivables. It usually occurs because the person in charge failed to input the right price in the original billing document (the price is too low) and for the company to not suffer loss, we need to create a subsequent document (debit memo).

In SAP terms, there are two documents that will be involved in this process: Debit Memo Request and Debit Memo Invoice.

3.3 Penalty Process

3.3.1 Process Description

There's Penalty term and condition which is agreed between EDGE entities and the customer in the contract. Due to that EDGE entities supposed to receive penalty charges sort of Debit Note and intimations from their clients.

For example: Delay in delivery of good or services as per agreed delivery date to Customer from EDGE entities.

In such cases, Customer will send the Penalty Debit note or intimation for payment of penalty charges to Edge entities. Edge will create Credit Memo Request against that debit note in SAP S/4 Hana with billing block and order reason of Penalty charges.

Approval authority will review the credit memo request and release the billing block based on approval to issue Credit Note to the Customer.

3.4 Replacement Scenario (ED-07_020102)

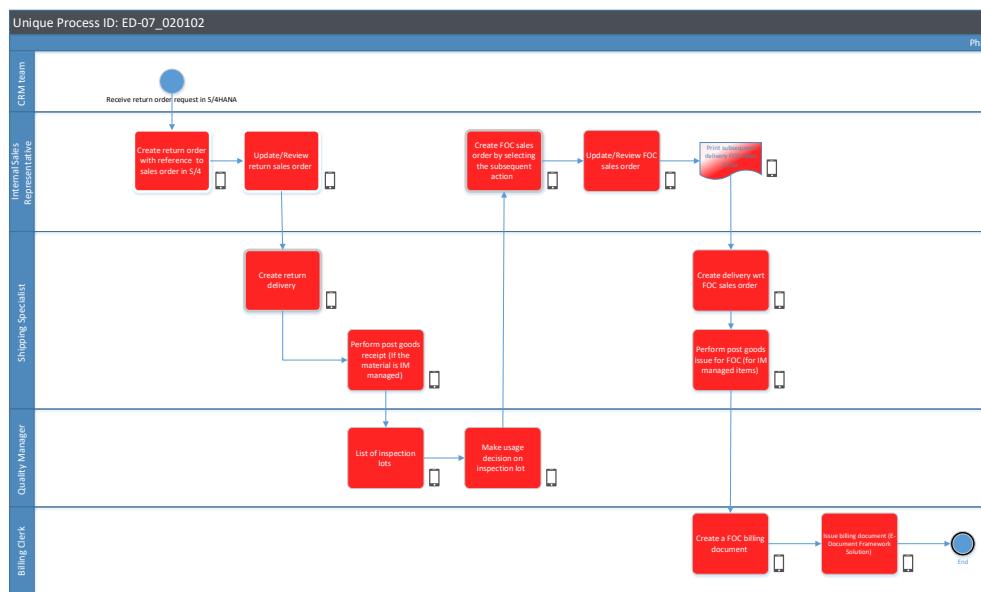
3.4.1 Business Process Description

The replacement process starts with a customer's request for a replacement for the entities included in P2 CRM team, an advanced return sales order is then created with reference to the original invoice or sales order to receive the incoming goods.

Incoming goods are received by entities included in P2 (Post Goods Receipt) and goods inspection is conducted during which usage decision is made by the quality inspection team, resulting in either stock return or scrap.

Afterward, a subsequent FOC delivery decision is selected in the accelerated return order by an entity included in P2 internal sales representative, this delivery is free of charge to the customer. A post goods issue is performed by a shipping specialist for FOC and a FOC billing document is created and released. The process ends when a customer confirms the reception of replaced material.

3.4.2 Process Diagram



3.4.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_020102	Receive return order request in S/4HANA	P200	Start	CRM Team	Fully Automated	N/A

P200	ED-07_020102	Create return order with reference to sales order in S/4	P300	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P300	ED-07_020102	Update/Review return sales order	P400	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P400	ED-07_020102	Create return delivery	P700	Process	Shipping Specialist	Partially Manual	Create Delivery with Reference to Sales Order
P500	ED-07_020102	List of inspection lots	P600	Process	Quality Manager	Human Triggered	Process Inspection Lots – Worklist
P600	ED-07_020102	Make usage decision on inspection lot	P800	Process	Quality Manager	Human Triggered	Process Inspection Lots – Worklist
P700	ED-07_020102	Perform post goods receipt (if the material is IM managed)	P500	Process	Shipping Specialist	Partially Manual	Change Delivery with Reference to Sales Order
P800	ED-07_020102	Create FOC sales order by selecting the subsequent action	P900	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P900	ED-07_020102	Update/Review FOC sales order	P1000	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P1000	ED-07_020102	Print subsequent delivery FOC Sales Order	P1100	Document	Internal Sales Representative	Partially Manual	Manage Sales Order
P1100	ED-07_020102	Create delivery wrt FOC sales order	P1200	Process	Shipping Specialist	Partially Manual	Create Delivery with Reference to Sales Order
P1200	ED-07_020102	Perform post goods issue for FOC (for IM managed items)	P1300	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery
P1300	ED-07_020102	Create a FOC billing document	P1400	Process	Billing Clerk	Partially Manual	Create Billing Document
P1400	ED-07_020102	Issue billing document (E-Document Framework Solution)	P1500	Process	Billing Clerk	Partially Manual	Change Billing Document

P1500	ED-07_020102	Process End	End	Billing Clerk		
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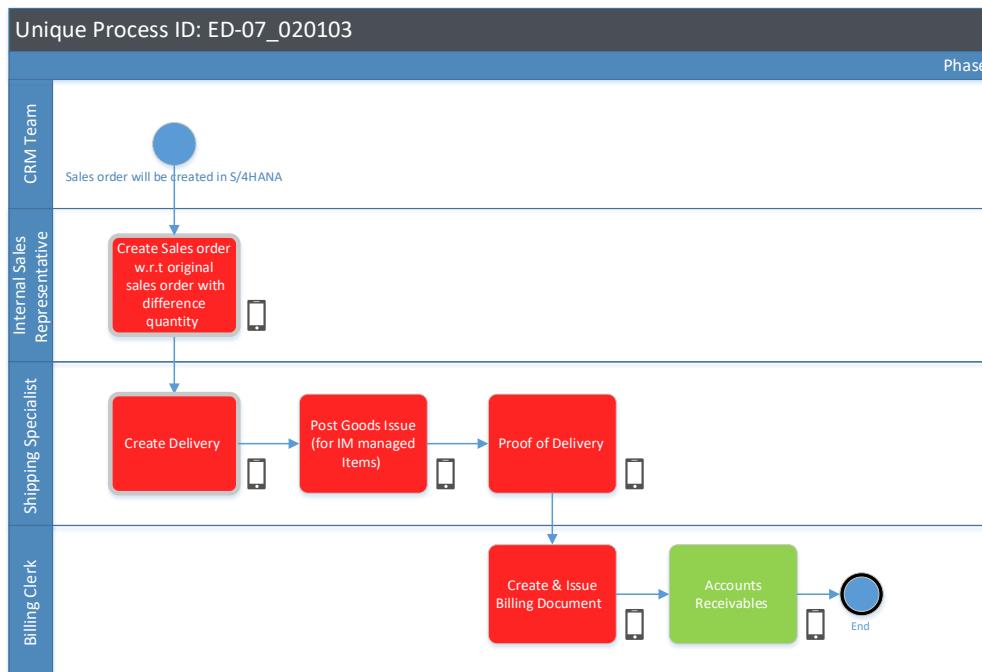
3.5 Partial Non-Conformance (ED-07_020103)

3.5.1 Business Process Description

After the Proof of delivery (PoD) confirmation is received from the customer relating to non-conformance of certain products, included in EDGE P2 ENTITIES is liable according to the terms of the contract to deliver the shortfall of the goods to the customer.

A Sales order with reference to the original sales order needs to be created to plug the partial non-conformance and deliver the goods to the customer. PoD will take place for this partial quantity which is delivered to customer. After the confirmation from the customer, the invoice will be raised as per the agreed terms of the contract.

3.5.2 Process Diagram



3.5.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_020103	Sales Order will be created in SAP S/4HANA	P200	Start	CRM Team	Fully Automated	
P200	ED-07_020103	Create Sales order w.r.t original sales order, Enter the PoD difference quantity	P300	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P300	ED-07_020103	Create Delivery	P400	Process	Shipping Specialist	Partially Manual	Create Outbound Delivery
P400	ED-07_020103	Post Goods Issue (for IM managed Items)	P500	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery
P500	ED-07_020103	Proof of Delivery	P600	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery - Proof of Delivery
P600	ED-07_020103	Create & Issue Billing Document	P700	Process	Billing Clerk	Partially Manual	Create Billing Document/ Create Billing Due List
P700	ED-07_020103	Accounts Receivables	P800	Process	Billing Clerk	Automated	Display Accounting Document
P800	ED-07_020103	End		End	Billing Clerk		

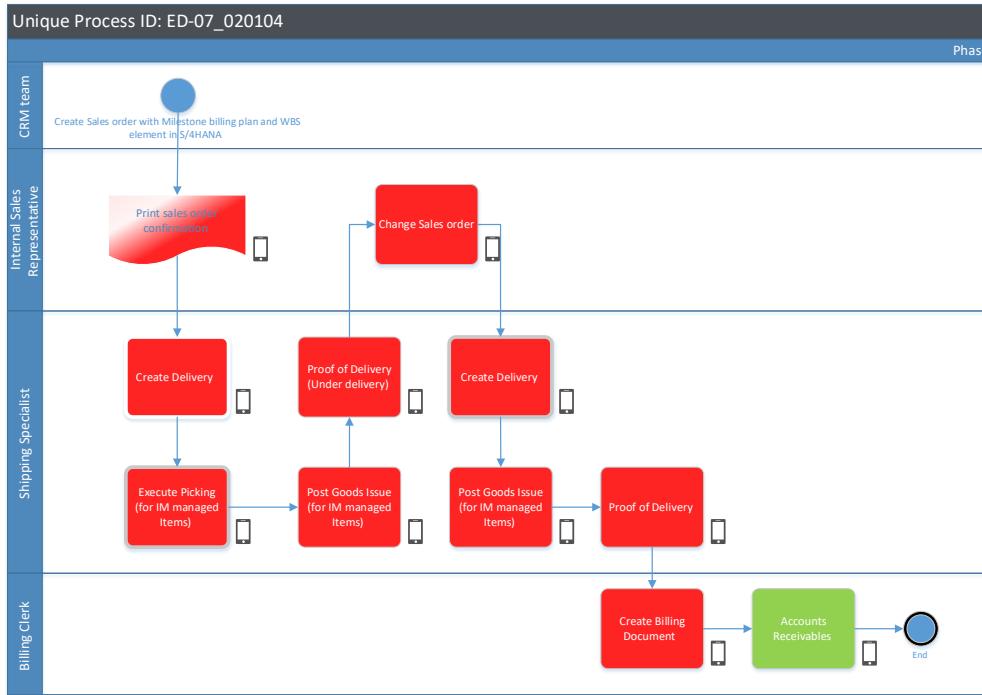
3.6 SD-PS Integration with Billing Plan and PoD Variance (ED-07_020104)

3.6.1 Business Process Description

The process encompasses an end-to-end SD-PS integration scenario with a milestone billing plan and WBS element attached at the sales item level. The process is further followed with the delivery of the milestone along with Proof-of-Delivery (PoD) confirmation. If there is PoD variance, shortfall quantity is delivered to the customer. The process ends with complete milestone achievement and an invoice is raised to the customer for the complete quantity of the milestone.

Legends: SD – SAP Sales & Distribution Module, PS – Project System, PoD – Proof of Delivery

3.6.2 Process Diagram



3.6.3 Activity List

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation	Fiori
P100	ED-07_020104	Create Sales order with Milestone billing plan and WBS element in S/4HANA	P200	Start	CRM team	Fully Automated	
P200	ED-07_020104	Print sales order confirmation	P300	Document	Internal Sales Representative	Partially Manual	Manage Sales Order
P300	ED-07_020104	Create Delivery	P400	Process	Shipping Specialist	Partially Manual	Create Outbound Delivery wrt Sales Order
P400	ED-07_020104	Execute Picking (for IM managed)	P500	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery wrt Sales Order

P500	ED-07_020104	Post Goods Issue (for IM managed)	P600	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery wrt Sales Order
P600	ED-07_020104	Proof of Delivery (Under delivery)	P700	Process	Shipping Specialist	Partially Manual	Proof Of Delivery
P700	ED-07_020104	Change Sales order	P800	Process	Internal Sales Representative	Partially Manual	Manage Sales Order
P800	ED-07_020104	Create Delivery	P900	Process	Shipping Specialist	Partially Manual	Create Outbound Delivery
P900	ED-07_020104	Post Goods Issue (for IM managed)	P1000	Process	Shipping Specialist	Partially Manual	Change Outbound Delivery
P1000	ED-07_020104	Proof of Delivery	P1100	Process	Shipping Specialist	Partially Manual	Proof Of Delivery
P1100	ED-07_020104	Create Billing Document	P1200	Process	Billing Clerk	Partially Manual	Create Billing Document
P1200	ED-07_020104	Accounts Receivables	P1300	Process	Billing Clerk	Automated	Display Accounting Document
P1300	ED-07_020104	End		End	Billing Clerk		

4. DETAILED SOLUTION DESIGN

Manage master data for Non-Conformance

Master Data	Application	Primary	Secondary
Business Partner	CRM/S4	CRM	SAP MDG
Product Master data	CRM/S4	SAP E2M	SAP MDG
Pricing Master data	CRM/S4	CRM	S/4
Tax codes	CRM/S4	S/4	CRM
Payment Terms	CRM/S4	S/4	CRM
Output Condition Records	CRM/S4	S/4	N/A
Material Groups	CRM/S4	S/4	CRM
GL Account	CRM/S4	S/4	N/A
Cost Centre	CRM/S4	S/4	CRM

Business Partner

Business Partner is a person, organization, group of persons, or group of organizations as per the types / mode of business of the company. This business object is used for a variety of business transactions. Most notably it is used in order processing. As per included in EDGE P2 ENTITIES requirement, business can create and manage business partners centrally for different business transactions and assigned different partner functions they play, such as sold-to party and ship-to party etc. Business partner can also be assigned to different roles, for example General, Finance, Sales, Credit Management & many more. As included in EDGE P2 ENTITIES the primary source for business partner creation is CRM system, it will create customers with basic high-level info such as name & address. Afterwards, the MDG system will be responsible for its enrichment and maintenance. The fine-tuned data will then be transferred to SAP S/4 system for order processing.

Product Master Data

The product master data is used to support planning, logistics, modeling, forecasting, and reporting. Product (or Material) is the very basic master data element. A product is the selling unit which must be assigned to models and planning versions, and later to transportation lanes and other transactions. The attribute value is used to define characteristics of the product. SAP supports the following type of products, i.e., Service, Warranty, Material, Finance etc. E2M Engineer to Manufacture will be responsible for new material creation. Once it has been created and comes into existence, the MDG system will be responsible for its governance & maintenance. The material master then be transferred to SAP for planning & order processing.

Pricing Master

The pricing of goods and services is being determined based on certain conditions like cost of materials, manufacturing, shipping, sales tax, etc. Generally, in SAP, the price of goods and services are determined by the pricing functions. During the sales documents processing, the SAP system automatically calculates the net values of documents by considering the condition values of different pricing elements. The prices are calculated based on conditions techniques. A condition technique is the process of determining the condition records into sales documents. Pricing/Conditions master data is very vital master data, which defines pricing for the product or

service, which are being sold to your customers. The maintenance of the pricing conditions master data determines the base price, discounts, surcharges, taxes, gross value, net value etc.

NOTE - Pricing will come from CPQ to CRM and will not be calculated in SAP during sales order creation based on condition records.

Tax Code

The Tax Code represents a tax category which must be taken into consideration when making a tax return to the tax authorities. Tax codes are unique per country. The tax rate calculation rules and further features are stored on a table for each tax code. For tax-exempt or non-taxable transactions, businesses should use tax codes with a zero-percentage rate if the corresponding transactions are to be displayed in the tax returns. Business must define new tax codes if tax rates are changed by the state. The old codes with the old tax rates must remain in the system until no more open items which use this tax code exist. Tax code is a two-digit code that represents the specifications used for calculating and displaying tax. The specifications defined under the tax code are - Tax rate, type of tax (input tax or output tax) and calculation method (percentage included/ excluded), etc.

Payment Terms

Payment terms composed of cash discount percentages and payment periods. It is used in sales orders, purchase orders, and invoices. Terms of payment provide information for cash management, dunning procedures, and payment transactions. When a system enters a business transaction, the application will use the key specified in its area of the master record. Businesses can specify different terms of payment keys in each of these areas. In the system, business defines payment terms as rules. This enables the system to automatically determine the appropriate payment terms. Once the system defines them, business can assign these terms to vendor/customer master.

Output Condition Record - BRF Plus

SAP S/4HANA approaches a new Output Management as BRF plus. The configuration is based on BRF+ logical table. In SAP S/4HANA, the target architecture is based on Adobe Document Server and Adobe Forms only. For the form determination rules (along with other output parameters) BRF+ functionality is used.

Material Groups

Material group is a wider range of material types. Material groups enable the business to classify and structure the entire product/material at multiple levels. Every material is assigned uniquely to one material group across the whole corporate group. Materials with some common attributes are taken together and they are assigned to material group. For Example: Suppose we have some materials which need packaging, so those material types can be electrical or food products, but we can group these material types and put them in packaged material group.

GL Account

SAP S/4HANA has integrated financial and controlling reporting into virtually all its modules. When a user performs a transaction in SAP, there is a good chance that the transaction is creating a debit or credit against one of the GL Accounts. GL stands for General LEDGER P2 Entities. This is the most fundamental structure for collecting financial information about a business. A General LEDGER P2 Entities account is an item within the General LEDGER for P2 Entities. Here, Business records the different types of financial transactions and their values. When a company

writes a financial report (such as a Profit/Loss report), much of the data is derived from the General LEDGER P2 Entities.

Cost Centre

A Cost Center is defined as a component in an organization that adds to the cost and indirectly adds to the profit of the organization. Examples include Marketing and Customer Service. Cost Center Accounting for controlling purposes within business organization. The costs incurred by the organization should be transparent. This enables us to check the profitability of each functional area and provide decision-making data for management. This requires that all costs be assigned according to their source. However, source-related assignment is especially difficult for overhead costs. Cost Center Accounting lets businesses analyze the overhead costs according to where they were incurred within the organization.

4.1 Solution prerequisites

Sales Organizations, Distribution channels, Divisions are required. Relevant document types to be configured in system for processing any sales transaction.

Interface between MS CRM and SAP S/4 Hana system needs to be set up for transferring the data between both the systems.

4.1.1 Process predecessor and successor

Predecessor Process:

For those transactions where MS CRM is the primary system for capturing the order details, CRM system will maintain the sales order details and will push the data to S/4 Hana system in project related billing project and the WBS needs to be created which will be used in sales order.

Successor Process: Sales Order, Outbound Delivery Creation, and Tax Invoice

Once the sales order is received and saved in S/4 Hana system, subsequent processes are triggered based on the type of sales and the type of material requested by customer (Example: Service Item, Stock Item, Project Stock Item, Make to Order item, etc.)

4.1.2 Master data prerequisites

- Customer Master
- Material Master
- Pricing Master

4.1.3 Organizational structure requirements

- Company Code
- Sales Organization
- Distribution Channel
- Division
- Shipping Point
- Credit Control Area (If applicable)

4.2 Detailed Solution Design

4.2.1 Credit Note Scenario; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Create Sales Order	<p>Return order is created in S/4Hana system using Advance return management (ARM). The return order can be created using with or without reference to Billing document.</p> <p>If return order is created with reference to invoice the details like customer code, the material details, price are copied from Invoice.</p> <p>If business needs to create the return order without reference to invoice, then below details needs to be selected while creating the return sales order.</p> <p>Advance Return Order type, Sales organization, Distribution channel</p> <p>Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>In Refund Type user need to select the follow up action. This will allow system to identify what kind of subsequent transaction system should generate, whether it's a credit memo or FOC Sales Order.</p> <p>Business needs to select the order reason and follow up activity while creating the return order. The follow up activity helps business user to decide what subsequent action needs to be done with the returned material, like take back to plant, send it back to customer, etc. Predefined SAP down values are given in the follow up field.</p> <p>In Refund control user needs to select the correct value as per the internal decision.</p> <p>Once the document is saved user can see in the Return Overview Tab the credit memo request and return delivery created for against the return order.</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Change / Display Return delivery	Using ARM function S4Hana system will automatically create return delivery. Business can see the return delivery document by selecting the Returns Overview Tab. User can either change or display the return delivery document number by select the document number showing against the return delivery.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using EWM, business need to perform, Post Goods Receipt manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
	Using ARM function S4Hana system will automatically the credit memo request. Business can see the credit memo request number by selecting the returns overview tab. User can either	Desktop / Tablet	Internal Sales Representative	S/4 HANA

Change/ Display Credit Memo Request	change or display the credit memo request by selecting the document number showing against the credit memo.			
Create Billing Document/ Create Billing Due List	Create Credit Memo with reference to the credit memo request document.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can manually post the amount details to G/Ls. Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA
Display Accounting Document				

4.2.2 Replacement Scenario; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Create Sales Order	<p>Using ARM function user can create replacement order. The return order can be created using with or without reference to Billing document.</p> <p>If return order is created with reference to invoice the details like customer code, the material details, price are copied from Invoice.</p> <p>If business needs to create the return order without reference to invoice, then below details needs to be selected while creating the return sales order.</p> <p>Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.</p> <p>In Refund type, user need to select the value as Replacement Material.</p> <p>Business needs to select the order reason and follow up activity while creating the return order. The follow up activity helps business user to decide what subsequent action needs to be done with the returned material, like take back to plant, send it back to customer, etc. Predefined SAP down values are given in the follow up field.</p> <p>In Refund control user needs to select the correct value as per the internal decision.</p> <p>Once the document is saved user can see in the Return Overview Tab the Subsequent FOC order and return delivery created for against the return order.</p> <p>If the document is not created due to some issue, user can select the return tab. From the overview screen user can select the document which needs to be processed, then select the restart</p>	Desktop / Tablet	Internal Sales Representative	S/4 HANA

	document creation which will help user to create the respective document.			
Change / Display Return delivery	Using ARM function S4Hana system will automatically create return delivery. Business can see the return delivery document by selecting the returns overview tab. User can either change or display the return delivery document number by select the document number showing against the return delivery.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using EWM, business need to perform, Post Goods Receipt manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Sales Order	FOC order is created automatically while creating the return order using ARM function. In FOC sales order system will determine 100 % discount which brings the net value to "0".	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Delivery with Reference to Sales Order	Business can create delivery with reference to the FOC sales order.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	The delivery document is passed to EWM system for performing the picking, packing and batch selections, if the item is managed in EWM. If the material is not managed using EWM, business need to perform, Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	FOC invoice created with reference to delivery document. The amount details are posted to G/Ls automatically.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA
Change/Display Billing Document Display Accounting Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA

4.2.3 Partial Non-Conformance; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Change/Display Sales Order	The Sales Orders which are created in MS CRM system are passed to S/4Hana system with Customer and Material information. Below field details are copied from CRM to S/4 Hana system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA

	update the customer address details, material details and pricing.			
Change/Display Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	System will pass the requirement details from sales order details to production planning using MRP run.	Desktop / Tablet	Production Planner	S/4 HANA
Post Goods Receipt for Production Order	After production is completed, the stock received at the finished goods storage location booked against sales order.	Desktop / Tablet	Warehouse clerk	S/4 HANA
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, with reference to the quantity confirmed sales order delivery document can be created. If the material is not managed using IM, business need to perform the picking and batch selection in delivery change mode.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using IM, business need to perform, Post Goods Issue manually. User needs to select the batches manually in S4 Hana system	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Outbound Delivery - Proof of Delivery	Business can use Proof of Delivery app to capture the delivery quantity received by customer	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	Create Billing Document with reference to the delivery document number. Once billing document is saved, system will automatically post the amount details to G/Ls.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer. Business can validate the accounting document using change or display billing applications.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Sales Order	The Sales Orders created for difference quantity is created in MS CRM system are passed to S/4Hana system with Customer and Material information. Below field details are copied from CRM to S/4 Hana system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Change/Display Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Manage Internal Requirements	System will pass the requirement details from sales order details to production planning using MRP run.	Desktop / Tablet	Production Planner	S/4 HANA
Post Goods Receipt for Production Order	After production is completed, the stock received at the finished goods storage location booked against sales order.	Desktop / Tablet	Warehouse clerk	S/4 HANA

Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, with reference to the quantity confirmed sales order delivery document can be created. If the material is not managed using IM, business need to perform the picking and batch selection in delivery change mode.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using IM, business need to perform, Post Goods Issue manually. User needs to select the batches manually in S4 Hana system	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Outbound Delivery - Proof of Delivery	Business can use Proof of Delivery app for capturing the delivery variance	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document/ Create Billing Due List	Create Billing Document with reference to the delivery document number. Once billing document is saved, system will automatically post the amount details to G/Ls.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA
Change/Display Billing Document	Business can take invoice printout manually and send to customer. Business can validate the accounting document using change or display billing applications.	Desktop / Tablet	Billing Clerk/ Accounting Clerk	S/4 HANA

4.2.4 SD-PS Integration with Billing Plan & POD Variance; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Change/Display Sales Order	The Sales Orders which are created in MS CRM system are passed to S/4Hana system with Customer and Material information. Below field details are copied from CRM to S/4 Hana system. Sales organization, Distribution channel Division, Customer code, Material Code, Order Quantity, WBS code for capturing the Milestone etc. Based on the master data set up in system, it will automatically update the customer address details, material details and pricing.	Desktop / Tablet	Internal Sales Representative	CRM & S/4 HANA
Change/Display Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, delivery document can be created. If the material is not managed using IM, business need to perform the picking and batch selection in delivery change mode.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using IM, business need to perform, picking and Post Goods Issue manually. User needs to select the batches manually in S4 Hana system	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Outbound	Business can use Proof of Delivery app to capture the delivery quantity received by customer	Desktop / Tablet	Shipping Specialist	S/4 HANA

Delivery - Proof of Delivery				
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, with reference to the quantity confirmed sales order delivery document can be created. If the material is not managed using IM, business need to perform the picking and batch selection in delivery change mode.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using IM, business need to perform, Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Outbound Delivery - Proof of Delivery	Business can use Proof of Delivery app for capturing the delivery variance	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document	Create Billing Document with reference to the delivery document number only for the POD quantity. Once billing document is saved, system will automatically post the amount details to G/Ls.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA
Change Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA
Change/Display Sales Order	For the variation quantity user can select the quantity in CRM system. The data is passed to S4 Hana system.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Change/Display Sales Order	Business can review the sales order using sales order change. Business can take sales order confirmation printout.	Desktop / Tablet	Internal Sales Representative	S/4 HANA
Create Delivery with Reference to Sales Order	Once the Stock is confirmed in the sales order, delivery document can be created. If the material is not managed using IM, business need to perform the picking and batch selection in delivery change mode.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Delivery with Reference to Sales Order	If the material is not managed using IM, business need to perform, Post Goods Issue manually.	Desktop / Tablet	Shipping Specialist	S/4 HANA
Change Outbound Delivery - Proof of Delivery	Business can use Proof of Delivery app for capturing the delivery variance	Desktop / Tablet	Shipping Specialist	S/4 HANA
Create Billing Document	Create Billing Document with reference to the delivery document number only for the POD quantity. Once billing document is saved, system will automatically post the amount details to G/Ls.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA
Change Billing Document	Business can take invoice printout manually and send to customer.	Desktop / Tablet	Billing/ Accounting Clerk	S/4 HANA

4.2.5 Debit Memo

Fiori App / Transaction	Description of activities at Process step	Device to be used	Role	System
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/Handheld application/ WRICEF				
Manage Sales Order	Debit Memo request is created with reference to the original S4Hana billing document number, the details like customer code, the material details, price are copied from reference Invoice. Business needs to select any line item and select the condition type and enter the penalty value manually. If separate material code is created for identifying as deb it note item user can select the same and update the price (for capturing material information and this is non-inventory item). By default, the billing block is updated in the debit memo request document.	Desktop / Tablet	SAP – OTC	S/4 HANA
Manage Sales Order	Business user can review the debit memo request document. Authorized user can remove the billing block. This acts as an approval mechanism by giving an option to business for preventing unauthorized debit transactions.	Desktop / Tablet	SAP – OTC	S/4 HANA
Manage Billing Document	Create debit Memo with reference to the debit memo request document.	Desktop / Tablet	SAP – RTR	S/4 HANA
Change or Display Billing document	Before posting the value to accounts user can validate the amount details. Business can manually post the amount details to G/Ls. Business can take debit memo printout manually and send to customer.	Desktop / Tablet	SAP – RTR	S/4 HANA

4.2.6 Penalty process (using Credit Note)

Penalty process is used for capturing the penalty value which entity needs to pay back to customer.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Manage Sales Order	Credit Memo request is created with reference to the original S4Hana billing document number, the details like customer code, the material details, price are copied from reference Invoice. Business needs to select any line item and select the condition type and enter the penalty value manually. If separate material code is created for identifying as credit note item user can select the same and update the price (for capturing material information and this is non-inventory item).	Desktop / Tablet	SAP – OTC	S/4 HANA

	By default, the billing block is updated in the credit memo request document.			
Manage Sales Order	Business user can review the credit memo request document. Authorized user can remove the billing block. This acts as an approval mechanism by giving an option to business for preventing unauthorized credit transactions.	Desktop / Tablet	SAP – OTC	S/4 HANA
Manage Billing Document	Create Credit Memo with reference to the credit memo request document.	Desktop / Tablet	SAP – RTR	S/4 HANA
Change or Display Billing document	Before posting the value to accounts user can validate the amount details. Business can manually post the amount details to G/Ls. Business can take credit note printout manually and send to customer.	Desktop / Tablet	SAP – RTR	S/4 HANA

Assumption: This order type is used for capturing the penalty amount.

Sales Order Type & Description	ZOCR- EDGE Credit Memo Request
Number Range	10000000 to 19999999
Billing Type	ZEG2 (Billing Document Number Range is maintained as entity specific).

4.2.7 Associated Fiori Apps

Fiori App Name	App Description	App Type	Device Type
Sales Order Fulfillment Issues (Version 2)	This app allows P2 ENTITIES order management specialists to analyze and resolve issues that impede sales orders from being fulfilled	Transactional, Analytical	Desktop, Tablet
Outbound Delivery (S/4HANA)	Business can access this app from the Enterprise Search for outbound deliveries search results	Analytical	Desktop, Smartphone, Tablet
Returns Delivery	EDGE P2 ENTITIES users can access this app from the Enterprise Search for returns deliveries search results	Analytical	Desktop, Smartphone, Tablet
Manage Billing Documents	This app can be used to manage invoices, invoice cancellations, credit memos, and other billing documents	Transactional	Desktop, Tablet
Create Billing Documents	With this app ADASI, AL TARIQ, HALCON & NIMR entities can create billing documents (for example, invoices and credit memos) from items in the billing due list	Transactional	Desktop, Tablet
Outbound Deliveries	With this app, business can see a list of all business outbound deliveries	Transactional	Desktop, Tablet

Manage Outbound Deliveries	With this app, business can see a list of all Business outbound deliveries. Business can click on each delivery to see its details	Transactional	Desktop, Smartphone, Tablet
Pick Outbound Delivery	With this app shipping specialist in EDGE P2 ENTITIES can enter the results of the picking process for a particular delivery	Transactional	Desktop, Tablet
Analyse Delivery Logs	This app is to check system messages that have been logged during the collective creation run of deliveries, regardless of whether business started the creation run online or in the background	Transactional	Desktop, Smartphone, Tablet
Schedule Billing Output	This app can be used by business to schedule billing document output	Transactional	Desktop, Tablet
Schedule Billing Creation	With this app business can schedule jobs for the creation of billing documents	Transactional	Desktop, Tablet
Credit Memo Request	With this app EDGE P2 ENTITIES sales representatives can display all the details relevant for a credit memo request in one place	Analytical	Desktop, Smartphone, Tablet
Manage Sales Orders	With the Manage Sales Orders app, business can search for sales orders according to filter criteria and display them in a list	Transactional	Desktop, Tablet
Manage Credit Memo Requests	With this app EDGE P2 Entities sales representatives can search for credit memo requests according to business filter criteria and display them in a list	Transactional	Desktop, Tablet
Customer - 360° View	With this app business can get an overview of one specific customer by reviewing aggregated sales data from the past and the present.	Analytical	Desktop, Smartphone, Tablet
My Sales Overview	With this app, EDGE P2 ENTITIES can display and create sales data using actionable cards that are grouped together in a dashboard format	Analytical	Desktop, Tablet
Sales Volume - Detailed Analysis	With this app, sales manager at EDGE P2 ENTITIES can drill down into business sales volume from different perspectives	Analytical	Desktop, Tablet
Billing Document Request	This object page, can be used to display the details of billing document requests (BDRs)	Analytical	Desktop, Smartphone, Tablet
List Incomplete Sales Documents	With this app, HALCON, NIMR, ADASI, AL TARIQ entities can search for incomplete sales documents according to business filter criteria and display them in a list	Transactional	Desktop, Tablet
Analyse Confirmations of Sales Orders	EDGE P2 ENTITIES sales managers here can use various Fiori tiles to view details of sales orders	Analytical	Desktop, Tablet
Track Sales Orders (S/4HANA)	This app can be used to check whether the delivery of a sales order is on track regarding its fulfilment	Transactional	Desktop, Tablet
Sales Management Overview	Sales managers at EDGE P2 ENTITIES here can get a graphical overview of business various sales data on cards. Using this app, business can gain comprehensive insights into business current sales situation and respond quickly	Analytical	Desktop, Tablet

Manage Invoice Lists	With this app business can display, filter, sort, and group all invoice lists in the system	Transactional	Desktop, Tablet
Sales Performance - Plan/Actual	With this app EDGE P2 ENTITIES can compare planned and actual sales data on different dimensions, such as sales organization, customer, and product	Analytical	Desktop, Tablet
Manage Sales Scheduling Agreements	This app can be used to search for and display a list of all sales scheduling agreements in the system	Transactional	Desktop, Tablet
My Inbox - Approve Sales Orders	With the transactional app My Inbox, EDGE P2 ENTITIES users can make important decisions via mobile or desktop devices anywhere and anytime.	Transactional	Desktop, Smartphone, Tablet

4.2.8 Reporting Overview

Below is the list of standard SAP reports in Fiori Launchpad. The main objective to integrate reports in SAP Fiori is to improve the user experience and work seamlessly across devices like smartphones, tablets, and desktops.

- **My Sales Overview Report** - Cards included in this app provide information on sales data, including open sales quotations and sales orders, blocked credit memo requests, customer returns, and customer information. An internal sales representative at EDGE P2 ENTITIES can use the app to search for, create, modify, or view sales information to improve reaction time and allows the user to act on the most important issues first
- **Sales Management Overview Report** - Sales managers at EDGE P2 ENTITIES can get a graphical overview of various sales data on analytical cards. Using this app, comprehensive insights can be obtained by EDGE P2 ENTITIES into business current sales situation to respond quickly.

Key features of this report are: -

- Each sales topic is represented by a card. On the cards, business can view relevant sales KPIs
- Sales data is visualized in charts and lists
- Business can filter results by various criteria, such as sold-to party and sales organization
- Business can specify a preferred currency for displaying the results
- **Customers Overview Report** - This report displays the average number of sales orders per month for the last 6 months, it also displays the average net value of sales orders per month for the last 6 months
- **Order-To-Cash Performance - Overview Report** - This enables sales managers and process owners to get a quick overview of issues and the current and past performance of the order-to-cash process without having to open many different reports and transactions. All relevant information is shown on a single page in an attractive and efficient way
- **Sales Volume Check open sales Report** – This report can be used to check sales volume in comparison with previous months, with the additional insight of open orders and open deliveries for the current month, in comparison with previous months. The app enables EDGE P2 ENTITIES to see briefly how the current month's sales volume relates to the previous month and helps business to identify where they can act to increase business sales volume.

Reports Transaction Code / FIORI App ID	Description for Report
V0A05	List of Sales Orders
V.01	Incomplete Orders
VL060	Outbound Delivery Monitor
VF05N	List of Billing Documents
F1609	Business Process Activities
F1810	Aggregated Business Process Activities
F2005	Order-to-Cash Performance
F2006	Order-to-Cash Performance Monitor - Time Series
F2242	Order-to-Cash Performance - Overview
F1249	Incoming Sales Orders - Flexible Analysis
F1250	Sales Volume - Flexible Analysis
F2235	Sales Volume - Detailed Analysis
F2270	Sales Volume - Check Open Sales
F2271	Sales Volume - Profit Margin
F2458	Sales Order - Demand Fulfillment
F2601	Sales Management Overview
F2783	Delivery Performance - Delivered as Requested
F3408	Predicted Delivery Delay
F3889	Customer Returns - Flexible Analysis (Design Studio)
F4092	Customer Returns - Return Rate
W0139	Customer Returns

5. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

5.1 Role/Skill Class Inventory

Role	Skills	EDGE P2 Entities
Internal Sales Representative	SAP – OTC	Know how to create standard orders, post goods issues, and billing documents.
Shipping Specialist	SAP – OTC	Create deliveries, perform post goods receipt/issue, capture proof of deliveries.
Quality Manager	SAP – P2P	Validate the quality check & approve/reject the product by quality analysis.
Sales Manager	SAP – OTC	Modify & approve sales orders, remove order blocks.
Billing Clerk	SAP – RTR	Create invoices and handling of billing documents.
Accounting Clerk	SAP – RTR	Handling of account posting entries.

5.2 Security roles as per process design

Stream	Sub-Module	Master Role	Master Role Description	Internal Sales Representative	Sales Manager	Billing Clerk	Shipping specialist	Purchaser - Central Procurement	Logistics Service Provider Representative	Accounts Payable - Accountant – Procurement
D2S	SD	D2S:OM: Change Sales Order	OM: Change Sales Order	X	X					
D2S	SD	D2S:OM: Display Sales Order	OM: Display Sales Order	X	X					
D2S	SD	D2S:OM: Create Billing & Invoice	OM: Create Billing & Invoice			X				
D2S	SD	D2S:OM: Change Billing & Invoice	OM: Change Billing & Invoice			X				
D2S	SD	D2S:OM: Display Billing & Invoice	OM: Display Billing & Invoice			X				
D2S	SD	D2S:OM: Manage Invoice	OM: Manage Invoice		X	X				
D2S	SD	D2S:OM: Sales Analytical Reports	OM: Sales Analytical Reports	X	X					
D2S	SD	D2S:OM: Sales Operational Reports	OM: Sales Operational Reports		X					
D2S	SD	D2S:OM: Order Fulfillment	OM: Order Fulfillment		X					
D2S	SD	D2S: OM: Confirm Proof of Delivery	OM: Confirm Proof of Delivery			X				

D2S	SD	D2S: OM: Create Outbound Delivery	OM: Create Outbound Delivery			X			
D2S	SD	D2S: OM: Change Outbound Delivery	OM: Change Outbound Delivery			X			
D2S	SD	D2S: OM: Display Outbound Delivery	OM: Display Outbound Delivery			X			
D2S	SD	D2S-MM-Create Purchase Order	MM-Create Purchase Order				X		
D2S	SD	D2S-TM-Freight Planning and costing	TM-Freight Planning and costing					X	
D2S	SD	S2P--Create Vendor Invoice	S2P-Create Vendor Invoice						X

6. PROCESS FITNESS & GAP ANALYSIS

6.1 Process Variation (legal, geographical or business-led)

N/A

6.1.1 Sub-Process Variation

N/A

6.1.1.1 Business Unit Level

All the business processes are harmonized across AL TARIQ/ADASI/HALCON/NIMR entities.

6.1.1.2 Geography/Legal Entity Led

All the business processes will be as per the requirement of AL TARIQ/ADASI/HALCON/NIMR entities. The legal entity will be as per UAE rules.

6.2 GAP Register

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnit ude of Impact (H/M/L)	Solution Type	RICEFW No.	Ref. to Req. id.
UAE	"Automate the quantity determination for a new sales order due to non-conformance/POD variance. Difference between the dispatch quantity and quantity confirmed by customer end. Requirement- Business need not reconcile POD quantity and sales order quantity separately, a new order with the quantity variance (Original sales order quantity- POD quantity) will be automatically added Limitations in Standard S4- This feature is currently not available in standard S4"	N	M	Manual	N/A	GAP_D2S_P2_001
UAE	FOC (Delivery Free of Charge) based on specific order reason. Requirement- Based on a specific order reason, system should allow to create delivery free of charge only, so that business loss can be minimized	N	M	Using Advance Return Management		GAP_D2S_P2_002
UAE	Billing date determination in billing document based on POD date using Incoterm.	N	M	Enhancement	WRICEF_D2S_2A_23 WRICEF_D2S_2A_67	GAP_D2S_P2_003
UAE	Credit Memo against the return material based on specific order reason. Requirement- Based on a specific order reason, system should allow to create credit	N	M	Using Advance Return Management		GAP_D2S_P2_005

	memo request only, so that business loss can be minimized					
UAE	OM Output Forms	N	H	Custom Forms	WRICEF_D2S_2A_25 WRICEF_D2S_2A_21 WRICEF_D2S_2A_24 WRICEF_D2S_2A_26 WRICEF_D2S_2A_26A WRICEF_D2S_2A_19 WRICEF_D2S_2A_19A WRICEF_D2S_2A_20	GAP_D2S_P2_035

Commented [A1]: GAP belong to Contract fulfilment

6.2.1 Process Fitness

Req ID	Short Description	Long Description	Req. Type
1.	Credit Memo against the return material based on specific order reason.	Code will check the order reason for the previous return order type and if the reason code qualifies for a credit memo, then only the credit may be given to the customer. It comes under WRICEF.	New

6.3 WRICEF Register

EDGE P2 ENTITIES WRICEF #	WRICEF Type	Description	Complexity (H/M/L)	Comments	Use from myConcerto (New/Rework/Rep)	Ref # from WRICEF inventory	Assign system / SAP component
1	Form	Order management output forms Printout Template - English & Arabic	Low	N/A	N/A	WRICEF_D2S_2A_25 WRICEF_D2S_2A_21 WRICEF_D2S_2A_22 WRICEF_D2S_2A_26 WRICEF_D2S_2A_26A WRICEF_D2S_2A_19 WRICEF_D2S_2A_19A WRICEF_D2S_2A_20	1
2	Enhancement	Automate the quantity determination for a new sales order due to non-conformance/POD variance.	Medium	N/A	N/A	N/A	2

		Difference between the dispatch quantity and quantity confirmed by customer end.					
3	Enhancement	Credit Memo against the return material based on specific order reason.	Medium	N/A	N/A	N/A	3
4	Enhancement	FOC against the return material based on specific order reason.	Medium	N/A	N/A	N/A	4
5	Enhancement	Billing date determination in billing document based on POD date using Incoterm.	Medium	N/A	N/A	WRICEF_D2S_2A_23 WRICEF_D2S_2A_67	5

7. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

7.1 Integration points

Process ID (L4 processes)	Type (legacy system, DT Ops, functional integration)	Related technical scope item (if required)	Leading stream	Business process Integration with domain	Description	In	out
ED-07_03 0100			D2S	P2P - ED-11_020400	Quality check for inspection lots	At the time of Return/Non-Conformance, the QA team needs to do the quality inspection (out of system) before processing the goods into EDGE P2 ENTITIES. Post quality Inspection feedback the goods are taken back to EDGE P2 ENTITIES by creating return sales order in S/4Hana system.	N/A

7.2 Inbound Communication

Activity	Type	Automatic/Manual	Source	Destination	Description
N/A	N/A	N/A	N/A	N/A	N/A

7.3 Outbound Communication

Activity	Type	Automatic/Manual	Source	Destination	Description
N/A	N/A	N/A	N/A	N/A	N/A

7.4 Other Issues

Issue #	Issue Description	Impact	Status	Resolution
N/A	N/A	N/A	N/A	N/A

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY
13 LOGISTICS AND TRANSPORTATION
13.4 OUTBOUND LOGISTICS

TABLE OF CONTENT

Table of Content.....	2
1. Introduction	5
1.1 Change History	5
1.2 Approval Details	6
1.3 Other Related Documents.....	6
2. Business Process (Level 2).....	7
2.1 To-Be Process Overview and Context	7
2.1.1 Definitions.....	8
a. Serial number management	8
b. Batch management.....	8
c. Handling units management.....	9
2.1.2 Key Value Drivers for the Business Process	10
2.2 Key Design Decisions	11
2.3 Standard KPI and reports	11
2.4 Extreme automation	12
3. Process Design.....	13
3.1 Manage outbound transports (ED-13_040101).....	14
3.1.1 Process Description.....	14
3.1.2 Process Diagram.....	19
3.1.3 Activity List and Job Role Mapping	19
3.1.4 Applicability Matrix and Special Requirements	20
3.2 Deliver goods (ED-13_040102).....	21
3.2.1 Outbound Delivery.....	22
3.2.2 Picking and Packing.....	26
3.2.3 Post Goods Issue (PGI)	30
3.3 Manage reverse logistics (ED-13_040103).....	32
3.3.1 Process Description.....	32
3.3.2 Process Diagram.....	33
3.3.3 Activity List and Job Role Mapping	34
3.3.4 Applicability Matrix and Special Requirements	35
3.4 Settle transportation costs (ED-13_040201).....	35
3.4.1 Process Description.....	35
3.4.2 Process Diagram.....	36
3.4.3 Activity List and Job Role Mapping	37
3.4.4 Applicability Matrix and Special Requirements	38
3.5 Track and trace outbound deliveries (ED-13_040202).....	38
3.5.1 Process Description.....	38
3.5.2 Process Diagram.....	39
3.5.3 Activity List and Job Role Mapping	39
3.5.4 Applicability Matrix and Special Requirements	39
4. Detailed Solution Design	40
4.1 Manage outbound transports detailed solution Design	44
4.1.1 Solution prerequisites.....	44
4.1.2 Process predecessor and successor	44

4.1.3 Master data prerequisites.....	44
4.1.4 Organizational structure requirements	44
4.1.5 Manage outbound transports detailed solution design	45
4.2 Deliver dangerous goods detailed solution design	48
4.2.1 Solution prerequisites.....	48
4.2.2 Process predecessor and successor	48
4.2.3 Master data prerequisites.....	48
4.2.4 Organizational structure requirements	48
4.2.5 Detail Dangerous goods	49
4.3 Settle transportation costs; Solution steps and elements (Level 5-6)	50
4.3.1 Solution prerequisites.....	50
4.3.2 Process predecessor and successor	50
4.3.3 Master data prerequisites.....	50
4.3.4 Organizational structure requirements	51
4.3.5 Detail settlement	51
4.4 Track and trace outbound deliveries detailed solution design	52
4.4.1 Solution prerequisites	52
4.4.2 Process predecessor and successor	52
4.4.3 Master data prerequisites.....	52
4.4.4 Organizational structure requirements.....	53
4.4.4 Track and trace outbound deliveries	53
4.5 Manage reverse logistics detailed solution design	53
4.5.1 Solution prerequisites	53
4.5.1 Process Predecessor and Successor.....	54
4.5.2 Master data prerequisites.....	54
4.5.3 Organizational structure requirements	54
4.5.4 Detailed solution design	55
4.6 Associated Fiori Apps	56
4.7 Reporting Overview.....	58
5. Role Definition.....	60
5.1 Role/Skill Class Inventory	60
5.2 Security roles as per process design.....	60
6. Process Fitness & Gap Analysis	64
6.1 Process Variation (legal, geographical or business-led).....	64
6.1.1 Sub-Process Variation	64
6.2 GAP Register	66
6.3 Process Fitness	66
6.4 WRICEF Register	66
7. Integration Points.....	68
7.1 Integration points.....	68
7.2 Inbound Communication.....	68
7.3 Outbound Communication.....	69
7.4 Other Issues.....	69
8. KUT feedback and new requests (implementation to be decided on Compliance/Customer/Business Case/Usability).....	70

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	3.10.2021	First draft	Vijay Bansal
V0.3	6.10.2021	Revised draft	Martin Posarnig
V0.4	11.10.2021	Revised draft	Vijay Bansal / Martin Posarnig
V0.5	14.10.2021	Content added (master data, fiori, reporting)	Sunil Kumar / Martin Posarnig
V1.0	07.11.2021	Approval GPO	Martin Posarnig
V1.1	13.12.2021	Update content with feedback	Sunil Kumar / Martin Posarnig
V2.0	20.12.2021	Ready for BO approval	Martin Posarnig
P2_v0.1	12.08.2022	Update into new PDD format	Moritz Waubke
P2_v0.2	22.09.2022	Update business process description	Martin Posarnig
P2_v0.3	15.10.2022	Update business process description, Activity lists	Martin Posarnig
P2_v0.4	11.12.22	Incorporate SI feedback and forms & labels	Martin Posarnig
Change of versioning numbering policy			
V0.7	09.03.2023	Incorporating open points from Feedback Tracker, OPL (Deliverables list) and entity feedback	Martin Posarnig / Zakia El Houary / Azam Hussain Syed / Sateesh Natarajan / Shakti Prasad
V0.8	22.03.2023	Quality review	Dr. Piotr Rykaczewski
V0.9	29.03.2023	GPO approval (V0.8 → V0.9)	
V0.9	19.06.2023	Updated of the transportation related processes	Zakia El Houary / Faraz Quddusi
V0.9	19.06.2023	Updated the process deliver dangerous goods/normal goods: added partial delivery, partial picking, case of quality rejection	Zakia El Houary / Faraz Quddusi
V0.9	19.06.2023	Added a process variation in section 6: kitting process NIMR Algeria	Zakia El Houary / Faraz Quddusi

V0.9	01.02.2023	Updated the labels and forms	Zakia El Houary / Faraz Quddusi
V0.9	04.08.2023	Quality review of the updates	Dr. Piotr Rykaczewski
V0.9	22.08.2023	Update of transportation processes (introduction of freight unit and freight order)	Zakia El Houary /Faraz Quddusi
V0.9	10.10.2023	Update of the structure of process design section as aligned with DT team	Zakia El Houary /Faraz Quddusi
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See cover sheet			

1.3 Other Related Documents

Please insert links/References to related Documents (issues, data entities, extreme automation, etc.)

Related Document	Comment
<u>EDGE_KDS_EWM.xlsx</u>	KDS EWM

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

The outbound delivery process is tied to the starting point with the customer what is the contract and later the sales order. It is also the interface to the contract fulfilment process. Trigger for the operational process is either the terms and condition in the sales order or a call off within a delivery schedule. First step is to create an outbound delivery. This initiates the creation of freight units as well as the assignment to a carrier. The operator starts the picking process with a mobile device to be finished on shipping day. After loading the truck goods issue gets posted to finalize the process.

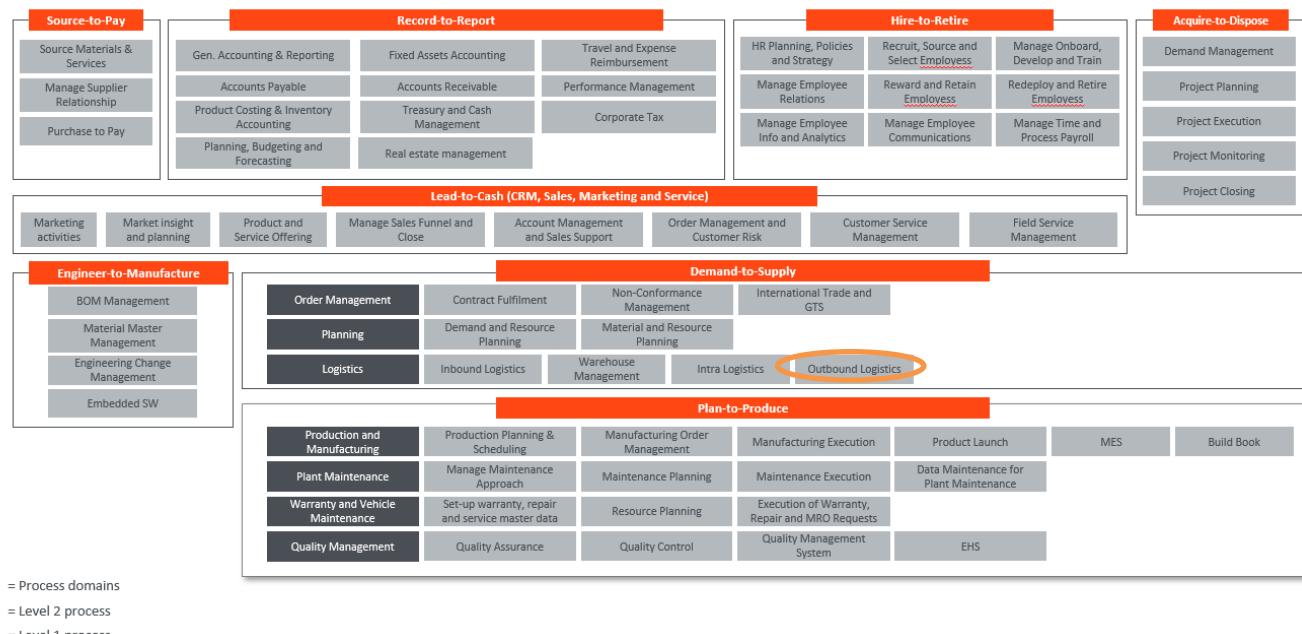
For many products the military is the customer for EDGE entities. For some deliveries the military will come onsite to EDGE premises to pick-up the finished products. In this case there is no transportation management needed from EDGE side, but only outbound process.

A separate process is also covered within this area regarding the reusable packaging material. This will cover in the subprocess of reverse logistics.

Orientation within the business process hierarchy:

Demand to supply → 13 Logistics and Transportation → 13.4 Outbound transports

Figure 1: EDGE Business Processes Overview



The outbound process is linked to the warehouse management as a starting point and ends up in the billing process. There are several interfaces in superordinated and subordinated processes like “dangerous goods management” or “International trade and GTS (global trade system)”.

For the most efficient usage of the logistics module, three core processes have been defined and aligned over all the entities during High-level and Deep-Dive Workshops. Integration points with other streams have also been aligned and agreed upon:

- **Order Integration** covers the integration of the ERP orders/ deliveries with the TM (transport management), for generating the transportation requirement, so that the transportation planning can be modelled on this requirement.
- **Transportation Planning & Execution** covers all the processes pertaining to the transportation plan and its stepwise execution activities. This involves planning based on schedules/ lanes, carrier sub-contracting, its assignment, capturing transportation events.
- **Charges Management & Settlement** describes holistic approach for carrier subcontracting process and its freight agreement release. It also includes the freight costs calculation in the freight execution documents and its posting in the MM (material management) system for freight invoicing.

The outbound logistics process majorly contains following sub-processes:

- **Manage Outbound Transports**
Considering all TM (transportation management) activities regarding outbound deliveries
- **Deliver Dangerous Goods**
All EWM (extended warehouse management) steps for the outbound process from picking to post goods issue
- **Mange reverse logistics**
Covering all steps regarding handling of reusable packaging material as well as managing customer returns and reverse picking process.
- **Settle Transportation Costs**
All tasks regarding the verification of freight costs and settlement
- **Track and Trace Outbound Deliveries**
It captures all events from assigning freight to carrier until proof of delivery (POD) of customer.

2.1.1 Definitions

Product Identity: Serial number management; Batch Management, and Handling Unit Management

a. Serial number management

A serial number is a unique identifier or code assigned to a specific individual item or product. It is used to distinguish and track the item throughout its lifespan. Serial numbers are typically assigned during the manufacturing process. Managing serial numbers involves assigning, recording, and utilizing serial numbers to enable traceability, warranty tracking and inventory management.

For this project, it has been identified that 4 entities can have serialized items.

b. Batch management

A batch number or a lot number or batch code, is a unique identification code assigned to a specific group or lot of products during the manufacturing process. It is used to track and trace the products throughout their

lifecycle, from production to distribution and often through to the end-use. Batch number management involves assigning, recording, and using batch numbers to ensure traceability, quality control, and product recall.

For this project, it has been identified that 4 entities can have batch managed items.

c. Handling units management

Handling Unit (HU) is the SAP term for a package (pallet, container, etc.) and describes the physical combination of

- Packaging material (pallet, carton, container, box, etc.) and
- Goods (material to be shipped, stored, used, etc.)

For the Edge entities, Shipment HUs are required to prepare a package for shipment. Ship HU labels will be printed out carrying all the details of the package contents. The following entities will be using the Ship HUs:

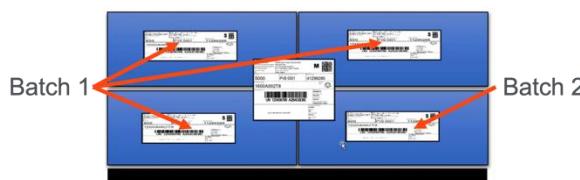
- NIMR – for the kits
- Halcon – for all products
- Al Tariq – optional
- ADASI – optional

The following Ship HU labels are possible:

A **homogenous HU** contains only one material number but can contain one to multiple batches. Each single HU is labelled with an HU Label. This is the smallest movable unit and material gets consumed on that level. The nested HU label is only to move multiple single HU's at the time.

A **mixed HU** can contain multiple materials and multiple batches. The labelling rules follow the same as the homogenous HU. Each entity can decide to allow mixed HU's or not. In terms of proper utilization of the warehouse the recommendation is to allow mixed HUs.

The HU label is a sticker label in A7 format and printed before GR posting or when executing an HU split. HU labels can be reprinted at every time in case of loss or damage



Homogeneous HU



Mixed HU

Figure 2: HU Label Example

"Entity Logo" HALCON	Outbound Delivery Number 1240128401	Delivery Date 31.05.2023	
Ship To CUSTOMER NAME / SHIP TO PARTY	Ship To Address Ship To Address of Customer		
Package Number 111002412412 Single Item Package / Multiple Items Package *		Package Count 1	Total Packages 10
Package Dimensions L X W X H UOM 30 x 30 x 30 CM	Package Volume 90 CM ³	Gross Weight 80 Kgs	Package Contents 4 Cartons
Entity Material Number 654000021 HS CODE	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space		

2.1.2 Key Value Drivers for the Business Process

The new system-supported inbound logistics process will provide the following advantages:

- Improve order fulfilment: the system provides capabilities to optimize the order fulfilment process. It helps in accurate and efficient picking, packing, and shipping of products, reducing errors and delays. This ultimately leads to improved customer satisfaction
- Real-time Visibility: EWM offers real-time visibility into inventory levels, order status, and warehouse operations. This visibility allows better monitoring and control over outbound processes, enabling proactive decision-making and timely interventions if any issues arise
- Inventory Management: With EWM, it is possible to have a better control over inventory accuracy and visibility. It enables tracking of goods at a bin or even serial/lot level, providing accurate stock information.
- Analytics and Reporting: EWM provides comprehensive analytics and reporting capabilities, offering insights into warehouse performance, order processing times, resource utilization, and more. These insights enable continuous improvement initiatives, helping identify bottlenecks and areas for optimization

2.2 Key Design Decisions

Process ID	KDD ID	Type	Description
ED-07_020 400	KDD_D2S _96	Foundation	<p>Order based or delivery-based freight planning</p> <p>Delivery based freight planning - S/4HANA deliveries transfers to TM system, creating freight unit on S/4HANA Delivery items in TM system, which will then be consumed by OBD/IBD (outbound delivery/inbound delivery) when OBD/ IBD gets transferred to TM system.</p>

2.3 Standard KPI and reports

To monitor various aspects of the outbound logistic process the following KPIs out of the EDGE KPI handbook should be recorded and visualized:

- **Delivery Performance (2.1)**

Calculation: $\Sigma \text{Customer deliveries on time} / \Sigma \text{Planned customer deliveries on time} * 100 = x\%$

The delivery performance shows the adherence to the delivery dates of the entity. It is the percentage of time that the entity delivers a completed product to the internal/external customer on schedule. The delivery performance is calculated by dividing the total number of units delivered by the number of planned orders delivered on-time. For this KPI only those deliveries are considered that are due in the current time span regardless of when the delayed delivery is taking place.

- **Planned deliveries on time (2.1.1)**

Total number of units that were planned to deliver for that time.

- **Customer deliveries on time (2.1.2)**

Total number of units that were delivered on time this month.

- **Total customer deliveries (8.1.1.2)**

The total of all delivered units for that timespan. Every unit delivered regardless of whether they are in time or not.

- **Freight cost (6.1.2.1)**

Freight cost for outgoing freight (not intralogistics).

Following KPIs could bring additional benefit to improve operations:

- **Average picking time / freight unit**

This indicates if the picking process is running smoothly and how improvements work.

- **Average occupancy of shipping area**

Helps to design the shipping area and indicates reliability of carriers.

- **Average duration of transportation**

Duration will be recorded via the transportation orders. A visualized trend can indicate if optimizations are needed. A correlated view with the warehouse utilization can be useful.

- **Service level of 3rd party service provider**

This KPI can contain several parameters (response time for inquiry, on time pick-up and delivery, run time)

2.4 Extreme automation

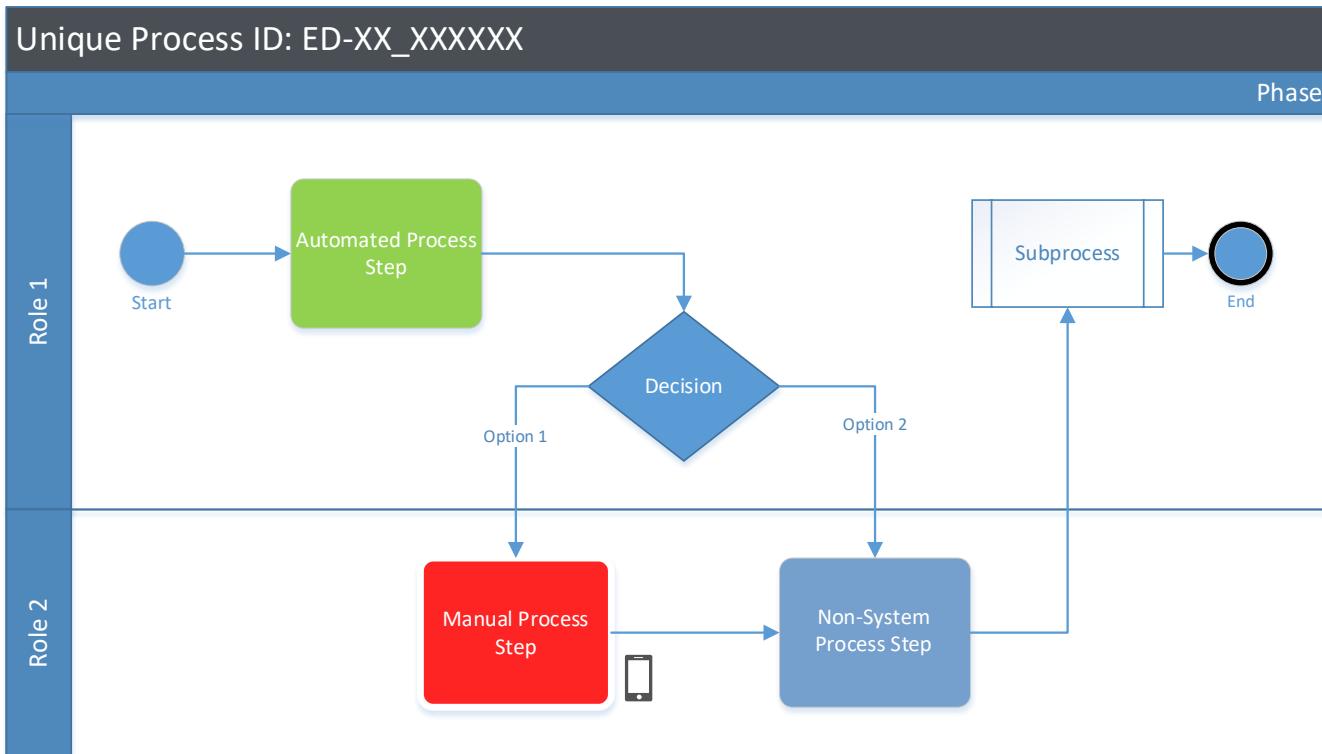
All the relevant use cases under consideration for extreme automation are updated (with EBS input if required) in before the initiation of validation phase.

Detailed key-stroke level process details will be captured through walkthrough sessions in the Extreme automation PDD section. ERP PDD's and ERP training manuals shall be leveraged to capture information that is readily available for the identified automations

3. PROCESS DESIGN

In the following chapters processes are described in swimlane flow diagrams, in which the swimlanes represent responsible roles and the flow is shown in process steps of different kinds (see legend).

Example for swimlane flow chart:

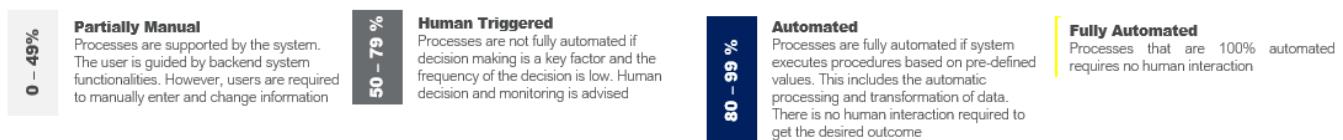


Legend



For each swimlane flow diagram, a corresponding activity list exists, with additional details:

- Process Step - Number of process step (Pxxx)
- BPH ID - BPH ID of L4 process
- Description - Short description of the step
- Role - Responsible role for executing the step
- SAP-Automation - Options: Partially Manual, Human Triggered, Automated, Fully Automated, Sub-Process/Non-System (blank); details on definition see below
- Tcode - SAP Transaction Code (SAP EWM in Italic letters)
- Fiori - Y, if Fiori App is available



3.1 Manage outbound transports (ED-13_040101)

3.1.1 Process Description

This process describes the management of transportation for outbound process. Outgoing goods are either to be shipped to the customer or subcontractor or to be returned to supplier.

This section covers the scope of all outbound transports. However, the cost bearing of these outbound transports being borne by the EDGE entities depends on the incoterms set with the customers. Based on the deal with the customers, the following three categories of outbound transports are possible considering all EDGE entities:

- One Leg Transport – Local Last Mile Delivery
- Two Leg Transport – Air / Sea + Local Last Mile Delivery
- Three Leg Transport – Local Pickup + Air/Sea + Foreign Last Mile Delivery

Outbound Process Trigger

The process trigger for the outbound transport operations will be the outbound delivery document that specifies the incoterms set with the customer and will require the one leg / two leg / three leg transport arrangements accordingly. The process starts by the creation of the outbound delivery document, if the transportation is not managed by the entity, the quality inspection of outgoing goods happens followed by picking, packing and goods issue posting.

In case the transportation is managed by the entity, two cases can be expected:

- Transportation managed by entities vehicles: Vehicles are assigned as per availability without any cost tracking, the vehicles are loaded, and goods issue is posted
- Transportation managed by external carrier/freight forwarder: when requesting external transport provider, the transportation planner prepares the shipping document with the information covered below.

After Outbound delivery creation

Entities have the following routes after Outbound delivery creation:

- Assign own vehicles for pick up and outbound operations
- Engage a Freight Forwarder for pick up and outbound operations
- Make a combination of own or multiple freight forwarders depending on the requirements
- Customer designated freight forwarder

The process requires a system-based freight document / unit indicating the choice from the above route along with further details as follows:

- Reference to the Customer purchase order
- Selected Outbound Deliveries for Outbound operations
- EDGE's invoice number – Proforma Invoice
- Customer information (name, contact, email address)
- Delivery address
- Mode of shipment / freight
- Shipment terms (incoterm)
- Insurance (if required)
- Project name and code
- If need of airfreight: reason for the request
- Shipment instructions
- Freight volume and weight: calculated in the system based on Edge's packaging and products details

Documentation needed:

- Commercial invoice (mandatory)
- Certificate of conformance (mandatory)
- Delivery note (mandatory)
- Certificate of origin (per material), if applicable
- Material Safety Data Sheet (MSDS) for chemicals
- IATA regulations certificate, if applicable
- Packing list

In addition to above details, time and schedule of the shipment should be maintainable. The following shipment events are required to be captured:

- Shipment Start – Date & Time of Pickup from EDGE – The collection time confirmed with the customer
- Arrival time – On EDGE Site
- Loading Start – On EDGE Site
- Loading End – On EDGE Site
- Shipment Complete – Date & Time of completion of the physical movement from EDGE site.
- Shipment End – Date & Time of completion of Shipment at Customer end

Consequently, actual date and time of the above events will also be captured and recordable on the same shipment document against the planned date and time of each event.

In case EDGE entities are using internal fleet, vehicles are assigned as per availability out of system and no cost tracking is performed. However, if a 3rd Party freight forwarder is engaged, freight cost must be booked to the freight order. This Freight Order is against the freight service booked with the freight forwarder. The procedural aspects of the freight order creation process are provided below.

The transportation planner reaches out to the authorized carriers/freight forwarders and request for quotation (RFQ). The freight quotations are received from carriers/freight forwarders and compared to select the best offer in terms of price and lead time. The offers vary depending on the service provider and transport mode as well (e.g. airfreight's cost can be lower than sea freight in some cases).

Once the carrier/freight forwarder is selected, the transportation planner book the transportation booking with the freight forwarder and update the freight order and ask for transportation manager approval.

The outbound delivery is updated, the quality inspection of outgoing goods is performed by quality department, then the goods are picked, packed, and loaded when the vehicles reach the pick-up location. The quality inspection can happen after picking as well for NIMR.

The logistics execution activities are detailed in the next section 3.2.

After processing the goods issue, Finance can process the transportation invoice when received upon settlement of Freight Order.

The outgoing goods will have these labels that have been agreed with the entities:

Description	Type	Recommended type (print / digital)	Format	NIMR	HALCON	AI TARIQ	ADASI
HU label: outbound	Label	Print	A6	Ok	Ok	Ok	Ok
Putaway Label: Finished Goods	Label	Print	A6	Ok	Ok	Ok	Ok
Delivery note	Form	Print	A4	Ok	Ok	Ok	Ok
Packing list	Form	Print	A4	Ok	Ok	Ok	Ok
Picking list	Form	Digital	A4	Ok	Ok	Ok	Ok
Picking list post confirmation	Form	Digital	A4	Ok	-	-	-

Figure 3: HU label for outbound

Entity Logo HALCON	Outbound Delivery Number 1240128401	Delivery Date 31.05.2023
Ship To CUSTOMER NAME / SHIP TO PARTY	Ship To Address Ship To Address of Customer	
Package Number 111002412412 Single Item Package / Multiple Items Package *	 Package Count 1 Total Packages 10	
Package Dimensions L X W X H UOM 30 x 30 x 30 CM	Package Volume 90 CM³	Gross Weight 80 Kgs Package Contents 4 Cartons
Entity Material Number 654000021 HS CODE	*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space	

Figure 4: Putaway labels for finished goods

PUT AWAY LABEL - without Packaging - Multiple Units			
Entity Logo HALCON	Queue Number Q01-WHS1	*WT Barcode*  45000024124	
Entity Material Number 111002412412	*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space	Material Number	Date & Time 31.05.2023 4 : 35 PM
HS CODE			Ref PO / Production Order 21958120581
Entity Batch Number AABC45124			
Expiry Date			
Batch Number 	Inspection Lot Number 1240124128098	Quantity 5	UOM Pieces
Quality Inspector Name			
WBS CODE PJ.001.000124	Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001	
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Destination Storage Type:

PUT AWAY LABEL - without Packaging 1 - Serial Code

PUT AWAY LABEL - without Packaging 1 - Serial Code			
Entity Logo HALCON	Queue Number Q01-WHS1	*WT Barcode*  45000024124	
Entity Material Number 111002412412	*Material Description* XYZ MATERIAL - up to 40 Characters of Print Space	Material Number	Date & Time 31.05.2023 4 : 35 PM
HS CODE			Ref PO / Production Order 21958120581
Entity Batch Number AABC45124			
Expiry Date			
Batch Number 	Inspection Lot Number 1240124128098	Quantity - UOM 1 - Piece	Serial Number 
Quality Inspector Name			
WBS CODE PJ.001.000124	Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001	
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Destination Storage Type:

Figure 5: Packing list

Packing List										Date	DATE_FIELD					
										Time	TIME_STAMP					
Ship to Party Details:										References:						
Name XYZ Company Delivery Address StreetA- Paris,PO Box. 12121, France Contact Person Ms Edwardo Contact Number 0041-12312 12332										Contract Reference (CRM)	SF-5550					
Count	Package Number	Package Dimensions				Package Contents										
		L (cm)	W (cm)	H (cm)	Weight (Kgs)	S No	Material No	HS Code	Description of Goods	Batch No	MO Number	Drawing No	Rev.	Quantity	UOM	Serial Numbers
1	12412414	10	10	10	990	1	89047124	12.11001	ABC DESCRIPTION	ABC12	AB12	ABC31	1	10	PC	124092141 124092142 124092143 124092144 124092145 124092146 124092147 124092148 124092149 124092150
						2										
						3										
						4										
						5										
						6										
						7										
						8										
						9										
						10										
2	12412415	10	15	10	1200	1	8904744	12.11002	CDE DESCRIPTION	CDE124	ABY	CDE123	1	3	PC	345123100 345123101 345123102
						2										
						3										
TOTAL		2 Packages			2,190	13								13	PC	

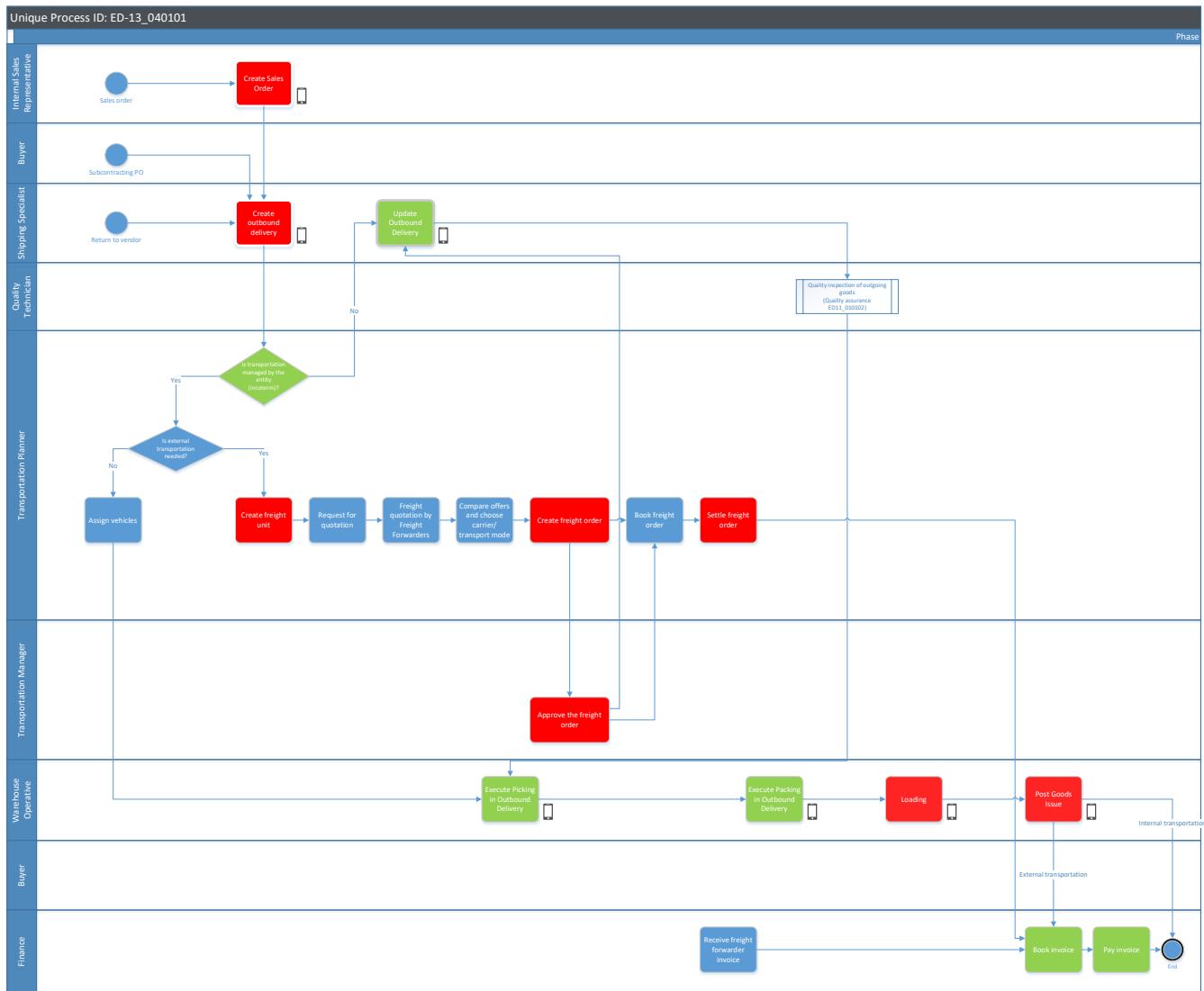
Package Summary		Printed by <u>USER NAME</u>	Sign and Stamp - EDGE Entity	Sign and Stamp - Customer
Total Quantity	13 PC	Printed on <u>PRINT DATE</u>		
No of Packages	2 EA	PRINT TIME		
Total Volume	2.5 M3			
Total Weight	2,190 KG			

ENTITY ADDRESS / DISCLAIMER TEXTS IF REQUIRED

Figure 6: Delivery note

HALCON		Delivery note										
<p style="text-align: center;">Delivery Date: 16/06/2023 Delivery Doc Nc 82000090</p>												
Ship to Party Details: Name XYZ Company Delivery Address StreetA- Paris,PO Box. 12121, France Contact Person Ms Edwardo Contact Number 0041-12312 12332												
References: Contract Reference (CRM): SF-5550 SAP Sales Order Ref : SO - 10000012000 Date of Sales Order: 01-May-2023 Shipment mode: By Sea												
CARRIER DETAILS Name Address Transporter Name VEHICLE TYPE & NO. ENTITY VEHICLE												
(Optional)												
S.No.	Material No.	HS Code	Description of Goods	Ship Qty	UOM	Batch No.	Order Qty	Balance Qty				
1	400010	9999	Hazel Nut Chocolates (400g)	1 000	Pcs	HN-0090	10 000	9 000				
2	400012	8989	Dark Chocolates (150g)	2 000	Pcs	DC-8981	5 000	3 000				
Remarks: Packing Instructions:												
Sign & Stamp (Vendor)				Sign & Stamp (Customer)								
Address of legal entity												

3.1.2 Process Diagram



3.1.3 Activity List and Job Role Mapping

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Fiori	Fiori App ID
P100	ED-13_040101	Start	Internal Sales Representative			
P200	ED-13_040101	Create Sales Order	Internal Sales Representative	Automated	Yes	F3893 – Manage Sales Order
P300	ED-13_040101	Create outbound delivery	Shipping specialist	Partially Manual	Yes	F0867A – Manage Outbound Deliveries
P400	ED-13_040101	Is transportation managed by the entity (depending on Incoterm)	Transportation Planner	Human Triggered	Yes	Maintain outbound delivery

P500	ED-13_040101	Is external transportation needed?	Transportation Planner	Human Triggered		
P600	ED-13_040101	Assign vehicles	Transportation Planner	Partially Manual		
P700	ED-13_040101	Create freight unit	Transportation Planner	Partially Manual		
P800	ED-13_040101	Request for quotation	Transportation Planner	Partially Manual		
P900	ED-13_040101	Receive quotation by freight forwarder	Transportation Planner	Partially Manual		
P1000	ED-13_040101	Compare offers and chose carrier/mode of transport	Transportation Planner	Partially Manual		
P1100	ED-13_040101	Create freight order	Transportation Planner	Partially Manual		
P1200	ED-13_040101	Book freight order (carrier's portal)	Transportation Planner	Partially Manual		
P1300	ED-13_040101	Approve the freight order	Transportation Manager	Partially Manual		
P1400	ED-13_040101	Settle freight order	Transportation Planner	Partially Manual		
P1500	ED-13_040101	Quality inspection of outgoing goods (Quality assurance ED11_010102)	Quality Technician	Human Triggered	Yes	F2180
P1600	ED-13_040101	Execute Picking for Outbound Delivery	Warehouse Operative	Partially Manual	Yes	/SCWM/MON
P1700	ED-13_040101	Execute Packing for Outbound Delivery	Warehouse Operative	Partially Manual	Yes	/SCWM/RFUI
P1800	ED-13_040101	Loading	Warehouse Operative	Human Triggered	Yes	/SCMTMS/ASR ()
P1900	ED-13_040101	Post Goods Issue	Warehouse Operative	Partially Manual	Yes	/SCMTMS/ASR () – Load or Unload Freight Orders
P2000	ED-13_040101	Book invoice	Finance	Partially Manual		
P2100	ED-13_040101	Pay invoice	Finance	Partially Manual		
P2200	ED-13_040101	End				

3.1.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
One Leg Transport – Internal Freight	✓	✓	✓	✓
One Leg Transport – External Freight	✓	✓	✓	✓

Two Leg Transport – Internal & External Freight	✓	✓	✓	✓
Two Leg Transport – External Freight	✓	✓	✓	✓
Three Leg Transport – Internal & External Freight	✓	✓	✓	✓
Three Leg Transport – External Freight	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.2 Deliver goods (ED-13_040102)

This section describes the warehouse steps for outbound deliveries that are integrated with the transportation process steps from previous chapter. From system perspective the handling of dangerous goods compared to normal goods is the same with regards to warehousing activities, however with an addition of IATA Goods Declaration Certificate in case of dangerous goods. The dangerous goods information gets passed on to the carrier company to get the transport permit and complete the legal requirements from Freight vendor side including the IATA Certificate where required.

When the outbound delivery triggers the shipment process. The transportation planning and carrier selection and assignment process will remain the same. EWM processes will be followed in a similar manner.

Packaging label would be printed out for both normal and dangerous goods, the labels will specify if it's dangerous good. In a similar fashion, the transportation documents will include relevant DG profile information.

Transportation documents in Adobe format will specify the details of the products involved in the transportation and with the dangerous goods and their loading, unloading, and shipping instructions, if any.

The EWM outbound process in a warehouse starts with outbound delivery order and ends with goods issue. The various stages that occur in an outbound process are:

Main steps	Brief description	Forms & labels	Hardware use	Integration
	Create outbound delivery	Delivery Note	Desktop/HHT	SD/EWM/IM

3.2.1 Outbound delivery	Perform quality inspection	NA	Desktop	QM/IM/EWM
3.2.2 Picking and packing	Creating picking warehouse task and create picking list	Picking List	Desktop/HHT	EWM
	Execute picking process			
	Move goods to packing area and complete packing (where applicable)	Putaway Labels	Desktop/HHT	EWM
	Move goods to outbound zone / loading area	HU Labels Outbound		
3.2.3 Post goods issue	Print documents (shipment instructions, transportation documents, etc.) Load transport Post goods issue		Desktop/HHT	EWM/IM

Exception: a process variant is identified at NIMR to ship kits, it is detailed in section 6.1

3.2.1 Outbound Delivery

3.2.1.1 Process Description

Outbound Delivery creation

The creation of the outbound delivery is triggered by the delivery schedule on the sales order (in reference to the respective WBS) and is the first step of the outbound process from a logistics point of view. Below some characteristics of the outbound delivery:

- An outbound delivery is a document which contains details of the goods to be delivered together to a goods recipient. An outbound delivery supports all shipping activities including picking, packing, transportation, and goods issue.
- An outbound delivery can be saved, processed, deleted, and archived.
- An outbound delivery is used as the basis for printing the delivery note or for sending a shipping notification.
- An outbound delivery can be created in the following ways:
 - With reference to a sales order
 - With reference to a subcontract order
 - Without any reference
- An outbound delivery has the following details:
 - Document category with the same name outbound delivery, document type, item category, item type, service profiles
- Two different ways to create outbound deliveries are:

- Automatically using worklists
- Manually
- Outbound deliveries can be combined to form a single group of deliveries.
- The overviews allow to monitor the created outbound deliveries and outstanding sales activities. outbound deliveries can only be created under certain conditions.
- In outbound delivery, serial numbers should be entered for components
- Partial delivery can be performed based on customer agreement; the procedural aspects of the process are covered in the subheading below: Partial Deliveries & Partial Picking.

Quality inspection at outbound

A quality inspection is performed before delivering the goods to the customer. The Delivery document will be created based on the delivery schedule (with reference to Sales order); the delivery document should initiate an inspection lot if the materials being delivered are Quality inspection activated in Material Mater.

Following are the business use cases:

- A quality inspection with the customer: the goods are approved by the customer through a Factory Acceptance Inspection. This process is carried out by quality manager alongside the customer to check the goods (sampling or total delivery) and documents. A Final approval of the Factory Acceptance Test is required from the customer
- A quality inspection carried by quality department

(For further details regarding quality inspection of outgoing goods, please refer to quality control PDD (ED11_010102)

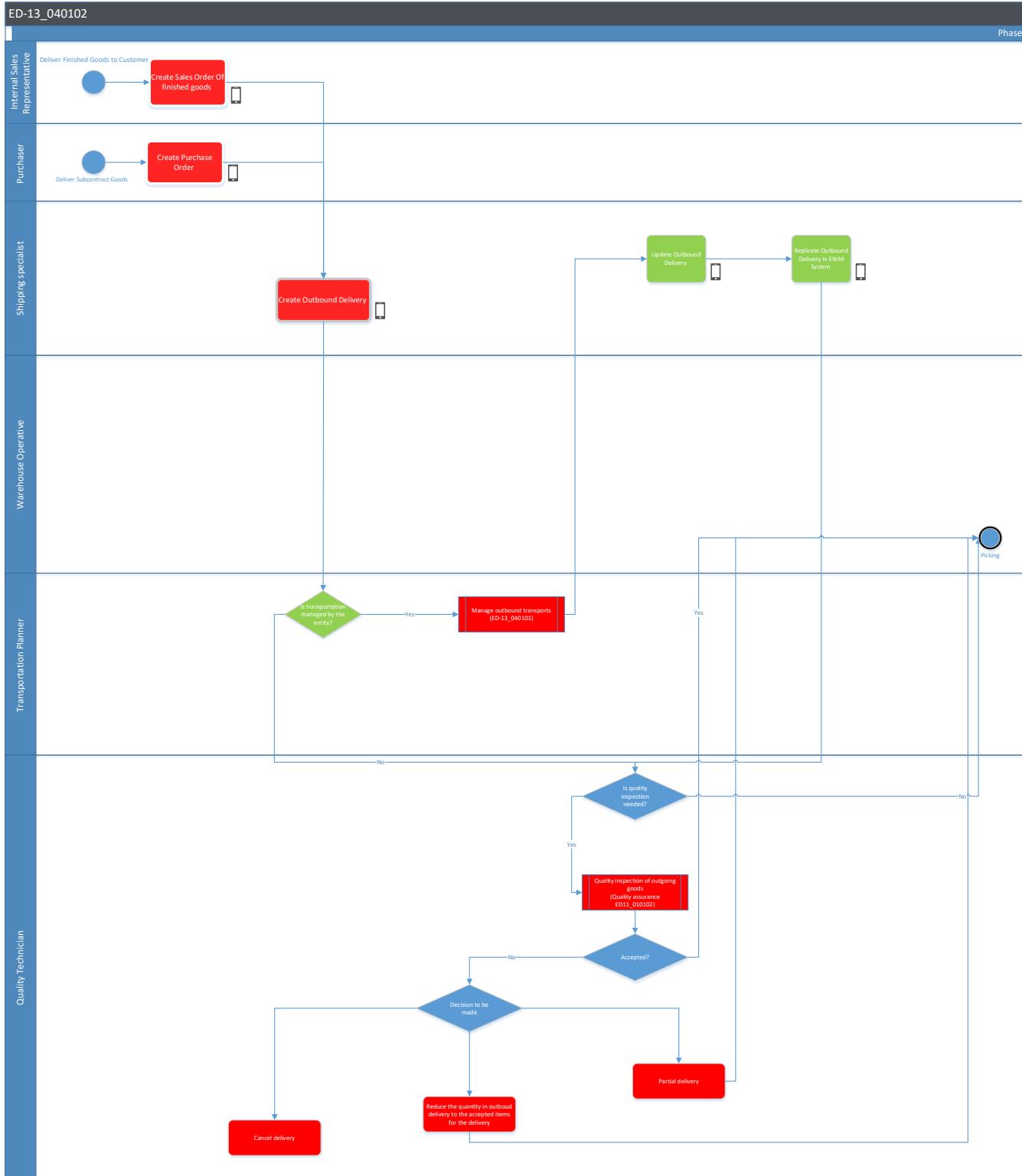
In both cases, after completion of the inspection, the result is recorded in the system. When the goods are partially or fully rejected at the quality inspection, a decision will be taken:

- Delivery cancelation
- Delivery of accepted quantity: by reducing the quantity in the outbound delivery to the accepted items only
- Delivery of accepted quantity: through a partial delivery where a partial picking will be performed to deliver only accepted items (refer to previous page for further details regarding partial delivery and picking)

Exception for NIMR: for outgoing goods, quality inspection happens after picking, once validated the goods are packed and shipped.

3.2.1.2 Process Diagram

Part 1: Outbound Delivery



3.2.1.3 Activity List and Job Role Mapping

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Fiori	Fiori App
P100	ED-13_040102	Deliver Finished Goods to Customer (start)	Internal Sales Representative	Partially Manual	NA	NA
P110	ED-13_040102	Deliver Subcontract Goods (start)	Buyer	Partially Manual	NA	NA
P200	ED-13_040102	Create Sales Order of finished goods	Internal Sales Representative	Human Triggered	Yes	F3893 – Manage Sales Order
P300	ED-13_040102	Create Purchase Order	Buyer	Human Triggered	Yes	F0348A - Manage Purchase Order
P400	ED-13_040102	Create Outbound Delivery	Shipping specialist	Human Triggered	Yes	F0867A – Manage Outbound Deliveries
P500	ED-13_040102	Is transportation managed by the entity (depending on incoterm)?	Transportation planner	Fully Automated	NA	NA
P510	ED-13_040102	Freight Unit/s Created Automatically	Transportation Planner	Fully Automated	Yes	/SCMTMS/FRE_UNIT
P511	ED-13_040102	Plan Freight Unit/s to create Freight Order and Assign Carrier	Transportation Planner	Fully Automated	Yes	/SCMTMS/FRE_ORDER
P512	ED-13_040102	Communicate Freight Details to Carrier with Dangerous Goods	Transportation Planner	Fully Automated	Yes	/SCMTMS/FRE_ORDER
P513	ED-13_040102	Update Outbound Delivery	Shipping specialist	Automated	Yes	F0867A – Manage Outbound Deliveries
P514	ED-13_040102	Replicate Outbound Delivery in EWM System	Shipping specialist	Automated	Yes	/SCWM/MON
P600	ED-13_040102	Is quality inspection needed?		Human Triggered		
P610	ED-13_040102	Perform Factory Acceptance Inspection (ED11_010102)	Quality Technician	Human Triggered	Yes	F2180
P611	ED-13_040102	Accepted?	Quality Technician	Human Triggered	NA	NA
P612	ED-13_040102	Decision to be made	Quality Technician	Human Triggered	NA	NA
P613	ED-13_040102	Cancel delivery	Quality Technician	Human Triggered	NA	NA
P700	ED-13_040102	End	Transportation Planner			

3.2.1.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Outbound delivery – With reference of Sales Order	✓	✓	✓	✓
Outbound delivery – With reference of Subcontracting Order	✓	X	✓	✓

Outbound Delivery – Without reference (Returns case)	✓	✓	✓	✓
---	---	---	---	---

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	Execute quality inspection after picking	NA

3.2.2 Picking and Packing

3.2.2.1 Process Description

Picking

- Picking list should be sorted by bin number to optimize the picking route
- Picking is always carried out from a particular storage type or bin. If a particular item must be picked, the specific bin location details must be entered. The process of picking involves taking goods of a specific quantity from a storage location and then placing them in the staging area. The goods will in turn be collected from the staging area for shipping.
- Full and partial picking can be performed, in case of partial picking, the picking process will follow the protocols listed in the section: Partial Deliveries & Partial Picking.
- Picking process can be carried out manually depending on the workload, the assignment of the resource is done by the warehouse clerk
- For goods issue to be posted, it is necessary that the item should be picked completely. The delivery quantity and the picked quantity in the outbound delivery line item must be equal.
- For picking to take place, a warehouse request needs to be generated for the outbound delivery. For this warehouse request, a warehouse task is created in EWM. The warehouse task is in turn assigned to a warehouse order. This warehouse order can be used as a picking list.
- For picking a finished product, warehouse task is needed to pick handling units. In the picking overview, the system only includes outbound deliveries that has not been picked or have only been partially picked through split line items.
- For picking a component or semi-finished good, that is serialized; the picking operation will be performed through the respective serial number of the inventory item. The serial numbers will be picked at the Picking stage and will not be pre-determined at the outbound delivery stage.

- For picking a component or semi-finished good, that is not serialized; the picking operation will be performed directly through the scanning or key in of the respective inventory item and its respective quantity.
- The partial picking scenarios will always lead to splitting of items in the deliveries as explained in the process below.

Partial Deliveries & Partial Picking:

Partial picking scenarios can arise in following circumstances:

- Partial Picking due to decision of partial delivery for rejected items during FAT
- Partial Picking due to unavailability of stock
- Partial Picking due to mismatch between system stock and physical stock
- Partial Picking by choice or by following a particular sequence (by the Warehouse Clerk)
- Partial Picking due to different physical locations of items within the warehouse

Irrespective of the above scenarios, the partial picking process will be facilitated in the system through splitting of deliveries. The delivery split will be initiated by the Warehouse Clerk who will be the right person for authorizing a partial picking scenario.

Warehouse clerk will split the delivery and create new line items on the outbound delivery. The respective line item on the delivery will be picked in full by the Picker through the floor operations. The picking operation will be confirmed in full or a reduced quantity in the line item, leading to full PGI for the respective line item of the delivery, and in turn leading to full invoice of the respective picked, and delivered line item.

In business process scenarios, where the inventory items are on pallets using Handling Units. The picker should follow the FIFO methodology through the HHT for picking loose items / open pallets first on the FIFO sequence.

For the scenario where there is partial picking due to mismatch between system stock and floor stock, it will lead to a warehouse management operation of physical inventory counting, as covered in PDD 13.2 - Warehouse Management.

Packing:

- This forms a part of delivery and shipment process. While processing the delivery itself, items can be packed. This can be done through the creation of Handling Units automatically in the background.
- Automatic packing allows using packing proposals to create handling units automatically.
- Even manual packing is possible, for this HU needs to be created by specifying details such as the material to be packed, plant where packing is being performed, the ship to party details and the quantity to be packed
- Packing instructions are needed to create HU proposals for the quantity to be packed.
- Packing instructions will be created along with the material master data for defining the packing process and for auto generating the HU proposal.
- Using packing in the work center, one can pack products into handling units and handling units into other handling units. One can use simple drag and drop to repack entire handling units or to pack products into other handling units.

Packaging Labels on Outbound Delivery:

Packaging Labels need to be handled within the outbound delivery as these labels will be used for clear marking of the goods to be delivered along with their destination and customer details that need to be visible on the shipment being delivered. These labels will be created per HU of items being delivered. These Labels will serve the following two primary purposes:

- Product Identification: specifying the product contents, individual, multiple or kit
- Shipment Details: destination details coming from the delivery

The following two scenarios can come up:

- Loose items without HUs due for delivery

Loose items are by definition: unpacked items that have not been packed in an HU from the production process. For the process, we will classify such items within this category that are although packed in their respective packaging, however the Handling Unit functionality is not used in the system. In such cases, the packaged material and its components will itself be considered as a single material.

An automatic packing proposal is required to generate a label per item. By default, the labels will have a 1 : 1 relationship with the quantity being delivered. The labels will be created and physically applied on the surface of the material or its packaging as defined above.

- Fully Packed items in HUs due for Delivery

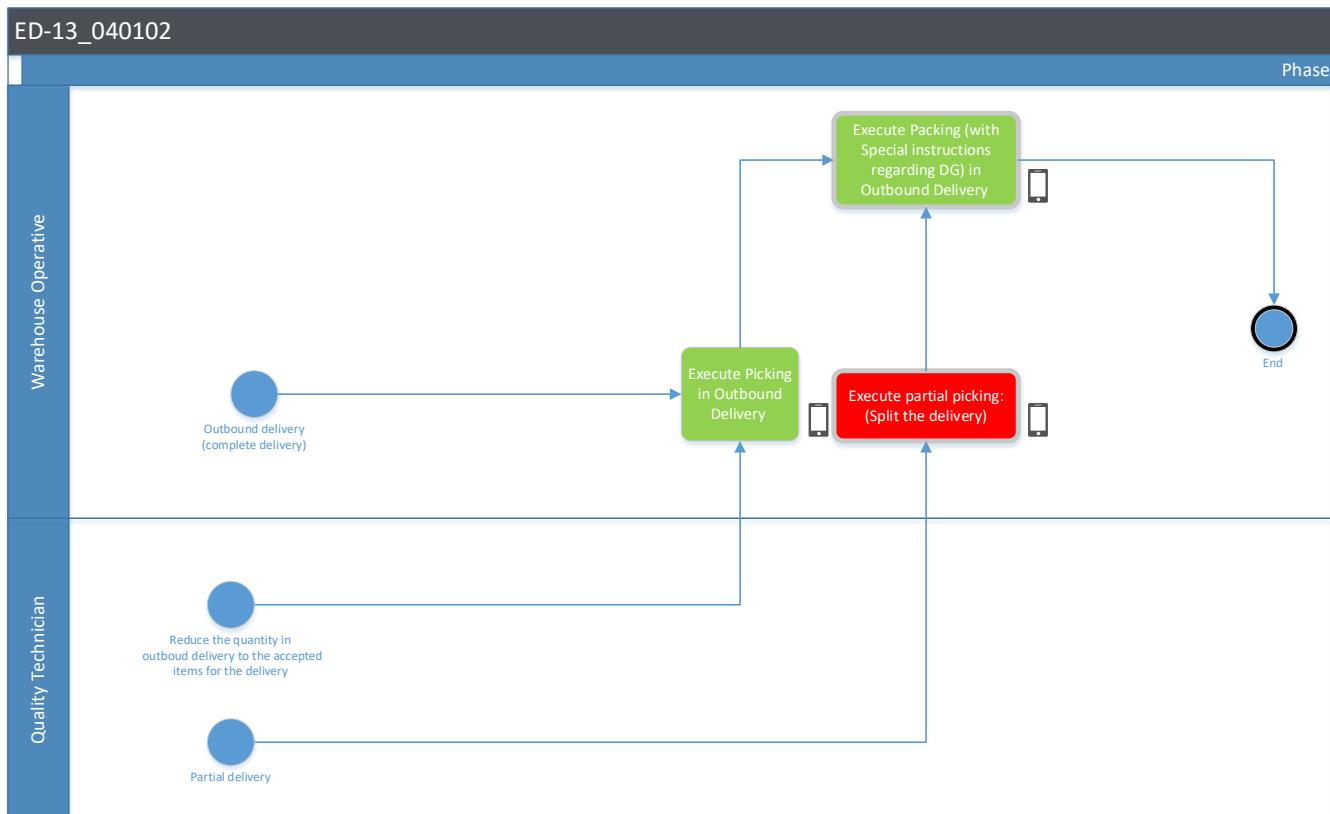
Fully packed items in HUs are by definition: those materials that are already packed from the production process using HUs. These might be in single or multiple quantities and their existing HUs will provide the package content details.

In such cases too, an automatic packing proposal is required to generate a label per HU. The labels will have a 1 : 1 relationship with each HU being delivered. The labels will be generated, printed in the respective format, and physically pasted on the surface of the existing HU. This label will be applied in addition to the existing HU label from the production process, if used.

In both the above cases, the packaging labels can be linked in principle to the automatic packing proposal referred above.

3.2.2.2 Process Diagram

Part 2: Picking and Packing



3.2.2.3 Activity List and Job Role Mapping

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Fiori	Fiori App
P614	ED-13_040102	Reduce the quantity in outbound delivery to the accepted items for the delivery	Quality Technician	Human Triggered	NA	NA
P615	ED-13_040102	Partial delivery	Quality Technician	Human Triggered	NA	NA
P616	ED-13_040102	Execute partial picking (Split the delivery)	Warehouse Operative	Human Triggered	NA	NA
P700	ED-13_040102	Execute Picking in Outbound Delivery	Warehouse Operative	Automated	Yes	/SCWM/MON

P800	ED-13_040102	Execute Packaging (with Special instructions regarding DG) in Outbound Delivery	Warehouse Operative	Fully Automated	Yes	/SCWM/MON
P900	ED-13_040102	End	Warehouse Operative			

3.2.2.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Partial Picking	✓	✓	✓	✓
Full Picking	✓	✓	✓	✓
Packing with HUs	✓*	✓*	✓*	✓*
Packing without HUs	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
Quality Inspection after Picking	NA	NA	✓	NA
* Applicable on certain materials - Spare Parts - Components	✓	✓	✓	✓

3.2.3 Post Goods Issue (PGI)

3.2.3.1 Process Description

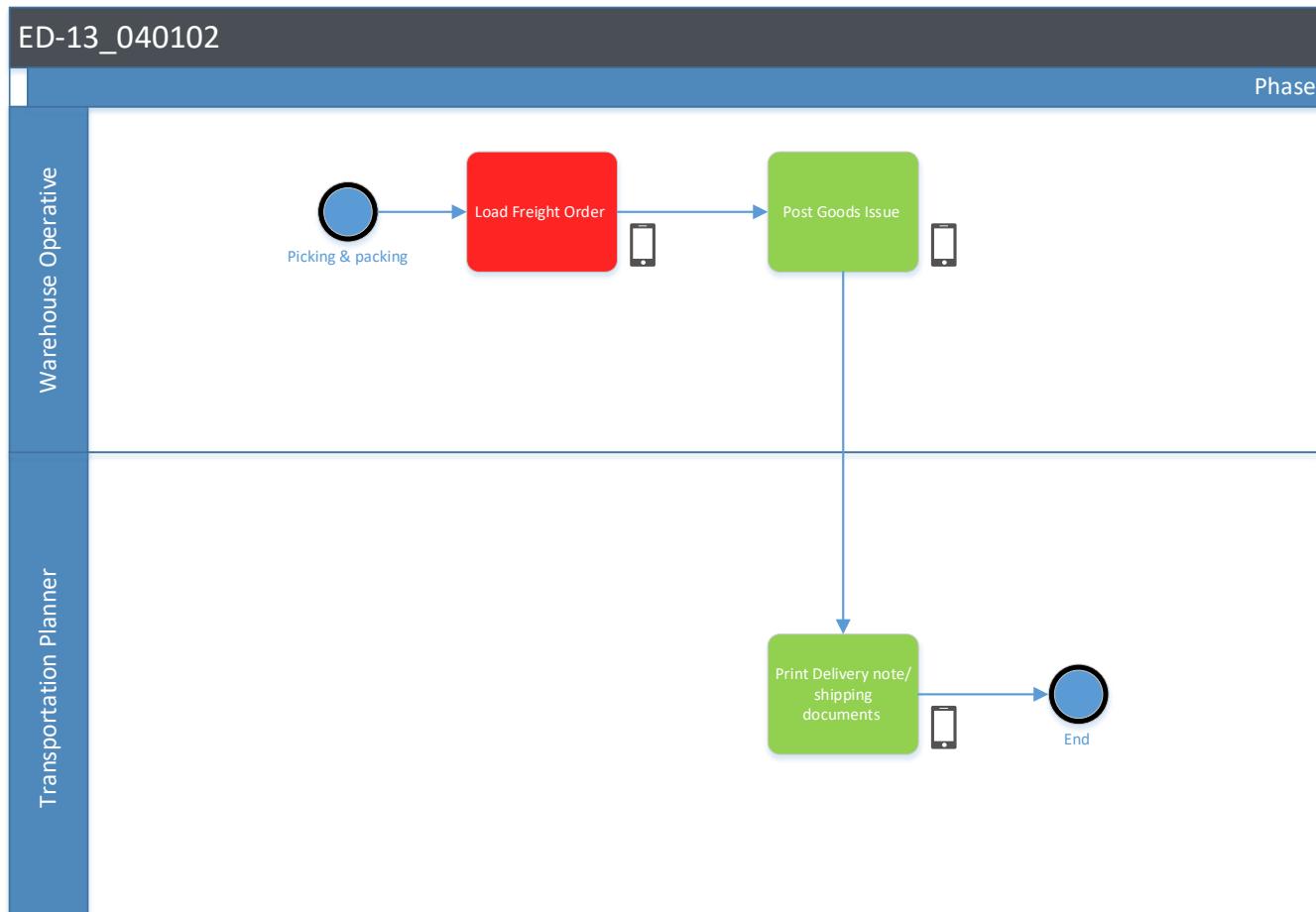
- When the goods leave the company, the shipping part of the business activity is completed. This process is goods issue for outbound deliveries.
- Following options can be used for posting goods issue:
 - Goods issue posting for individual outbound deliveries
 - Goods issue in collective processing to post goods issue for multiple outbound deliveries
 - Goods issue in collective processing for posting goods issue for multiple outbound deliveries in the background without manual intervention
 - Posting goods issue for an entire shipment
- The outbound delivery forms the basis of goods issue posting. The data required for goods issue posting is copied from the outbound delivery into the goods issue document which cannot be changed manually.
- On posting goods issue, the following functions are carried out based on the goods issue document:
 - Warehouse stock of the material is reduced by the delivery quantity

- Value changes are posted to the balance sheet account in inventory accounting
- Requirements are reduced by the delivery quantity
- The serial number status is updated
- Goods issue posting is automatically recorded in the document flow

After goods issue, dispatched sales deliveries are monitored via sales order fulfilment monitor Fiori app to identify the delivery issues. At last, billing is created, and payment settlement is done (interface with finance)

3.2.3.2 Process Diagram

Part 3: Post Goods Issue



3.2.3.3 Activity List Job Role Mapping

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Fiori	Fiori App
P1040	ED-13_040102	Load Freight Order	Warehouse Clerk	Human Triggered	Yes	/SCMTMS/ASR ()
P1050	ED-13_040102	Post Goods Issue	Warehouse Clerk	Automated	Yes	/SCMTMS/ASR () – Load or Unload Freight Orders

P1060	ED-13_040102	Print Delivery note/shipping documents	Transportation Planner	Automated	Yes	/SCMTMS/FRE_ORDER
P1070	ED-13_040102	End	Transportation Planner			

3.2.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Post Goods Issue	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.3 Manage reverse logistics (ED-13_040103)

3.3.1 Process Description

The reverse scenario comes up if the delivery got cancelled or changed and the truck has not yet departed. In case the goods are not yet issued, it is only needed to cancel the freight order, the picking and create the put away task. However, if the goods are already shipped, the following steps must be executed:

- Reverse PGI (post goods issue)
- Unload the trucks
- Cancel picking
- Create putaway warehouse task
- Cancel freight order

For freight order cancellation, as for now entities are managing transportation through transport provider's portals or via emails, the request is done out system. Also, while canceling the freight order, cost aspects should be considered in case there is any penalties.

In the following paragraphs, are detailed reasons for cancelation for Goods Issue and Freight order cancellation.

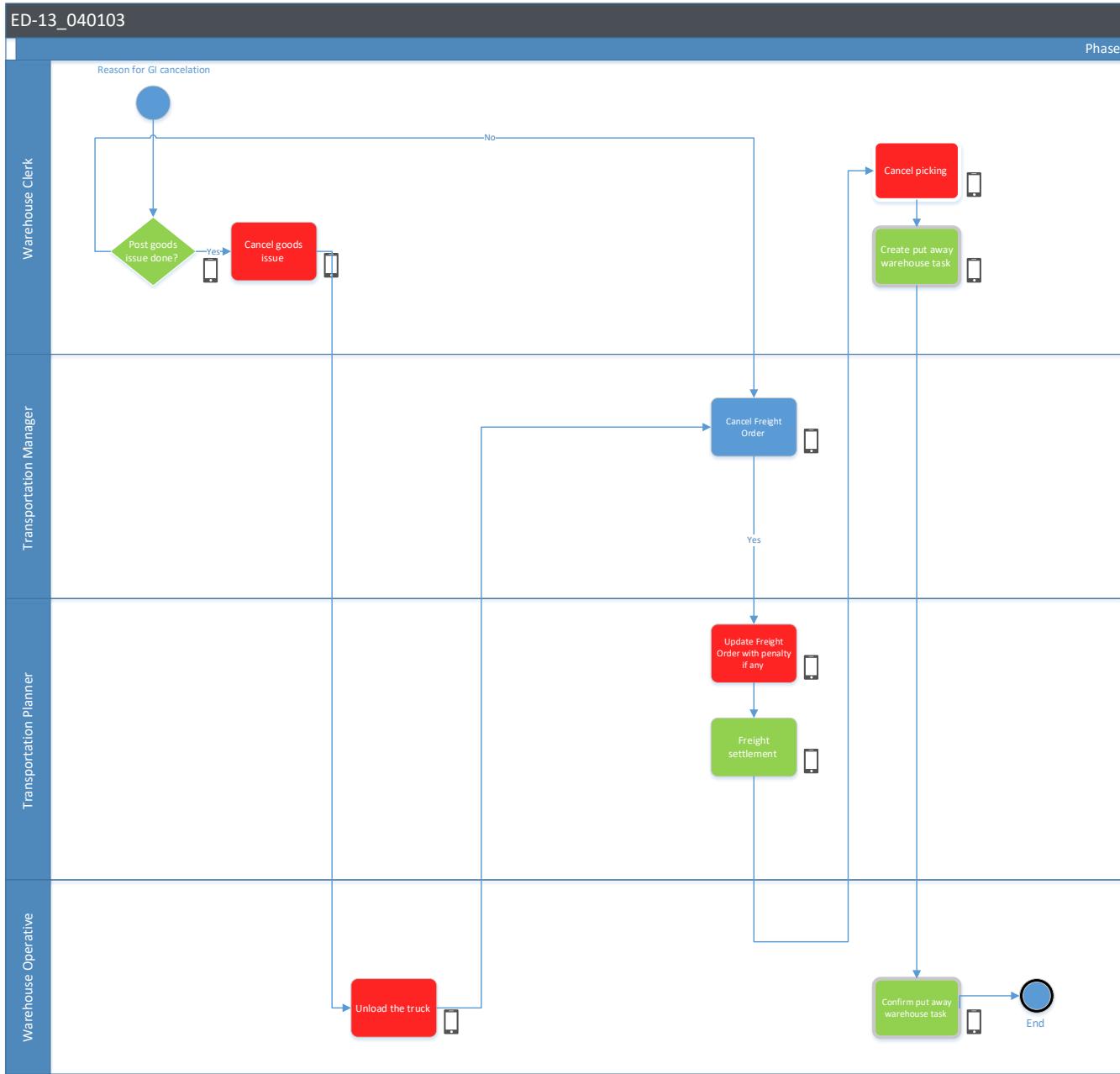
Goods Issue can be canceled in some cases depending on the requirements of the business, below common reasons for GI cancelation:

- Wrong quantity: If the wrong quantity of goods has been issued, it may require the cancellation of the goods issue and the creation of a new one with the correct quantity.
- Wrong batch or serial number: If the wrong batch or serial number has been issued, it may require the cancellation of the goods issue and the creation of a new one with the correct batch or serial number.
- Wrong material: If the wrong material has been issued
- Delivery cancellation: If the delivery has been canceled
- Customer request: If the customer requests a cancellation of the goods issue
- Other issues: There could be other issues such as problems with the carrier or transportation

Freight order as well can be canceled in some cases depending on the specific circumstances of the shipment and the requirements of the business:

- Delivery date change: If there is a change in the delivery date
- Shipping point change: If the shipping point has changed
- Product cancellation: If a product has been canceled or is no longer required
- Change in the quantity: If there is a change in the quantity of the goods that need to be shipped
- Route change: If there is a change in the shipping route
- Customer request: If the customer requests a cancellation of the freight order
- Other issues: There could be other issues such as problems with the carrier or transportation

3.3.2 Process Diagram



3.3.3 Activity List and Job Role Mapping

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Fiori App	Fiori
P100	ED-13_040103	Reason for GI cancellation	Warehouse Clerk	Human Triggered		
P200	ED-13_040103	Post goods issue done?	Warehouse Clerk	Human Triggered	/SCWM/MON	Yes
P210	ED-13_040103	Cancel goods issue	Warehouse Clerk	Human Triggered	/SCWM/FD	Yes

P220	ED-13_040103	Unload the truck	Warehouse Clerk	Human Triggered	/SCMTMS/ASR ()	Yes
P230	ED-13_040103	Payment to carrier needed?	Transportation Manager	Human Triggered	/SCMTMS/FRE_ORDER	Yes
P231	ED-13_040103	Cancel Freight Order	Transportation Planner	Partially Manual		
P232	ED-13_040103	Update Freight Order (penalties for not used capacity)	Transportation Planner	Human Triggered	/SCMTMS/FRE_ORDER	Yes
P233	ED-13_040103	Freight settlement	Transportation Manager	Automated	/SCMTMS/TCM_SFIR	Yes
P300	ED-13_040103	Cancel picking	Warehouse Clerk	Partially Manual	/SCWM/CANCPICK	Yes
P400	ED-13_040103	Create put away warehouse task	Warehouse Clerk	Partially Manual	/SCWM/MON	Yes
P500	ED-13_040103	Confirm put away warehouse task	Warehouse Operative	Partially Manual	/SCWM/RFUI	Yes
P600	ED-13_040103	End	Warehouse Operative			

3.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Reverse Logistics	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.4 Settle transportation costs (ED-13_040201)

3.4.1 Process Description

This process covers transportation cost settlement: as the booking of the transportation process is done through a quotation, the expected amount to be invoiced is agreed in the quotation.

Freight Quotations

In case of engaging a third party freight forwarder company for handling the outbound transport, freight quotations will be taken by the Transportation Planner for the freight service required. This is currently done through the following channels:

- By logging in to the Freight Forwarder's portal and building up quote based on source and destination locations
- By emailing an RFQ to the Freight Forwarder for providing a quote for the Freight service

Consequent to the above, the freight quotations are received from carriers/freight forwarders and compared to select the best offer in terms of price and lead time. The offers vary depending on the service provider and transport mode as well (e.g. Airfreight's cost can be lower than sea freight in some cases).

Once the carrier/freight forwarder is selected and the transportation booking is placed, the transportation planner will create the freight order with the agreed / negotiated rate and ask for transportation manager's approval.

When the service is conducted and goods are picked and delivered by the carrier/freight forwarder, warehouse operative records the actual delivery time and warehouse clerk confirms the transportation service and settles the freight order, which will enable Finance to process the invoice when received.

Once service is conducted and confirmed, Finance can proceed to process the invoice when received. In case of discrepancy, procurement team will be managing the process.

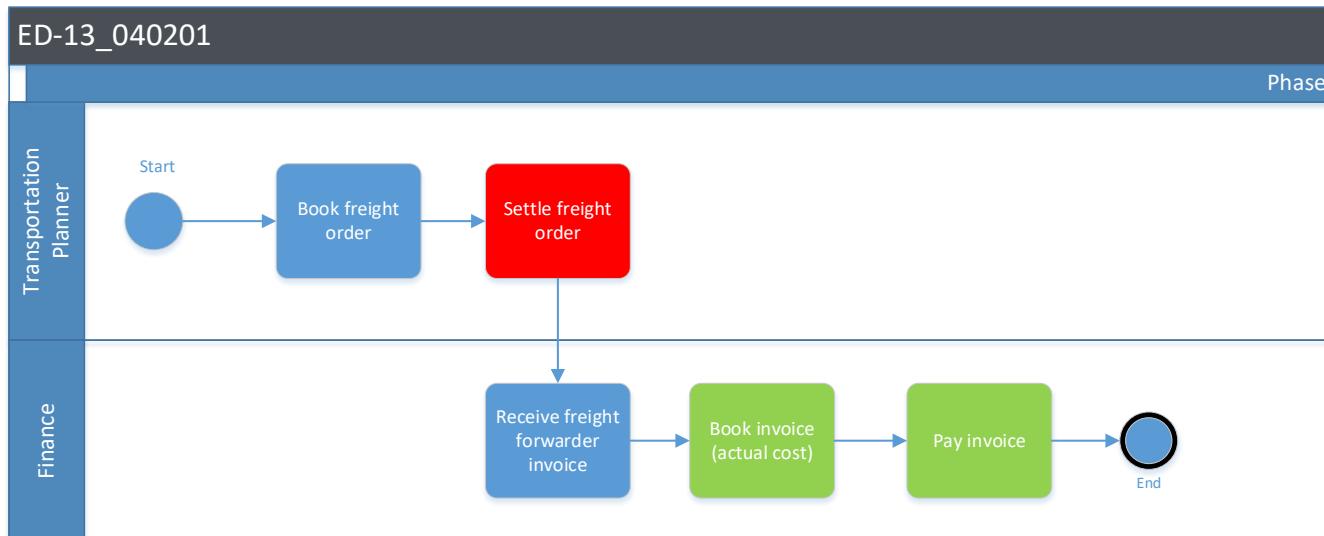
Customer Designated Fleet

In case transportation is handled by the customer, no cost will be recorded against the shipment process. However, documentation controls specified above will be followed as it is in all scenarios.

Entities' internal vehicles

In case transportation is handled by internal vehicles, no cost will be recorded.

3.4.2 Process Diagram



3.4.3 Activity List and Job Role Mapping

Process Step ID	BPH ID	Process Step Description	Owner	Automation	Fiori App	Fiori
P100	ED-13_040201	Book freight order	Transportation Planner	Partially Manual		
P200	ED-13_040201	Settle freight order	Transportation Planner	Partially Manual		Yes
P300	ED-13_040201	Receive freight forwarder invoice	Finance	Partially Manual		Yes
P400	ED-13_040201	Book invoice	Finance	Partially Manual		Yes
P500	ED-13_040201	Pay invoice	Finance	Partially Manual		Yes

3.4.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Settle Transportation Costs	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.5 Track and trace outbound deliveries (ED-13_040202)

3.5.1 Process Description

Track and trace are the features needed for logistics process, to capture status of goods that are transported. We can need 4 categories of capabilities to ensure track and trace activities:

1- Event capturing:

The following event information should be captured as they happen

- Confirmation of Freight order booking
- Picking and packing
- Shipment Pick up Schedule
- Loading Start and End
- Shipment Complete – Date & Time of completion of the physical movement from EDGE site
- Shipment End – Date & Time of completion of Shipment at Customer end
- Goods issue posting
- Departure
- Arrival at customer
- Proof of delivery

2- Real-time visibility

Track location and status of goods with real time visibility. Today entities can track the shipments using freight forwarders portal.

3- Exception management

Identify deviation from the expected delivery schedule and provide alerts and notification for potential delays or issues.

4- Reporting and analytics

Provide reports to monitor the delivery activities and visualize the features stated above.

3.5.2 Process Diagram

No process flow is required for this section, it is mainly related to reporting activities

3.5.3 Activity List and Job Role Mapping

No process flow is required for this section, it is mainly related to reporting activities

3.5.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Track and Trace Outbound Deliveries	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

4. DETAILED SOLUTION DESIGN

Final update of solution design chapter will be done after considering the results of SIT/UAT

Manage master data for contract fulfillment

Master Data	Application	Primary	Secondary
Business Partner	S/4	S/4	
Product Master	S/4, EWM	S/4, EWM	
Plants – Location	TM	TM	
Shipping Point -Location	TM	TM	
Warehouse	EWM	EWM	
Purchase Organization	S/4 & TM	S/4	TM
Purchasing Group	S/4 & TM	S/4	TM
Locations & Transshipment Location	TM	TM	
Transportation Zone	TM	TM	
Transportation Lane	TM	TM	
Transportation Resource	TM	TM	
Freight Agreements	TM	TM	
Calculation Sheets	TM	TM	
Rate Tables	TM	TM	
Scales	TM	TM	
Schedules	TM	TM	
Default Routes	TM	TM	
Packaging Specification	EMM	EWM	
Storage Bin, Staging Area, Door, Check Point	EWM	EWM	
Bin Assignment	EWM	EWM	
Print, Label Condition	EWM	EWM	
Task/Order condition	EWM	EWM	
Work Center	EWM	EWM	
Consolidation Group	EWM	EWM	

User Master (Resource, Que Assignment, Tolerance Group)	EWM	EWM	
Bin sorting	EWM	EWM	
PSA declaration	EWM	EWM	
QC set up	EWM	EWM	
Slotting	EWM	EWM	
Batch-Class and Characteristic	S4, EWM	S4	

TM Organization Structure

Figure 7: TM Structure Overview - ADASI



Figure 8: TM Structure Overview - NIMR



Figure 9: TM Structure Overview - HALCON



Figure 10: TM Structure Overview - AL TARIQ



Below mentioned master data objects would be maintained for the EDGE system:

Business partner (BP): A person, organization, group of persons, or group of organizations in which a company has a business interest. Each BP is identified with a unique business partner number (BP number). The specific data for a BP role can be created and managed once a specific role has been assigned to the BP.

Organizational management: A means for creating and managing the organizational and staffing structures in the company that uses an organizational model as its basis. Below type of organizations can be created.

- Corporate organization: This organization unit is optional and serves as a single-entry point into the organizations structure in SAP TM.
- Company organization: This organization unit corresponds to the ERP company code containing the local currency.
- Purchase organization and group

- Planning and execution organization and group

Transportation network: In this component, transportation network related data is setup in the system following are the network data elements:

- Transportation zone
- Transportation locations with transshipment locations
- Transportation zones with hierarchy
- Transportation lane
- Default Routes

These data objects provide visibility of movements between the plants, shipping points, distribution centers, hubs, ports, vendors, and customers.

Product: A tangible or intangible good that is part of the business activities of a company. It can be traded, and it contributes directly or indirectly to the value chain.

Transportation charges: Charge Management uses agreements and related master data to calculate freight costs to invoice the carriers and service providers.

High-Level TM Master Data

Master data is the core data of an enterprise that exists independently of specific business transactions and is referenced in business transactions. It builds the foundation for the smooth execution of business processes and well-informed business decisions. Master data represents business objects rather than business transactions and is rarely changed over a long period of time.

Plant, shipping point, customer master and vendor master data are used by ERP and by TM in general, However TM system have below master data of its own.

Shipping Point/BP:

Shipping Point/BP is a location which is responsible for Shipping and Receiving of goods.

Transportation Lane: The Transportation Lane is a route from Shipper to Consignee location which helps as execute transportation using different means of transport like Truck Types.

Transportation Locations:

Transportation Location is a location which is required as Shipping/Receiving/Warehousing/Hub/Ports/Sea Harbors/Border Crossing Points/Railway Stations.

Transportation Zone

It is a group of locations which helps to minimize TM master data. One Zone can have multiple locations in a geography.

Resource:

A resource is a transportation equipment like Vehicle, Containers, Trailers which is used for transportation planning.

Calendar is used as a TM resource in addition to the above resources.

Transshipment Location:

Transshipment Locations are interim locations like Ports, Railway Stations, Hubs, DCs, apart from shipping and Receiving Locations which is involved during the Transportation Process.

4.1 Manage outbound transports detailed solution Design

4.1.1 Solution prerequisites

Contract/Tendering process should be in place for awarding shipper.

4.1.2 Process predecessor and successor

Predecessor:

Outbound Delivery document

Successor:

Billing document to Customer, Packing List, Delivery Note, Freight unit, Freight order, Freight settlement document, Service purchase order, Service Entry sheet

4.1.3 Master data prerequisites

Material Master

Packaging Master Data

BP – Carrier

BP – Customer

Transportation Location

Transportation Zones

Transportation Lanes

Transportation Resources

Default Routes

Freight Agreements

Calculation Sheet

Rate Tables

4.1.4 Organizational structure requirements

Required organization elements updated in KDS file below


EDGE_KDS_EWM
V1.2.xlsx

ERP Spec. Org. Master Data	ADASI	NIMR	HALCON	AL TARIQ
Company Code	2900	3400	4300	4600
Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
SLOC	Refer to file above			
ERP WH Number	291, 292	341, 342	431	461
Supplying Plant	2901	3401	4301	4601
TM Specific Org. Master Data:	ADASI	NIMR	HALCON	AL TARIQ
TM Pur. Org	102901	103401	104301	104601
Procuring Company Code				

4.1.5 Manage outbound transports detailed solution design

EDGE entities used by a shipper that wants to manage domestic and International outbound freight. The shipper is a manufacturer and distributes products through its network. The shipper has its own fleet of transportation or third party logistics organization that is responsible for the timely, cost effective and efficient transportation of products between and from the shipper's facilities and to the end customer.

The process starts with the creation of a standard sales order. Depending on the customer and the material, various special events take place during order entry, such as customer or material pricing. As soon as the delivery is created, the Transportation Planner plans and executes the transportation and the Settlement Specialist calculates freight costs for payment.

Except ADASI rest of the P2 entities NIMR, HALCON and AL TARIQ normally communicates Carrier once the production is completed for FGs and what type of transportation vehicle requires with capacity like 5 tons, 10 tons or 15 tons to deliver to end customer.

To facilitate EDGE entities transportation, Advanced Shipping and Receiving simplifies communication between the shipper and EDGE leveraging S4 Transportation Management and Extended Warehouse Management. In Freight Unit , the packing details will automatically confirms with the actual packaging information details which eventually makes the Shipper to plan the vehicle type required to fulfil the end to end transportation.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	Fiori App	System
F0867A – Manage Outbound Deliveries	Create Outbound Delivery for the Sales Order	Fiori App	Shipping Specialist	F086A	S4/HANA
Create Freight Units	The freight units are generated from the out bound delivery	Fiori APP	Transportation Planner	/SCMTMS/FRE_UNIT	S4/HANA
Create Freight order	The freight orders are created with reference to Freight unit	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Carrier Assignment	Assign Carrier	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Execute Charge Calculation	Charges needs to generate by adding the Carrier Business partner in the freight order	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S\$ HANA
Run Outbound Process – Deliveries (F1704)	Create Picking Warehouse Task against Outbound Delivery	Fiori App	Warehouse Clerk (EWM)	/SCWM/MON	S4/HANA
Pick Warehouse Order (WO)	Resources are assigned to the Warehouse Orders. When the user login the HANDHELD device the open WO is visible in the HANDHELD device. It can be executed, physically moving the pallets from Final Bin to Packing station	HANDHELD Device	Warehouse Operative (EWM)	/SCWM/MON	S4/HANA
Create Shipping HU at Packing Work Center	Shipping HUs are finalized, and labels / content lists are printed.	HANDHELD Device	Warehouse Operative (EWM)	/SCWM/MON	S4/HANA
Carrier Communication	Communicate Packaging Details to Carrier, from the assigned deliveries in FO	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Stage Shipping HU	Resources are assigned to the Warehouse Orders. When the user login the HANDHELD device the open WO is visible in the HANDHELD device. It can be executed, physically moving the pallets from Pack station to Staging Area	HANDHELD Device	Warehouse Operative (EWM)	/SCWM/MON	S4/HANA
Outbound Quality Inspection	Perform outbound Quality Inspection	Fiori App	Quality Technician	F2180	S4/HANA
Warehouse Monitor (/SCWM/MON)	Send Loading instructions to SAP TM	Fiori App	Warehouse Clerk (EWM)	/SCWM/MON	S4/HANA
Load or Unload Freight Order (/SCMTMS/ASR ())	Load Freight Order	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA

Load or Unload Freight Order (/SCMTMS/ASR ())	Post Goods Issue against Outbound Delivery	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Create Freight settlement Document	Freight settlement document needs to be created with reference to Freight order	Fiori APP	Transportation Manager (TM)	/SCMTMS/TCM_SFIR	S4/HANA
Create Service Purchase order and Service Entry sheet	Generate the Service purchase order and Service Entry sheet	Fiori APP	Transportation Manager (TM)	/SCMTMS/TCM_SFIR	S4/HANA

4.2 Deliver dangerous goods detailed solution design

All P2 entities, ADASI, NIMR, HALCON and AL TARIQ doesn't deal with dangerous goods in outbound Process. To fill explosives to the weapons for HALCON and AL TARIQ normally go to a different entity (Not in P2 scope). Once explosives filled in the weapons, the filled weapons used to go to the final warehouse Zone 1 directly from the filler entity. As of now it is not tracked in the system and from Zone 1 to dispatch to customer is a standard Outbound Process in system.

The UAE customers arrange their transportation to carry the Finished Goods to their location and respective EDEG entities may not be involved in the transportation.

4.2.1 Solution prerequisites

Contract/Tendering process should be in place for choosing carrier for transportation
The manual tendering steps will be used for carrier selection.

4.2.2 Process predecessor and successor

Predecessor:

Outbound Delivery document

Successor:

Billing document to Customer, Packing List, Delivery Note, Freight unit, Freight order , Freight settlement document, Service purchase order, Service Entry sheet

4.2.3 Master data prerequisites

Material Master

Packaging Master Data

BP – Carrier

BP – Customer

Transportation Location

Transportation Zones

Transportation Lanes

Transportation Resources

Default Routes

Freight Agreements

Calculation Sheet

Rate Tables

4.2.4 Organizational structure requirements

	ADASI	NIMR	HALCON	AL TARIQ
Shipping Point	2901	3401	4301	4601
Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
Transportation Lane	2901	3401	4301	4601
Transportation Zone				
Location				
Resource				
TM Purchase Org	102901	103401	104301	104601

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4.2.5 Detail Dangerous goods

Outbound delivery is created from sales order with dangerous goods and then freight units are generated. Based on freight unit user must planning the transport to deliver the goods to the end customer. And then freight order get create and then assign the carrier. And then pgi will be create from freight order.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	Fiori App	System
F0867A – Manage Outbound Deliveries	Create Outbound Delivery for the Sales Order With dangerous goods	Fiori App	Shipping Specialist		S4/HANA
Create Freight Units	The freight units are generated from the out bound delivery	Fiori APP	Transportation Planner	/SCMTMS/FRE_UNIT	S4/HANA
Create Freight order	The freight orders are created with reference to Freight unit	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Communicate Freight Details to Carrier with Dangerous Goods	Communicate Freight Details to Carrier with Dangerous Goods	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Execute Charge Calculation	Charges needs to generate by adding the Carrier Business partner in the freight order	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4 HANA
Print Transportation label	Print Transportation label	Fiori App	Transportation Planner	/SCMTMS/FRE_ORDER	S4 HANA
Run Outbound Process – Deliveries (F1704)	Create Picking Warehouse Task against Outbound Delivery	Fiori App	Warehouse Clerk (EWM)	/SCWM/MON	S4/HANA
Pick Warehouse Order (WO)	Resources are assigned to the Warehouse Orders. When the user login the HANDHELD device the open WO is visible in the HANDHELD device. It can be executed, physically moving the pallets from Final Bin to Packing station	HANDHELD Device	Warehouse Operative (EWM)	/SCWM/MON	S4/HANA
Create Shipping HU at Packing Work Centre	Shipping HUs are finalized, and labels / content lists are printed.	HANDHELD Device	Warehouse Operative (EWM)	/SCWM/MON	S4/HANA
Stage Shipping HU	Resources are assigned to the Warehouse Orders. When the user login the HANDHELD device the open WO is visible in the HANDHELD device. It can be executed, physically moving	HANDHELD Device	Warehouse Operative (EWM)	/SCWM/MON	S4/HANA

	the pallets from Pack station to Staging Area				
Outbound Quality Inspection	Perform outbound Quality Inspection	Fiori App	Quality Technician	F2180	S4/HANA
Warehouse Monitor (/SCWM/MON)	Send Loading instructions to SAP TM	Fiori App	Warehouse Clerk (EWM)	/SCWM/MON	S4/HANA
Create Freight settlement Document	Freight settlement document needs to be created with reference to Freight order	Fiori APP	Settlement Clerk (TM)	/SCMTMS/TCM_SFIR	S4/HANA
Create Service Purchase order and Service Entry sheet	Generate the Service purchase order and Service Entry sheet	Fiori APP	Settlement Clerk (TM)	/SCMTMS/TCM_SFIR	S4/HANA

4.3 Settle transportation costs; Solution steps and elements (Level 5-6)

4.3.1 Solution prerequisites

Freight Agreement with Carrier and the required configuration to settle cost to a Cost Centre with G/L accounts. Process is covering all tasks regarding the calculation and verification of freight costs and settlement. After assigning the freight to a carrier calculation gets done and freight settlement document is created. Based on that the service gets purchased. Changes in freight order must be changed manually while creating a new freight settlement document is automated. Process closes with invoice verification.

4.3.2 Process predecessor and successor

Predecessor:

Freight order and freight settlement document

Successor:

Service purchase order, Service Entry sheet

4.3.3 Master data prerequisites

Below is the list of Master data required

Material Master

Packaging Master Data

BP – Carrier

BP – Customer

Transportation Location

Transportation Zones

Transportation Lanes

Transportation Resources

Default Routes

Freight Agreements

Calculation Sheet
Rate Tables

4.3.4 Organizational structure requirements

ERP Spec. Org. Master Data	ADASI	NIMR	HALCON	AL TARIQ
Company Code	2900	3400	4300	4600
Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
SLOC	2911, 2921	3411, 3421, 3423	4101	4613
TM Pur. Org		103401	104301	104601
Procuring Company Code				

4.3.5 Detail settlement

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Freight Order/Booking	Assign Carrier to Freight Order/Booking	Fiori APP	Transportation Planner	S4/HANA
Freight Order/Booking	Calculate Freight Charges with cost distribution	Fiori APP	Transportation Planner	S4/HANA
Freight Order/ Booking	Create Freight Settlement Document	Fiori APP	Transportation Planner	S4/HANA
Freight settlement document	Post Freight Settlement Document with freight cost distribution	Fiori App	Transportation Manager	S4/HANA
Freight settlement document	Service Purchase order and service entry sheet are generated automatically from Freight settlement document	Fiori APP	Transportation Manager	S4/HANA
Create Dispute Document for Freight Settlement	Create Dispute Document for Freight Settlement	Fiori APP	Transportation Manager	S4/HANA
Add New Charge/Update Existing Charge in FO	Add New Charge/Update Existing Charge in FO	Fiori APP	Transportation Manager	S4/HANA
Cancel Existing FSD	Cancel Existing FSD	Fiori APP	Transportation Manager	S4/HANA

Automatic cancellation of SPO, SES and SMD	Automatic cancellation of SPO, SES and SMD	Fiori APP	Transportation Manager	S4/HANA
Create and Post new FSD with all charges	Create and Post new FSD with all charges	Fiori APP	Transportation Manager	S4/HANA
Automatic creation of SPO, SES and SMD	Automatic creation of SPO, SES and SMD	Fiori APP	Transportation Manager	S4/HANA
Invoice Verification	Invoice Verification	Fiori APP	Transportation Manager	S4/HANA

4.4 Track and trace outbound deliveries detailed solution design

Track and Trace of Outbound Deliveries would trigger in case of Shipper is updating the Delivery information through Event Management. Currently P2 entities of EDGE, have limited Carrier who are extensively use and have daily thousand of Orders to fulfill. Deliveries is very limited since EDGE is executing all the Orders based on Project. Majority of EDGE's production is based on MTO which is having high lead time for delivery and Customers are unique.

4.4.1 Solution prerequisites

Track and trace are a feature of the logistics process, which captures status of the goods to be transported. After the outbound delivery is created in the system, it is distributed to TM and EWM system, which captures the execution activities as required.

TM system allows the following events to be posted:

- Loading Start
- Loading End
- Departure (after the PGI)
- Arrival
- Unloading Start
- Unloading End

Transporter checks in the plant and when the loading starts at the docking station, then loading start and end events can be posted in the FO/ FB.

4.4.2 Process predecessor and successor

Predecessor:

Freight order

Successor:

Billing document to Customer, Packing List, Delivery Note, Freight unit, Freight order, Freight settlement document, Service purchase order, Service Entry sheet

4.4.3 Master data prerequisites

NA

4.4.4 Organizational structure requirements

NA

4.4.4 Track and trace outbound deliveries

Track and trace are a feature of the logistics process, which captures status of the goods to be transported. After the outbound delivery is created in the system, it is distributed to TM and EWM system, which captures the execution activities as required.

TM system allows the following events to be posted:

- Loading Start
- Loading End
- Departure (after the PGI)
- Arrival
- Unloading Start
- Unloading End

Transporter checks in the plant and when the loading starts at the docking station, then loading start and end events can be posted in the FO/ FB.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	Fiori App	System
Assign carrier to Freight Order/Booking	Assign carrier to Freight Order/Booking	Manual	Transportation Planner	/SCMTMS/FRE_ORDER	S4/HANA
Outbound Delivery activity status (Picking/Packing)	Outbound Delivery activity status (Picking/Packing)	Automated	Logistics Specialist	VL03N	S4/HANA
Post Goods Issue in EWM	Post Goods Issue in EWM	Automated	Warehouse Clerk	/SCWM/MON	S4/HANA

4.5 Manage reverse logistics detailed solution design

4.5.1 Solution prerequisites

Reverse Logistics is used when Customer returned any reusable packaging material which can be reused again. All EDGE entities are not using any packaging material which comes back for reuse. Except HALCON, none of the entities used HU Management as part of their day-to-day operation.

HALCON sells weapons to the end customer with special packaging material but none of the packaging material comes back for reuse.

The above requirement can be handled through ARM (Advanced Returns Management) when for Components. For Packaging Material we may not used ARM process looking into the value of the shipment and if the customer is a Global Customer than this ARM solution is a feasible solution to adopt.

4.5.1 Process Predecessor and Successor

- Predecessor
- ASN and Inbound Delivery
- Successor

Material Document, Inspection Lot, Warehouse Task, Warehouse Order

NA

4.5.2 Master data prerequisites

NA

Please, describe the master data requirements.

Material Master

Product Master having PACI (Put away Control Indicator)

Serial Number Profile

Batch Master

Packaging Material Master Data

Supplier Master

4.5.3 Organizational structure requirements

ERP Spec. Org. Master Data	ADASI	NIMR	HALCON	AL TARIQ
Company Code	2900	3400	4300	4600
Pur. Org	2901	3401	4301	4601
Plant	2901	3401	4301	4601
SLOC	2911, 2921	3411, 3421, 3423	4101	4613
ERP WH Number	291, 292	341, 342	431	461
Receiving Plant	2901	3401	4301	4601

WM Specific Org. Master Data:	ADASI	NIMR	HALCON	AL TARIQ
Supply Chain Unit				
EWM Warehouse Number				

4.5.4 Detailed solution design

In real world there is always a deviation in process during receipt from Supplier and management of handling of components in warehouse by the warehouse Clerk, Manager or Picker. There is a high chance of mismatch with the actual documents, quantity or damage of package while receiving from external vendor. To handle all possible exceptions during receipt of goods from supplier and within the warehouse, there processes can be handled by best practice solutions or sometimes through modifications to system to handle the deviations. One of the such process is Reversal of Goods Receipt.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
F0842A	Create Return Sales Order	Desktop/ Tablet	Sales	S4/HANA
F1996	Create Return Delivery	Desktop/ Tablet	Receiving Specialist	S4/HANA
/SCMTMS/FRE_UNIT	The freight units are generated from the out bound delivery	Desktop/ Tablet	Transportation Planner	S4/HANA
/SCMTMS/FRE_ORDER	Create Freight order The freight orders are created with reference to Freight unit	Desktop/ Tablet	Transportation Planner	S4/HANA
/SCMTMS/FRE_ORDER	Charges needs to generated by adding the Carrier Business partner in the freight order	Desktop/ Tablet	Transportation Planner	S4/HANA
/SCWM/RFUI	Create Picking Warehouse Task	HANDHELD Gun	Warehouse Operative	S4/HANA
/SCWM/RFUI	Confirm Warehouse Order	HANDHELD Gun	Warehouse Operative	S4/HANA
	Return Delivery Form - Automatic			Zebra Printer
/SCMTMS/FRE_ORDER	Load Freight Order	Desktop/ Tablet	Transportation Planner	S4/HANA

/SCWM/RFUI	Post Goods Receipt against Outbound Delivery	HANDHELD Gun	Warehouse Operative	S4/HANA
/SCMTMS/TCM_SFIR	Freight settlement document needs to be created with reference to Freight order	Desktop/ Tablet	Transportation Manager	S4/HANA
/SCMTMS/TCM_SFIR	Generate the Service purchase order and Service Entry sheet	Desktop/ Tablet	Transportation Manager	S4/HANA

4.6 Associated Fiori Apps

Fiori App Name	App Description	App Type	Device Type
Create Deliveries - Batch Report	SAP GUI	Create Deliveries - Batch Report	Desktop, Tablet
Outbound Delivery (S/4HANA)	Fact sheet	Outbound Deliveries for Shipping Specialist	Desktop, Smartphone, Tablet
Outbound Deliveries	Transactional	Outbound Deliveries	Desktop, Tablet
Manage Outbound Deliveries	Transactional	Manage Outbound Deliveries	Desktop, Smartphone, Tablet
Pick Outbound Delivery	Transactional	Pick Outbound Delivery	Desktop, Tablet
Create Outbound Deliveries	Transactional	Create Outbound Deliveries	Desktop, Tablet
Create Outbound Deliveries - From Sales Orders	Transactional	Create Outbound Deliveries - From Sales Orders	Desktop, Smartphone, Tablet
Analyze Outbound Delivery Logs	Transactional	Analyze Outbound Delivery Logs	Desktop, Tablet
Analyze Delivery Logs	Transactional	Analyze Delivery Logs	Desktop, Smartphone, Tablet
Schedule Delivery Creation	Transactional	Schedule Delivery Creation	Desktop, Tablet
Schedule Goods Issue for Deliveries	Transactional	Schedule Goods Issue for Deliveries	Desktop, Tablet
Transportation Costs	Analytical	Cost Analysis - Overview Page, Transportation Costs - Overview Page	Desktop, Smartphone, Tablet
Freight Order Execution	Analytical	Freight Order Execution Monitoring - Overview Page	Desktop, Smartphone, Tablet
Freight Order: Quantity driven operational Business	Analytical	Freight Order Quantity Analysis - Overview Page	Desktop, Smartphone, Tablet
Freight Order Execution - ALP	Analytical	Freight Order Execution - ALP for Transportation Manager	Desktop, Tablet
Freight Order Execution Status - ALP	Analytical	Freight Order Execution Status - ALP	Desktop, Tablet
Freight Order Quantities - ALP	Analytical	Freight Order Quantities - ALP	Desktop, Tablet
Transportation Costs - ALP	Analytical	Transportation Costs - ALP for Transportation Manager	Desktop, Tablet

Transportation Invoice Blocked - ALP	Analytical	Transportation Invoice Blocked - ALP	Desktop, Tablet
Analyze Delivery Performance - Shipped as Planned	Analytical	Analyze Delivery Performance - Shipped as Planned	Desktop, Tablet
Create Delivery with Reference to Sales Order	Transactional	Create Delivery with Reference to Sales Order	Desktop, Smartphone, Tablet
Explain Scheduling Results	Transactional	Explain Scheduling Results	Desktop, Smartphone, Tablet
Create Delivery without a Reference (Quick Create)	Transactional	Create Delivery without a Reference (Quick Create)	Desktop, Smartphone, Tablet
Export Master Data	Transactional	Export Data for master data specialist	Desktop, Tablet
Create Freight Unit	Transactional	Freight Unit Creation	Desktop
Create Freight Order	Transactional	Freight Order Creation	Desktop
Edit Freight Unit	Transactional	Freight Unit Editing	Desktop
Edit Freight Order	Transactional	Freight Order Editing	Desktop
Display Freight Unit	Transactional	Freight Unit Display	Desktop
Display Freight Order	Transactional	Freight Order Display	Desktop
Display Freight Agreement	Transactional	Freight Agreement Display	Desktop
Edit Freight Agreement	Transactional	Freight Agreement Editing	Desktop
Create Freight Agreement	Transactional	Freight Agreement Creation	Desktop
Display Calculation Sheet	Transactional	Calculation Sheet Display	Desktop
Edit Calculation Sheet	Transactional	Calculation Sheet Editing	Desktop
Create Calculation Sheet	Transactional	Calculation Sheet Creation	Desktop
Display Rate Table	Transactional	Rate Table Display	Desktop
Edit Rate Table	Transactional	Rate Table Editing	Desktop
Create Rate Table	Transactional	Rate Table Creation	Desktop
Display Default Route	Transactional	Default Route Display	Desktop
Edit Default Route	Transactional	Default Route Editing	Desktop
Create Default Route	Transactional	Default Route Creation	Desktop
Display Schedule	Transactional	Schedule Display	Desktop
Edit Schedule	Transactional	Schedule Editing	Desktop
Create Schedule	Transactional	Schedule Creation	Desktop
Display Freight Settlement Document	Transactional	Freight Settlement Document Display	Desktop
Edit Freight Settlement Document	Transactional	Freight Settlement Document Editing	Desktop
Create Freight Settlement Document	Transactional	Freight Settlement Document Creation	Desktop

4.7 Reporting Overview

This section will brief about the SAP standard reports which can be leveraged by EDGE entities for its analysis and others decision areas. The main objective to integrate reports in SAP Fiori is to improve the user experience and work seamlessly across devices like smart phone, tablet, and desktop

- **Planned Vs Actual Shipments:** This app can be used as a report to monitor the shipments based on the actual and planned shipments based on date/time, mode of transport, mode of transport Vs carrier, location of discharge and take key business decisions accordingly.
- **Analyze Outbound Delivery Logs:** This Fiori app will help report outbound deliveries which could not be created during the collective run. It will also provide the flexibility to rerun the process and create the delivery again for failed sales orders. The message generated will be a kind of report about issue related to a single item or whole delivery/order.
- **Average Delay Time:** This app can be used to display the key indicator about the average deliveries that arrived with a delayed POD (proof of delivery).
- **Average Vehicle Resource Utilization:** This app helps to report the average utilization of vehicle resources by the transportation orders created to date in the current year for the EDGE entities.
- **Dangerous Goods:** This app can be used to report the percentage of transportation orders created with dangerous good.
- **Delayed Freight Orders in Transit:** This can be used to report the FO's which have delayed status or have an overdue POD (proof of delivery) status. It also gives a clear picture of FO's which are in transit.
- **Transportation Orders with Discrepancies:** This can be used to collate orders that have discrepancies within the current fiscal year.
- **Transported Volume:** Can be used to check the total transported quantity within a year.
- **Transportation Cost:** The analytical app displays the Key Performance Indicator (KPI) Transportation Cost, to view the cost for transportation for the year to date. As the system contains invoices for different countries in different currencies, currency (and exchange rate) can be chosen to use to display the cost figure.
- **Average Vehicle Resource Utilization –** To view the average percentage utilization of the vehicle resources by the transportation orders created to date in the current year

- **Adjust Operational Supplier Evaluation Score** - With this app, the operational supplier evaluation score can be adjusted for a supplier. The operational score can be updated by modifying the individual scores that contribute to the operational score. These include the quantity, time, price, and quality scores on the purchase-order item level for a given supplier.
- **Purchasing Spend** - With the Purchasing Spend app, the spend for a given set of comparison filters to the total spend can be compared. Filters include supplier, material group, purchasing group, supplier country, and purchasing organization. This app can be used to compare the purchasing spend between the total spend of a data set with a sub-set of that data set by using the comparison filters.
- **Tendering Analysis Overview Page** – This app can be used to identify and work with the carriers who perform the best. Performance of carriers can be assessed with peer-to-peer requests for quotation (freight RFQs) and with all the tendering types. The best tendering type for an individual carrier can be identified, to investigate further why a carrier that the system proposed was manually replaced with another carrier.
- **Tendering ALP** – Following analysis can be done using this application:
 - Transportation cost analysis with overview pages (OVP) and analytical list pages (ALP)
 - Freight order quantities analysis with OVP and ALP
 - Freight booking quantities analysis with OVP and ALP
 - Freight order execution analysis with OVP and ALP
 - Freight booking execution analysis with OVP and ALP
 - Tendering analysis with OVP and ALP
 - Business share analysis with OVP and ALP
 - Allocation analysis with OVP and ALP

5. ROLE DEFINITION

The content in this section will serve as input for the training and performance support team's deliverables.

5.1 Role/Skill Class Inventory

Role	Skills	Knowledge
Transportation Planner	SAP – D2S	Carrier subcontracting, freight management, print shipping documents and exchange information with carrier
Transportation Manager	SAP – D2S	Handle Freight documents, report events to track freight execution and work with Shipping & Transportation Documents
Warehouse Clerk	SAP – D2S	Create the delivery note, update the outbound delivery, posting goods issue, familiar with goods issue cancelation process
Warehouse Operative	SAP – D2S	Picking, packing, loading/unloading of the trucks, posting goods issue, executing warehouse tasks
Internal Sales Representative	SAP – OTC	Create sales order
Quality Technician	SAP – P2P	Perform Factory Acceptance test, testing routines, final quality
Buyer	SAP – S2P	Create and change purchase order
Shipping specialist	SAP – D2S	Create outbound deliveries

5.2 Security roles as per process design

Stream	Sub-Module	Master Role	Master Role Description	Transportation Manager	Transportation Planner	Warehouse Clerk	Warehouse Operative	Internal sales representative	Quality Technician	Buyer
D2S	TM	YSHM:D2STM:XX XX:FRS,YSHM:D2STM:XXX X:STLM	Transportation - Freight Settlement, Transportation - Settlement	X						
D2S	TM	YSHM:D2STM:XX XX:MASTER_DATA	Transportation - Master Data	X						
D2S	TM	YSHM:D2STM:XX XX:FRM	Transportation - Freight Order Management	X						

D2S	TM	YSHM:D 2STM:XX XX:ADM	Transportation - Application Administration	X						
D2S	TM	YSHM:D 2STM:XX XX:BC_C TRM	Transportation - Contract Management	X						
D2S	TM	YSHM:D 2STM:XX XX:MD	Transportation - Master Data		X					
D2S	TM	YSHM:D 2STM:XX XX:PLN	Transportation - Planning		X					
D2S	TM	YSHM:D 2STM:XX XX:LGIN T,YSHM: D2STM: XXXX:PL N	Transportation - Integration & Planning		X					
D2S	TM	YSHM:D 2STM:XX XX:FRM, YSHM:D 2STM:XX XX:OM	Transportation - Freight Order Management		X					
D2S	TM	YSHM:D 2STM:XX XX:FRM	Transportation - Freight Order Management		X					
D2S	TM	YSHM:D 2STM:XX XX:PRFS	Transportation - Profiles and Settings		X					
D2S	TM	YSHM:D 2STM:XX XX:FRS_ FO_Mg mt	Transportation - Freight Settle & FO Mgmt.		X					
D2S	TM	YSHM:D 2STM:XX XX:IDM_ TPL	Transportation - Planning		X					
D2S	EWM	YSHM:D 2SEWM: XXXX:OU TB_ADV NCD	EWM - Outbound Processing (Extended)			X				
D2S	EWM	YSHM:D 2SEWM: XXXX:E WM_PR ODN_SC	EWM - Production Staging and Consumption			X				

D2S	EWM	YSHM:D 2SEWM: XXXX:E WM_M ON	EWM - Monitoring			X			
D2S	EWM	YSHM:D 2SEWM: XXXX:E WM_SET _RF	EWM - HANDHELD Settings			X	X		
D2S	EWM	YSHM:D 2SEWM: XXXX:E WM_OU TB_BSC	EWM - Outbound Processing (Basic)			X			
D2S	EWM	YSHM:D 2SEWM: XXXX:W ORK_EX EC_F	EWM - Work Execution Floor (Basic)			X	X		
D2S	EWM	YSHM:D 2SEWM: XXXX:E WM_EX EC_F_AD VN	EWM - Work Execution Floor (Extended)			X			
D2S	EWM	YSHM:D 2SEWM: XXXX:E WM_SHI PRECEVE	EWM - Shipping and Receiving			X			
D2S	P2P	YSHM:PT PQM:XX: 0000:QL T_MGR	PTP-QM- Quality Manager						X
D2S	P2P	YSHM:P TPQM:X X:0000: QLT_TE CH	Quality Technician Master Role						X
S2P	Procurement	YSHM:ST PMM:XX :0000:CR E_PRC_ ORD	STP-Buyer						

O2C	OM	YSHM:D TSOM:X XXX:SO_ PROC_O P	Sales - Sales Order Processing					X		
R2R	R2R	ZSHC:RT RAR:CC: 3400:AR _ACNT	AR Accountant_NI MR							

6. PROCESS FITNESS & GAP ANALYSIS

6.1 Process Variation (legal, geographical or business-led)

A sub process variation can be led by a business / geography or could be mandated by legal regulations or compliance requirements. Some of these variations can cut across sub process/ processes and will lead into integration requirements. Further additions

6.1.1 Sub-Process Variation

There is a special process for NIMR while selling Kits to NIMR Algeria, these kits are shipped grouped and labelled as per the work station in Algeria, below a detailed description:

Kits are a grouped parts of the vehicle (for example): Engine related items are grouped together; Chassis Related items and configurations related items are grouped together and make KITS. Split of these items is done by planning team based on Engineering of BOM. 1 BOM have several KITS inside and every KIT has its own components.

Illustrative purposes only:

Main Product (Mother Item)	KITs (Child Items)	KITs components
Super vehicle		
	Chassis Parts	Trunk
		Doors
		Body structure
		Bonnet
	Engine Parts	Cylinder block
		Combustion chamber
		Crankshaft
		Pistons
		Cylinder head
	Shock and Struts	Comp 1
		Comp 2
		Comp 3
	Steering Parts	Comp 4
		Comp 5
		Comp 6

Picking: picking will be performed as per standard process defined in the section 3, warehouse task will be triggered by the outbound delivery

Packing: will be done at a kit level grouping all the components of the kit and labelling each kit with the corresponding working station in Algeria

For example:

Chassis (200+ items) packed together as KIT1

Engine (several items) packed together as KIT2

Configuration (several items) packed together as KIT3

Delivery processing:

Entity sells complete vehicles on contract, with reference to customer order/contract there can be multiple deliveries. But delivery will be formed, and goods are sent to customer location based on the availability of the Sales KITS and their components. (*One vehicle will be set of multiple Kits*). The regular outbound delivery document will be used for dispatch.

In case of partial delivery, incomplete kits can be shipped.

6.1.1.1 Business Unit Led

For Manage Outbound Logistics section, FUBR (freight unit building rule) variations:

- a. Consolidate per item
- b. Consolidate as much as possible
- c. Consolidate per request

As per the business need the Freight unit building rule can be setup, the critical quantity can be based on:

- Gross Weight
- Net weight
- Gross Volume

NIMR: There is special packaging needed in outbound that will be considered on the bill in a separate position.

NIMR: Dispatch of nested HUs for spare parts is covered in SAP standard.

6.1.1.2 Geography/Legal Entity Led

None.

6.2 GAP Register

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	WRICEF No.	Ref. to Req. id.
NIMR AL TARIQ HALCON	Shipping Instruction Form - Bill of Lading (Air/ Sea/ Road Waybill Form) in the Freight Order/ Booking in TM Bill of Lading (Air/ Sea/ Road Waybill Form) in the Freight Order/ Booking in TM	Y	H	Solution1: Development	WRICEF_D2S_ P2_18_F	ED- 13_040101
NIMR AL TARIQ HALCON	Shipping Note - Shipping Manifest Form generation. It is a detailed document presenting the locations and Carrier information with driver executing the shipment.	N	M	Solution1: Development	WRICEF_D2S_ P2_20_F	ED- 13_040101
NIMR AL TARIQ HALCON	Transportation label 1 / Copy Form in TM Freight Document, for printing dangerous goods information and loading, unloading & shipping instructions	N	H	Solution1: Development	WRICEF_D2S_ P2_21_F	ED- 13_040101
NIMR AL TARIQ HALCON	Transportation Label 2	Y	M	Solution1: Development	WRICEF_D2S_ P2_22_F	ED- 13_040101
NIMR AL TARIQ HALCON	Delivery Note	Y	M	Solution1: Development	WRICEF_D2S_ P2_19_F	ED- 13_040101
NIMR AL TARIQ HALCON	Quality Inspection Process before shipment to customer	Y	M	Solution1:Dev elopment		

6.3 Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets
NA	NA	NA	NA	NA

6.4 WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Ref # from WRICEF inventory	Assign system /
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						SAP component
WRICEF_D2S_P2_18_F	Form	Shipping Instruction Form - Bill of Lading (Air/ Sea/ Road Waybill Form) in the Freight Order/ Booking in TM Bill of Lading (Air/ Sea/ Road Waybill Form) in the Freight Order/ Booking in TM	M			
WRICEF_D2S_P2_20_F	Form	Shipping Note - Shipping Manifest Form generation. It is a detailed document presenting the locations and Carrier information with driver executing the shipment.	M			
WRICEF_D2S_P2_21_F	Form	Transportation label 1 / Copy Form in TM Freight Document, for printing dangerous goods information and loading, unloading & shipping instructions	M			
WRICEF_D2S_P2_22_F	Form	Transportation Label 2	M			
WRICEF_D2S_P2_19_F	Form	Delivery Note	M			

7. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

7.1 Integration points

Process ID (L4 process)	Type (legacy system, DT Ops, etc.)	Related technical scope	Leading stream	Business process Integration with domain	Description	In	out
ED-13_040100			D2S	S2P, R2R	Freight Costs posted from Freight Order/ Booking to create Freight Purchase Order, Entry Sheet & Management Document	Freight Settlement Document Posted	Freight PO/ Entry Sheet and Management Document
ED-13_010100			D2S	MDG	Create Packaging material	Packaging material is required to create the packaging specification which is required for packing in EWM.	
ED-13_040100			D2S	P2P, GTS	EHS Integration for Outbound process. Specific to Dangerous, Hazardous goods	Goods (Dangerous/Hazardous) picking at warehouse to be notified through EHS	
ED-13_040500			D2S	R2R	Reverse Logistic- Receive returnable Packaging/Pallet after goods delivered	If customers do not return pallets, Edge can issue debit memo requests followed by Debit Memo	

7.2 Inbound Communication

The Inbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Inbound communication includes any required emails, forms or handoffs between parties that are required to initiate the sub process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description
NA	NA	NA	NA	NA	NA

7.3 Outbound Communication

The Outbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Outbound Communication includes any emails, forms, handoffs between parties that result from the sub process. Typically, these are output results and documentation that result from the process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description
NA	NA	NA	NA	NA	NA

7.4 Other Issues

8. KUT FEEDBACK AND NEW REQUESTS (IMPLEMENTATION TO BE DECIDED ON COMPLIANCE/CUSTOMER/BUSINESS CASE/USABILITY)

Topic	Raised by NIMR	Raised by HALCON	Raised by AL TARIQ	Raised by ADASI	Possible in standard in SAP
Seal number to be recorded in the system for every closed container	x				<input checked="" type="checkbox"/>
Outbound Transport with DG declaration	x				<input type="checkbox"/>
Packing list and invoice: For each vehicle, we need to have the breakdown per chassis, engine, transmission, column numbers	x				<input type="checkbox"/>
The inspection lot needs to be related to the picking document and not the delivery (Picking -> inspection lot --> packing)	x				<input type="checkbox"/>
Creating freight units should be done by HHT	x				<input type="checkbox"/>

Process Design Document (PDD)

PACKAGE 2

DEMAND TO SUPPLY

13 LOGISTICS AND TRANSPORTATION

13.2 WAREHOUSE MANAGEMENT

TABLE OF CONTENT

Table of Content.....	2
1. Introduction	4
1.1 Change History	4
1.2 Approval Details	5
1.3 Other Related Documents.....	5
2. Business Process (Level 2)	6
2.1 To-Be Process Overview and Context	6
2.2 Master data pre-requisites.....	7
2.3 Key Value Drivers for the Business Process.....	11
2.4 Key Design Decisions	11
2.5 Standard KPI and reports	13
2.6 Warehouse Structure & Warehouse Layouts.....	14
2.7 Extreme automation	21
3. Process Design.....	22
3.1 Move materials and goods within the warehouse (ED-13_020101).....	23
3.1.1 Physical movement within the warehouse.....	24
3.1.2 Issuing Material on Demand.....	32
3.1.3 Information Change	34
3.1.4 Unpack/Split HUs	36
3.2 Material movement to production (ED-13_020102)	37
3.2.1 Staging methods	39
3.2.2 Material Movement to Production MES Locations	41
3.2.3 Material Movement to Production Non-MES Locations	43
3.3 Material movement to production - KANBAN (ED-13_020103)	46
3.3.1 Process Description.....	46
3.3.2 Process Diagram.....	48
3.3.3 Activity List & Automation	49
3.3.4 Applicability Matrix and Special Requirements	49
3.4 Goods receipt from production (ED-13_020104).....	51
3.4.1 Process Description.....	51
3.4.2 Process Diagram.....	54
3.4.3 Activity List & Automation	54
3.4.4 Applicability Matrix and Special Requirements	55
3.5 Manage explosives and dangerous goods (ED-13_020201)	55
3.5.1 Process Description.....	55
3.5.2 Process Diagram.....	56
3.5.3 Activity List & Automation	56
3.5.4 Applicability Matrix and Special Requirements	57
3.6 Raise quality issues in the warehouse (ED-13_020301).....	57
3.6.1 Process Description.....	57
3.6.2 Process Diagram.....	58
3.6.3 Activity List & Automation	60
3.6.4 Applicability Matrix and Special Requirements	60
3.7 Scrap material in the warehouse (ED-13_020302)	61
3.7.1 Process Description.....	61

3.7.2 Process Diagram.....	65
3.7.3 Activity List & Automation	66
3.7.4 Applicability Matrix and Special Requirements	69
3.8 Monitor and control warehouse activities (ED-13_020401).....	69
3.8.1 Process Description.....	69
3.8.2 Process Diagram.....	70
3.8.3 Activity List & Automation	70
3.8.4 Applicability Matrix and Special Requirements	71
3.9 Perform inventory counting (ED-13_020402).....	71
3.9.1 Process Description.....	71
3.9.2 Activity List & Automation	74
3.9.3 Process Diagram.....	75
3.9.4 Applicability Matrix and Special Requirements	75
4. Detailed Solution Design	77
4.1 Solution prerequisites	78
4.1.1 Process predecessor and successor.....	78
4.1.2 Master data prerequisites.....	79
4.1.3 Organizational structure requirements	79
4.2 Detailed solution design	79
4.2.2 Manage explosives and dangerous goods; Solution steps and elements (Level 5-6).....	82
4.2.3 Raise quality issues in the warehouse; Solution steps and elements (Level 5-6).....	82
4.2.4 Scrap material in the warehouse; Solution steps and elements (Level 5-6)	83
4.2.5 Monitor and control warehouse activities; Solution steps and elements (Level 5-6)	84
4.2.6 Perform inventory counting; Solution steps and elements (Level 5-6)	85
4.2.7 Associated Fiori Apps	86
4.2.8 Reporting Overview	88
4.3 Role/Skill Class Inventory	89
4.4 Security roles as per process design.....	89
5. Process Fitness & Gap Analysis	92
5.1 Process Variation (legal, geographical or business-led).....	92
5.1.1 Sub-Process Variation	92
5.2 GAP Register.....	92
5.3 Process Fitness	93
5.4 WRICEF Register	93
6. Integration Points.....	96
6.1 Integration points.....	96
6.2 Inbound Communication.....	97
6.3 Outbound Communication.....	97
6.4 Other Issues.....	97
7. KUT feedback and new requests (implementation to be decided on Compliance/Customer/Business Case/Usability).....	98

1. INTRODUCTION

1.1 Change History

Ver.	Date	Summary of Changes	Author
V0.1	3.08.2021	Template Creation	Dr. Christian König
V0.2	04.10.2021	First draft	Martin Posarnig
V0.3	06.10.2021	Content ACN added	Sunil Kumar
V0.4	07.10.2021	Revised draft	Martin Posarnig
V0.5	10.10.2021	Revised draft	Sunil Kumar / Martin Posarnig
V0.6	13.10.2021	Update content (master data, reporting, Fiori)	Martin Posarnig
V1.0	07.11.2021	Approval GPO	Martin Posarnig
V1.1	13.12.2021	Update content based on feedback	Sunil Kumar / Martin Posarnig
V2.0	20.12.2021	Ready for BO Approval	Martin Posarnig
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V2.2	16.03.2022	Incorporate Feedback 2.0	Sunil Kumar / Martin Posarnig
P2_v0.1	5.08.2022	Update into new PDD format	Moritz Waubke
P2_v0.2	22.09.2022	Updated business process description	Martin Posarnig
P2_v0.3	14.10.2022	Updated business process description, Activity Lists	Martin Posarnig
P2_v0.4	23.11.2022	Incorporate SI feedback	Martin Posarnig
V0.7	09.03.2023	Incorporating open points from Feedback Tracker, OPL (Deliverables list) and entity feedback	Martin Posarnig / Zakia El Houary / Azam Hussain Syed
V0.8	17.03.2023	Quality review	Dr. Piotr Rykaczewski
V0.9	29.03.2023	GPO approval (V0.8→V0.9)	
V0.9	19.06.2023	Update of the process moving goods within the warehouse: added process for HU split, replenishment process for NIMR,	Zakia El Houary / Faraz Quddusi

V0.9	19.06.2023	Update of the process movement to production: added the requirement of grouping materials as a kit, added scenario of supplier managed Kanban	Zakia El Houray / Faraz Quddusi
V0.9	19.06.2023	Update of the scrap process and perform inventory count	Zakia El Houray / Faraz Quddusi
V0.9	02.08.2023	Update of the labels and forms	Zakia El Houray
V0.9	03.08.2023	Update of the warehouse layouts	Zakia El Houray
V0.9	04.08.2023	Quality review of the updates	Dr. Piotr Rykaczewski
V0.9	21.08.2023	Consideration of SAP Review Feedback	Faraz Quddusi
V0.9	10.10.2023	Update of the structure of process design section as aligned with DT team	Zakia El Houray /Faraz Quddusi
V0.9	29.01.2024	BPH ID and Automation Category	Fatima Bonsol

1.2 Approval Details

Task	Date	Name & Position of Approver	Signature
See cover sheet			

1.3 Other Related Documents

Related Document	Comment
EDGE_KDS_EWM.xlsx	Warehouse KDS
Warehouse structure and material flow	Warehouse structure and material flow

2. BUSINESS PROCESS (LEVEL 2)

2.1 To-Be Process Overview and Context

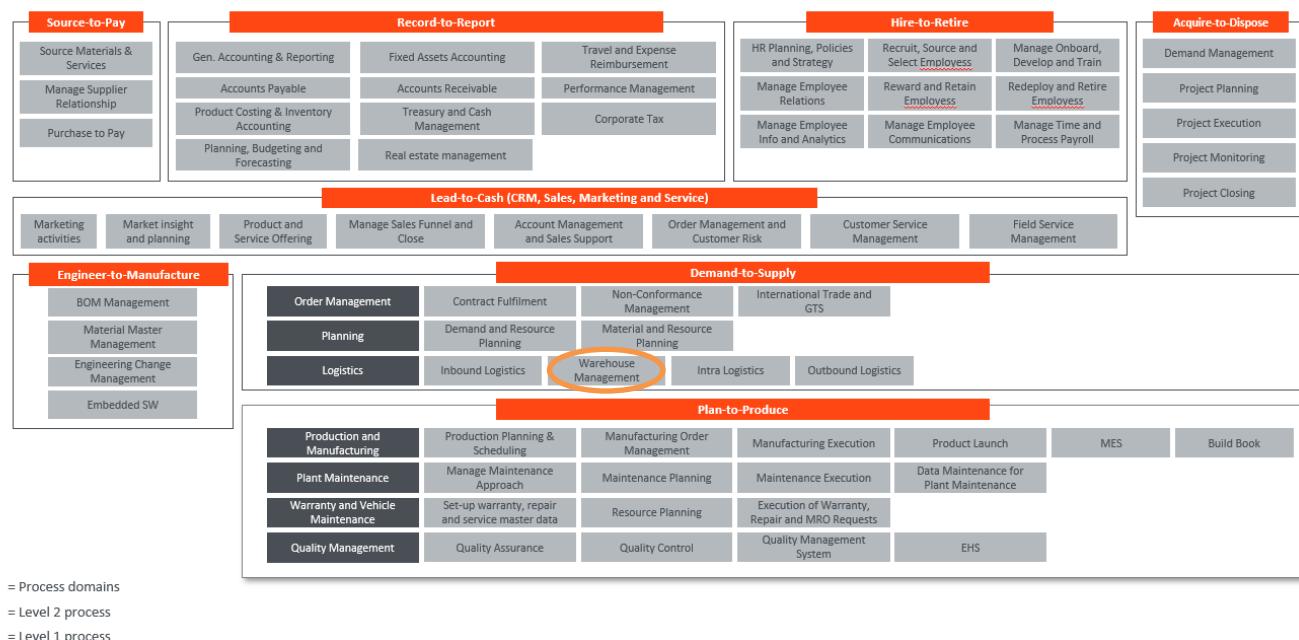
There are several touchpoints with Warehouse Management in daily operations. From a value stream perspective, the process starts after the goods receipt. After the usage decision is made warehouse tasks are created to forward material (HUs) into warehouse locations. Movements within the warehouse and withdrawal of material are covered in this PDD.

Production orders trigger the withdrawal of material from the warehouse with and without Kanban replenishment. Other processes like quality issues or scraping of material can also cause actions within the warehouse area. As maintaining a high reliability on stock levels is essential inventory counting can be regularly conducted on individual intervals. Finally, all warehouse activities can be reported via the warehouse monitor.

Orientation within the business process hierarchy:

Demand to supply → 13 Logistics and Transportation → 13.2 Warehouse management

Figure 1: EDGE Business Processes Overview



Due to EDGE specific needs the warehouse management process is broken down into the following subprocesses:

- Move materials and goods within the warehouse
- Material movement to production (with Kanban if possible)
- Goods receipt from production
- Manage explosives and dangerous goods
- Raise quality issues in the warehouse
- Scrap material in the warehouse

- Monitor and control warehouse activities
- Perform inventory counting

2.2 Master data pre-requisites

Master Data Governance

Master Data Governance (MDG) in the Logistics domain involves managing and maintaining crucial data related to logistics processes such as procurement, inventory management, and transportation on Key Master Data Objects applicable. Maintaining a unified master data creation and modification process is required that is controlled by approval of the related and designated authorities of the data domain.

The following protocols are set up for an effective MDG for Logistics:

- Centralised Creation
- Centralised Modification
- Warehouse Clerk's request update or change of EWM related fields (marked in detail per master data object)
- Warehouse Supervisor's approval before the MDM – Master Data Manager can create or change such changes centrally

Here's an overview of the scope of such master data objects, this will be continued on with the prerequisite steps for implementing MDG in the Logistics domain:

Bin management

Bin management includes bin creation, deletion and modification that should be available in the system. Below the process to create a new bin creation:

When a new bin creation is needed, the process is the following:

- Select the transaction for bin creation
- Choose the corresponding warehouse
- Specify the storage location where the bin should belong
- Specify the storage type where the bin should belong
- Provide bin details: bin number, bin type, size, weight capacity, hazard class, storage condition, and any other attributes
- Save and validate the bin creation

The authorization to create a bin should be provided to the warehouse manager.

The print of bin labels is available once a bin is created and can be reprinted whenever needed.

Resource management

Resource management includes resource creation, deletion and modification that should be available in the system. Below the process to create a new resource creation:

To create a new resource in the warehouse module, access the resource management area of the module and use the following steps:

- Select the transaction resource creation
- Choose the appropriate resource type: work centre, labour resource, tools, equipment, etc.
- Provide resource details: resource name, description, identification number, and any additional relevant attributes
- Define resource capacity if applicable
- Save and validate resource creation

The authorization to create a resource should be provided to the warehouse manager

Material Master

Material Master is a central repository for storing information about materials, products, and services and is covered in in the MDG documents. When it comes to Warehouse Management (WM) and Extended Warehouse Management (EWM), specific fields in the Material Master are crucial for managing warehouse-related processes. Here are some key fields clustered as per scope in the Material Master related to WM and EWM:

Basic Data:

- **Storage Conditions (WM):** Specifies the storage conditions required for the material in the warehouse, such as temperature or humidity settings. These must be specified for hazardous materials like chemicals in the case of EDGE entities.
- **Weight and Volume Data (WM):** Information about the weight, volume, and dimensions of the material, essential for warehouse space planning.
- **WM Group:** These groups up materials that have similar storage or handling requirements, facilitating efficient storage allocation. While this is optional but is recommended to be maintained for effective warehouse management.
- **Hazardous Material Indicator (WM):** Indicates whether the material is hazardous, requiring specific handling and storage precautions.

Logistics Data:

- **Weight Unit (WM/EWM):** Specifies the unit of measurement for weight, important for weight-based quantity calculations and space optimization.
- **Volume Unit (WM/EWM):** Specifies the unit of measurement for volume, important for space optimization.

- **Storage Bin Type (EWM):** Determines the type of storage bin in the warehouse where the material should be stored.
- **Storage Conditions (EWM):** Similar to WM, EWM also considers storage conditions to determine the suitable storage area.

Warehouse Management Data:

- **Storage Unit Management Indicator (WM/EWM):** Indicates whether storage unit management is activated for the material. This is crucial for EWM where handling units are used extensively.
- **Batch Management Indicator (WM/EWM):** Indicates whether the material is subject to batch management, which is important for tracking and tracing. It has been agreed that all materials in EDGE entities are mandatorily marked as Batch Managed as this is going to help support the Aging of Materials.
- **Storage Unit Type (EWM):** Specifies the type of handling unit or packaging material to be used for the material.
- **Handling Unit Type (EWM):** Determines the handling unit type to be used when the material is packed.
- **Putaway and Picking Strategies (WM/EWM):** Specifies the strategies to be used for put away and picking, optimizing warehouse processes.
- **Storage Section (EWM):** Assigns the material to a specific storage section within the warehouse.

Quality Management Data:

- **Quality Inspection Indicator (WM/EWM):** Indicates whether the material is subject to quality inspection upon receipt.
- **Inspection Type (WM/EWM):** Specifies the type of quality inspection to be performed on the material.

Package specification management

A packaging specification is master data. The packaging specification defines all the necessary packing levels for a product in order, for example, to put away or transport the product. For a product, a packaging specification mainly describes in which quantities you can pack the product into which packaging materials in which sequence.

PSA management

A PSA area in production or in the warehouse is an area where products are staged or withdrawn.

To stage products for a production order, a warehouse must know where it has to take the products. For production orders in the ERP system, the PSA contains this information.

A PSA usually contains one or more storage bins where you can stage the products of a production order. For this reason, the EWM system needs information about the PSAs to find out the correct storage bin for staging the products, depending on the following:

- Product number
- Party entitled to dispose
- PSA itself

Queue management

Queue management in a warehouse involves organizing and prioritizing tasks, allocating resources, and monitoring progress to ensure efficient operations. It prioritizes tasks based on urgency and allocates the appropriate resources while balancing the workload. As per the requirement of the entities, it was not required to consider the queues as the resources are not specialized and are assigned manually per availability. So, only one queue was considered to manage

Product Data Management

Product Data Management involves creating and maintaining accurate product information, including master data, serialization, packaging details, and classification. This data is integrated into the warehouse processes. Product data management ensures data governance, compliance and traceability.

Work centres

Within a warehouse, work centres are specific physical locations or areas where various tasks and activities are performed. Work centres are an essential concept in warehouse management systems and are used to optimize resource allocation, task execution, and overall warehouse operations. The work centres of the 4 entities can be shown in the warehouse structure layouts in section 2.6, this includes: receiving areas, shipping areas, quarantine areas, staging areas, etc.

Control Cycles Management

The relation between the EWM managed storage location from which the material required for production is to be withdrawn and the production supply area in which this material is to be staged; is required to be maintained and controlled in the system. Control Cycles Management helps specify this relationship. In the case of EDGE

entities, the control cycle for EWM category will be used, implying that the source and destination are both EWM managed.

When both the source and the destination of the material to be staged is defined in the control cycle, all events and movements within the warehouse are controlled and tracked by the system.

2.3 Key Value Drivers for the Business Process

The new functions of EWM (extended warehouse management) in S/4HANA provide enhanced support for all operations in the warehouse:

- All events and movements within the warehouse are tracked by the system
- Batch traceability takes place in the background and helps the operator to quickly identify raw material or components affected by quality issues
- Integrated reporting functions enable additional improvements for all warehouse processes.
- EDGE specific is the handling of dangerous goods. These are not only explosives but also chemicals (consumables) for production

2.4 Key Design Decisions

Process ID	KDD ID	Type	Description	Approved Option	Approval Date
13.2.6 Perform inventory counting	ED-13_020600	Foundation	<p>For synchronizing physical stock count with system count in S4-EWM and to post differences to S/4HANA leading practice:</p> <p>Different physical inventory procedures will be executed as per business requirement:</p> <p>Periodic, Ad-hoc, cycle count procedures mostly used for inventory counting and adjustments.</p> <p>Executing physical inventory & cycle count inventory procedure in S4-EWM.</p> <p>Periodic physical inventory</p> <p>Continuous physical inventory</p> <p>Stock reconciliation can be done at any given point of time.</p> <p>Low-stock check inventory procedure for automatic triggering of PI process.</p>	13.2.6 Perform inventory counting	ED-13_020600
13.2.5 Monitor and control warehouse activities	KDD_D2S_29	Foundation	<p>Batch Management:</p> <p>In the SAP System, the batch number uniquely identifies the batch. You use the batch level to specify whether the batch number for a material is unique in one plant, or in all plants.</p> <p>Batch is maintained at plant & material level and activated the same. Automatic determined batch at sales document level</p> <p>Batch based on the reporting requirements for</p>	13.2.5 Monitor and control warehouse activities	KDD_D2S_29

			<p>the traceability of a product. It allows accurate traceability reporting in SAP Global Batch Traceability (SAP GBT).</p> <p>Batch management is used to track lot for example, goods receipt, goods issue, and physical inventory etc. Standard automation is available for generating batch numbering on goods receipt from production orders and Goods receipt from external procurement.</p>		
13.2.4 Scrap material in the warehouse	KDD_D2S_155	Solution	<p>Goods stored in any of the storage types in warehouse can be scrapped. Scrapping process can be initiated based on expired shelf life of a stock item, or it can be triggered by discovering damaged goods in the warehouse in daily work. When stock is moved to scrapping zone, a workflow need to be triggered to finance for approval.</p>	13.2.4 Scrap material in the warehouse	KDD_D2S_155
13.2.5 Monitor and control warehouse activities	KDD_D2S_154	Solution	<p>Warehouse forms and label prints:</p> <p>Automatically warehouse forms and labels can be printed as per the corresponding warehouse activity. Below are list of forms/labels planned to be developed,</p> <ul style="list-style-type: none"> • Pick list for outbound delivery • Physical inventory count slip • Pick list for production staging • Scrap slip • Handling unit label 	13.2.5 Monitor and control warehouse activities	KDD_D2S_154
13.2.5 Monitor and control warehouse activities	KDD_D2S_153	Foundation	<p>Mobile device will manage very frequent warehouse activities using SAP standard RF framework. To enable RF framework, needs an integration (ITS Mobile) to connect Handheld devices with S4/EWM</p>	13.2.5 Monitor and control warehouse activities	KDD_D2S_153
13.2.1 Move materials and goods within and from the warehouse	KDD_D2S_156	Solution	<p>For single order replenishment, system can propose the requested quantity from PMR instead of EWM control cycle quantity with a low complexity enhancement. So that exact quantities requested from production will be staged in Production supply area and no extra efforts required to clear PSA</p>	13.2.1 Move materials and goods within and from the warehouse	KDD_D2S_156
13.2.1 Move materials and goods within and from the warehouse	KDD_D2S_P2_05	Solution	<p>Project Specific Stock selection during Cross Order Staging – Low complexity enhancement</p>		

2.5 Standard KPI and reports

According to the EDGE KPI handbook following KPIs should be recorded and visualized:

- **Inventory turn rate**

Calculation: material expenses / inventory value * 100 = x%

The metric Inventory Turn Rate is the relation between the used material for that timeframe and the absolute stock value for the entity. All material should be considered that was consumed in production and sold to the customer.

- **Materials consumed in production**

The material expenses consider all material that consumed in production and sold to the customer. It measures the material consumption of that timespan.

- **Value of inventory**

The inventory value covers all materials, semifinished and finished goods needed for production. Spare parts for machines and equipment are not included in the inventory value

In addition to these following KPIs can be considered:

- **Warehouse utilization**

Calculation: used warehouse capacity / available warehouse capacity *100 = X%

Utilization rates will be depending on the WH strategy (fixed vs. chaotic). To monitor the utilization on the long term can help to indicate when it will be necessary to enlarge or reduce the warehouse.

- **Slow-mover evaluation**

If warehouse utilization goes up it can be useful to make this report. Obsolete material might block valuable space in the warehouse.

- **Number of pallets moved / time**

The number of pallets equivalent moved in a certain time can support the planning of operators. If the utilization is different between shifts, a shift related report could give best solution foundation.

- **Inventory accuracy**

Based on inventory counting an inventory accuracy KPI can be derived. System can create a deviation report after inventory counting. The deviation report compared to the inventory level shows the inventory accuracy.

- **ABC indicator**

A stock categorization indicator will be set at the material master level through a standardized periodic system report. The basis of the classification will be QUANTITY MOVED following the set criteria:

- A Indicator – 80%
- B Indicator – 15%
- C indicator – 5%

The above % are recommended, however, entities may change these percentages as per their requirement at the time of executing ABC reports.

The Warehouse Manager takes a monitoring role over the above KPIs and Reports.

Role	Skills	Knowledge
Warehouse Manager	SAP-D2S	Warehouse monitoring reports

2.6 Warehouse Structure & Warehouse Layouts

The following warehouse structure presents the organisational structural mapping of the following entities:

- ADASI
 - o AL AIN Main Location
 - o AL AIN Polytech Location
 - o AL AIN MIDEX Facility
 - o AL DHAFRA
- AL TARIQ
 - o Main Location in Tawazun Industrial Park (TIP)
- Halcon
 - o Main warehouse
 - o C&H
 - o PCB
- NIMR
 - o TIP
 - o Al Ain

Figure 1 – Warehouse and Organisational Structure Mapping of ADASI

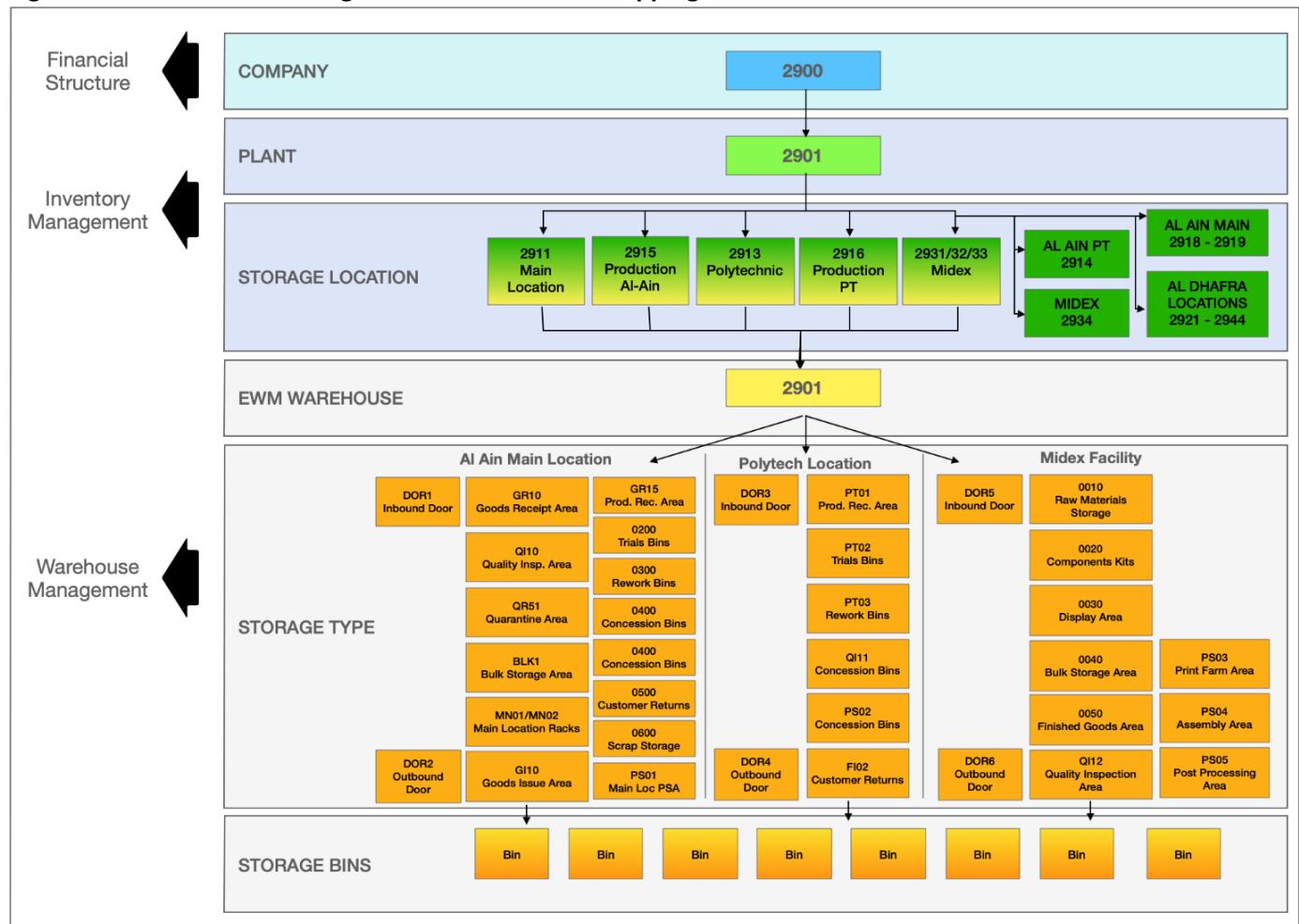


Figure 2 – Warehouse Layout – Main Warehouse ADASI

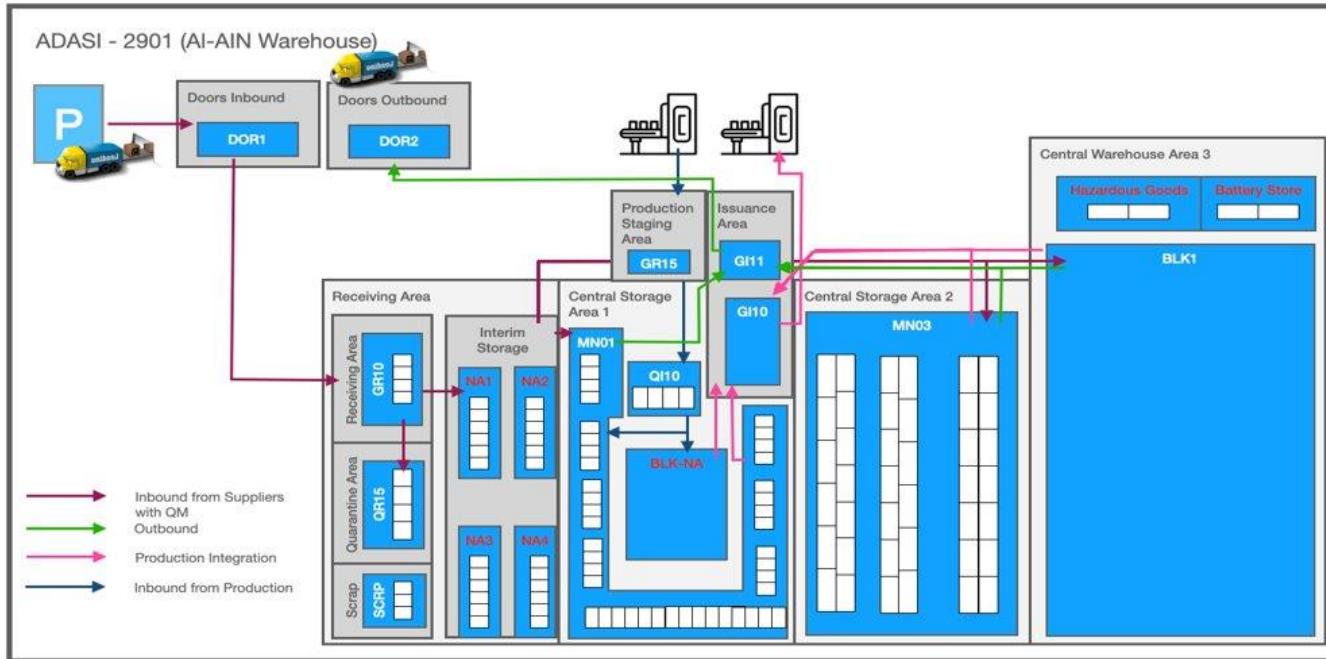


Figure 3 – Warehouse Layout – Polytech ADASI

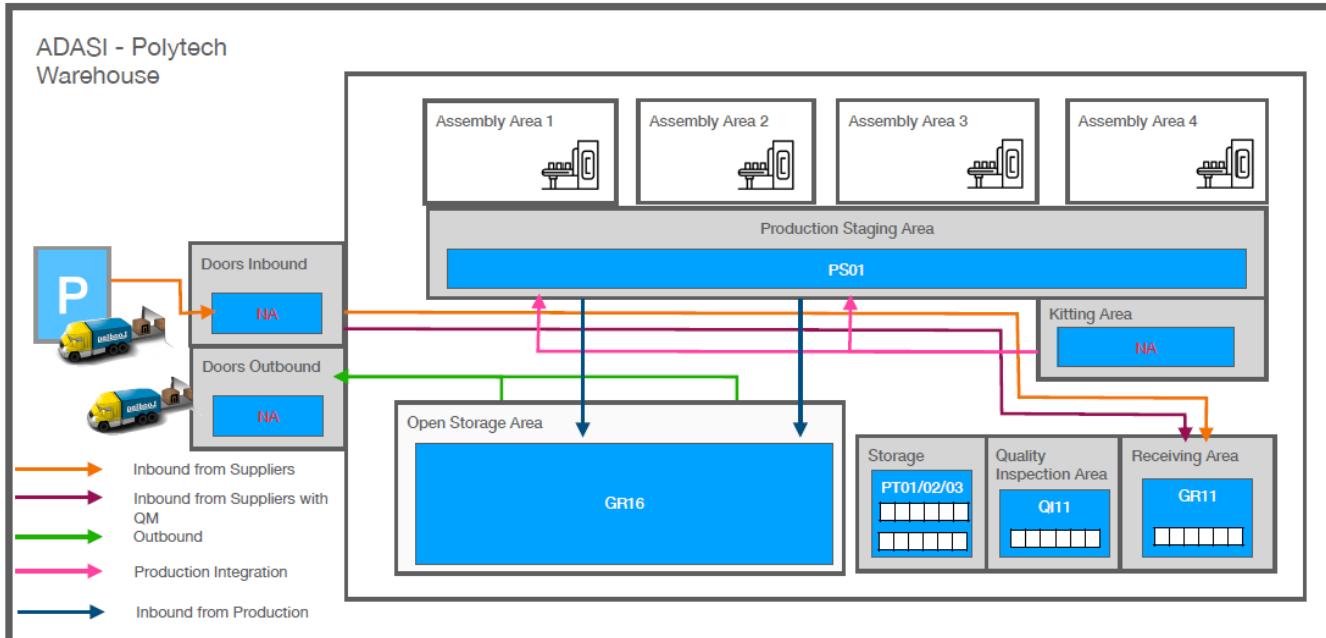


Figure 4: Warehouse Layout – Midex Facility ADASI

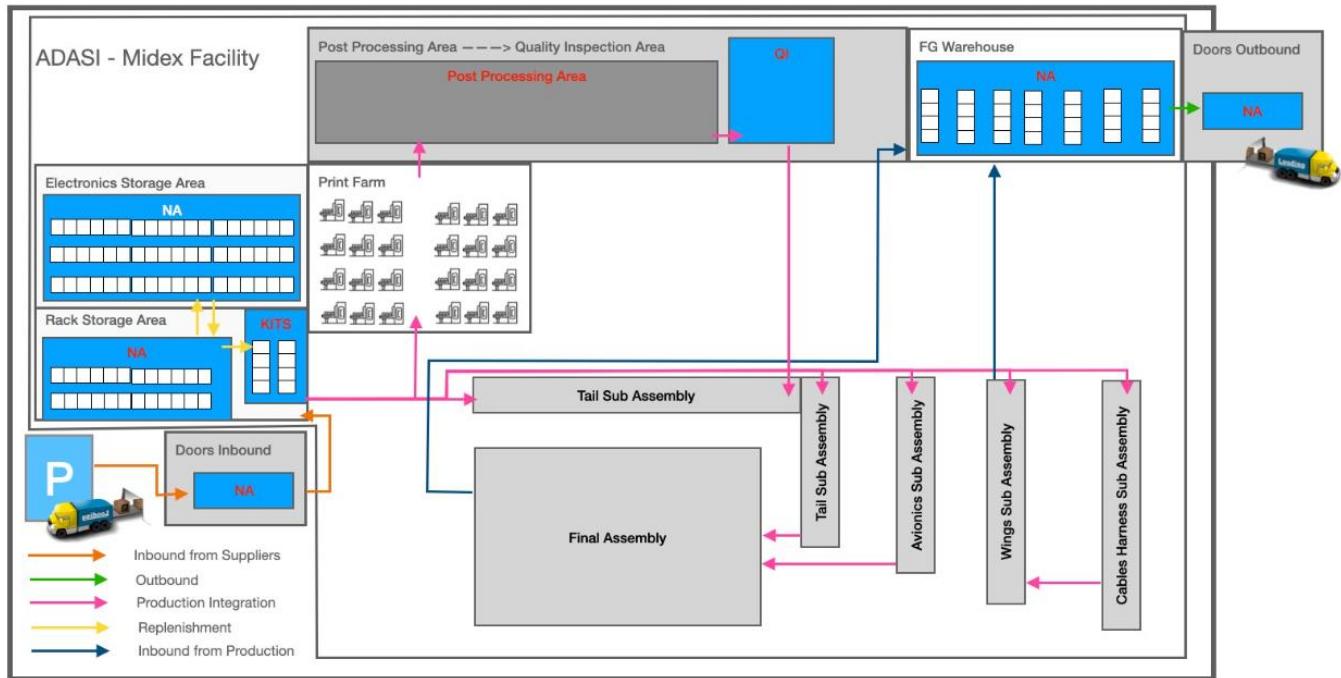


Figure 5 – Warehouse and Organisational Structure Mapping of Al Tariq

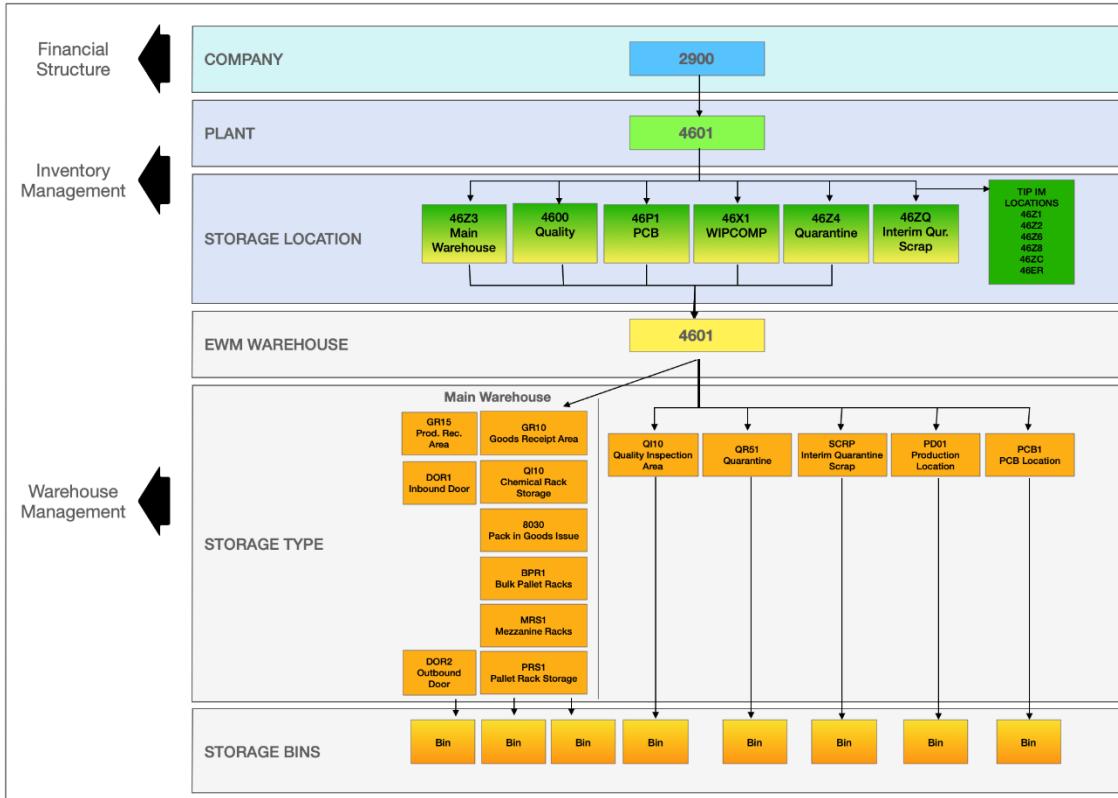


Figure 6: Warehouse Layout – Al Tariq

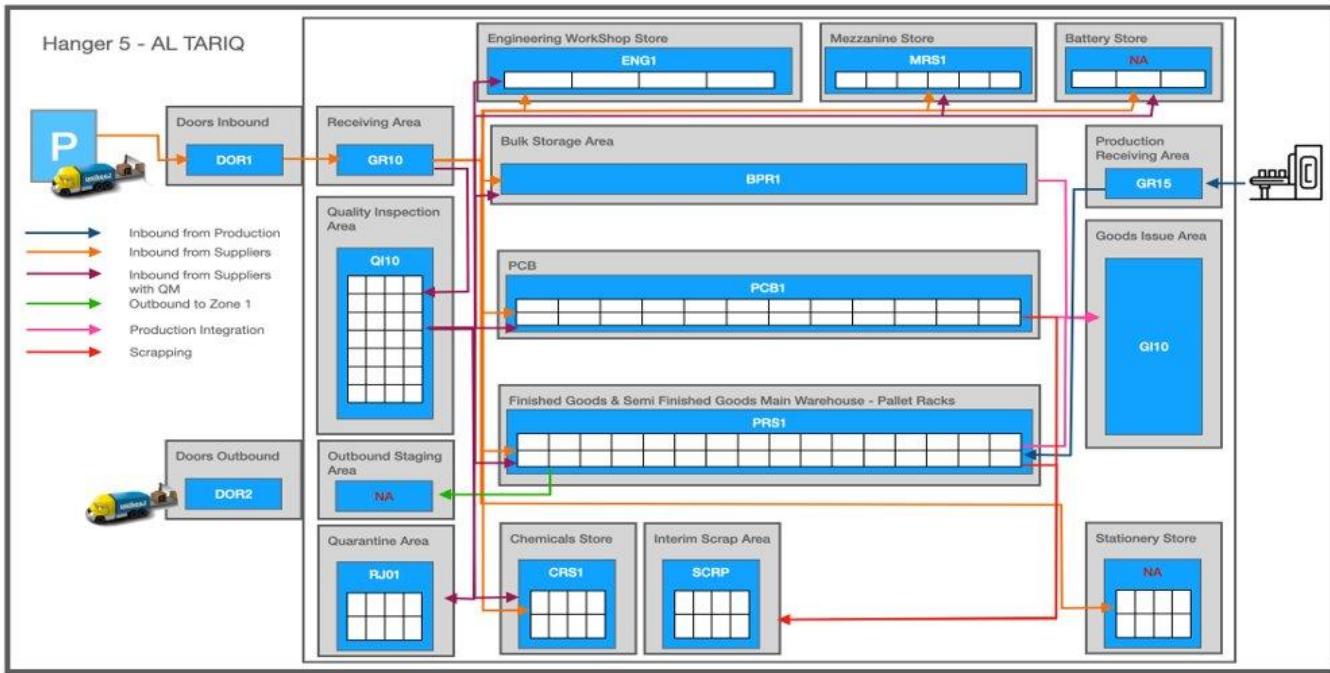


Figure 7: Warehouse and Organisational Structure Mapping of NIMR (Will be added once the respective KDS is approved)

Figure 8: Warehouse Layout – NIMR-TIP

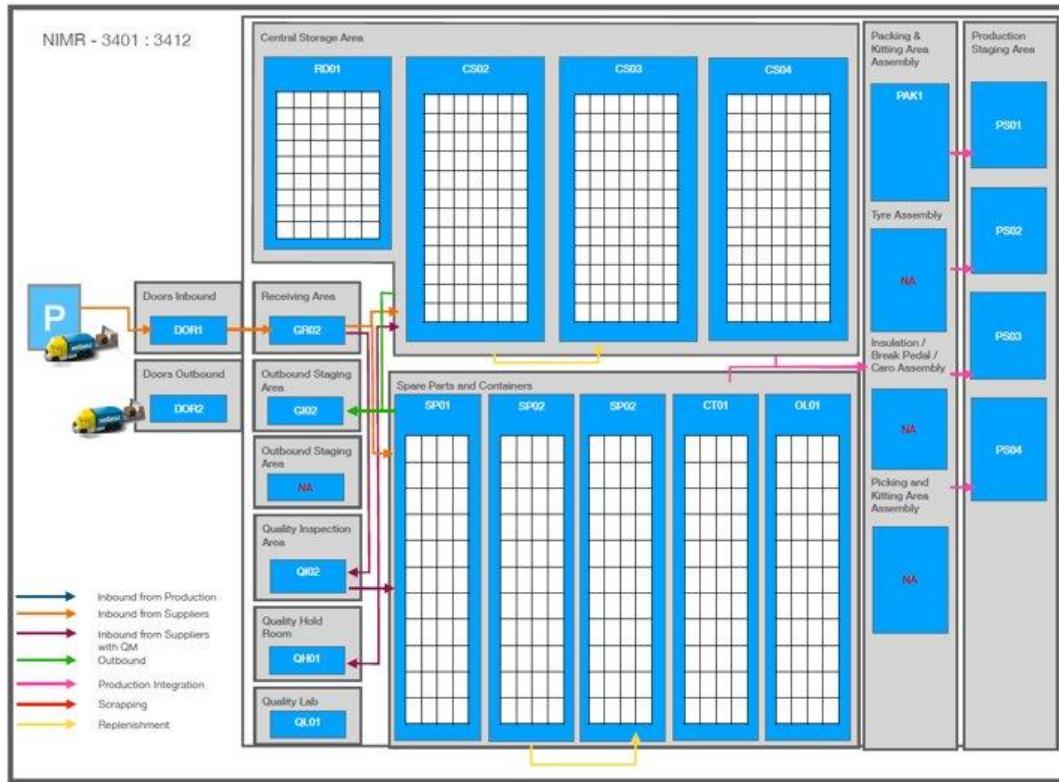


Figure 8: Warehouse Layout – NIMR Al Ain

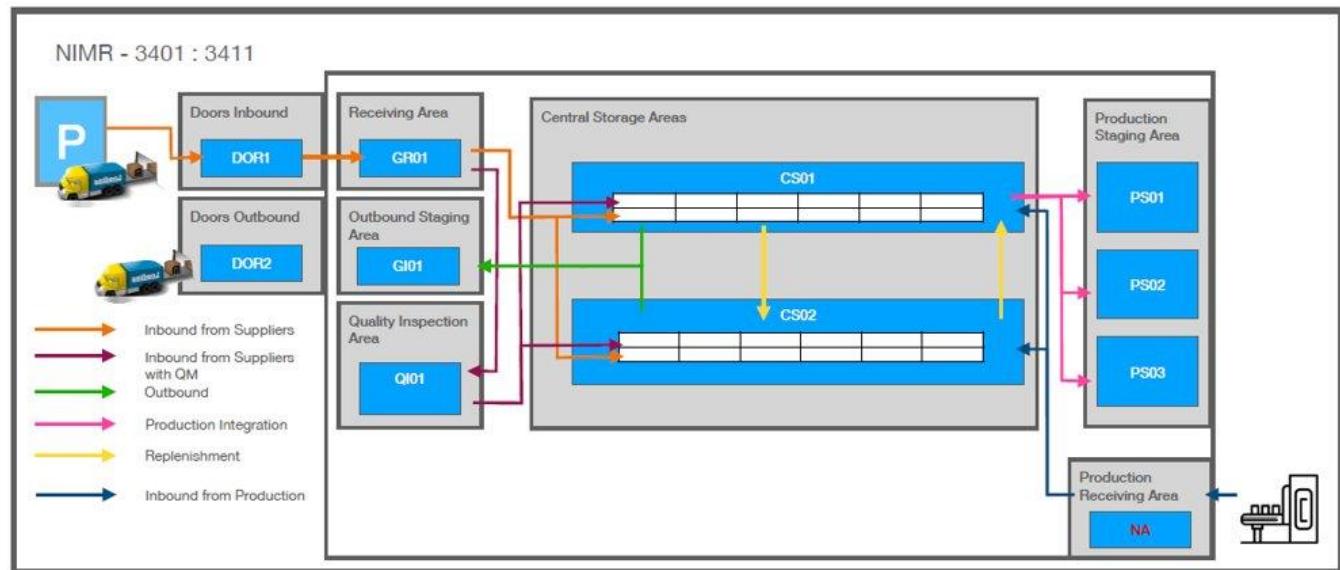


Figure 9: Warehouse and Organisational Structure Mapping of NIMR (Will be added once the respective KDS is approved)

Figure 10: Warehouse Layout – Main Warehouse Halcon

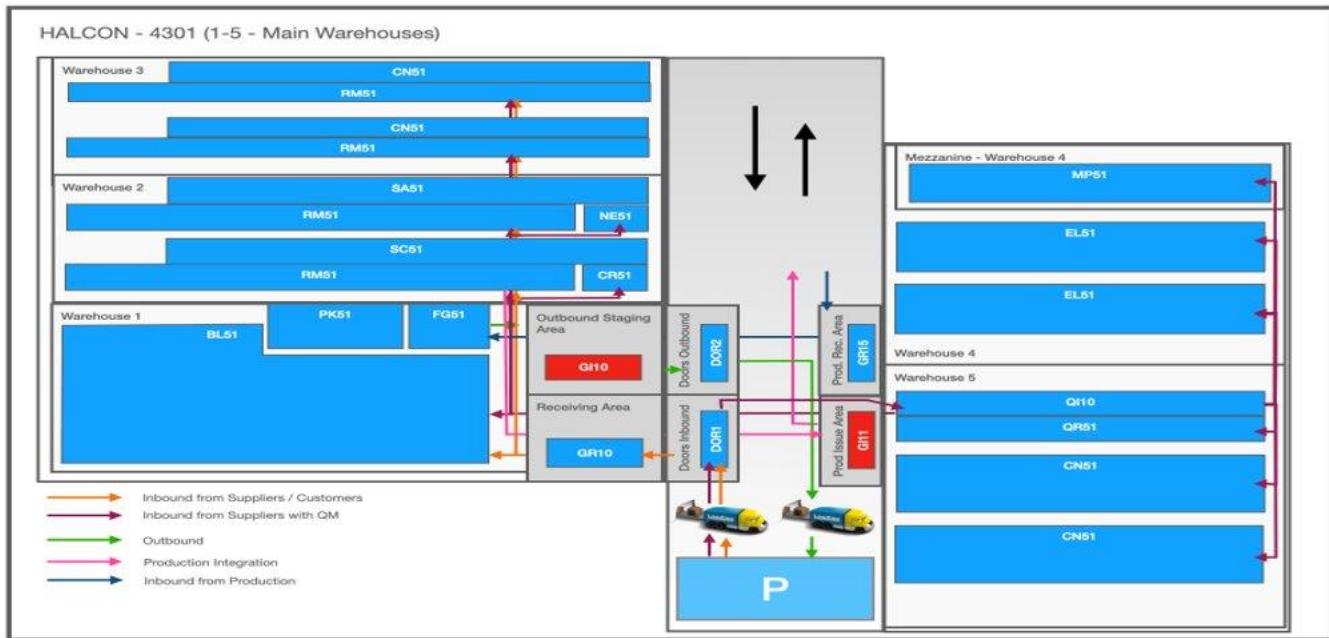


Figure 11: Warehouse Layout – C&H Halcon

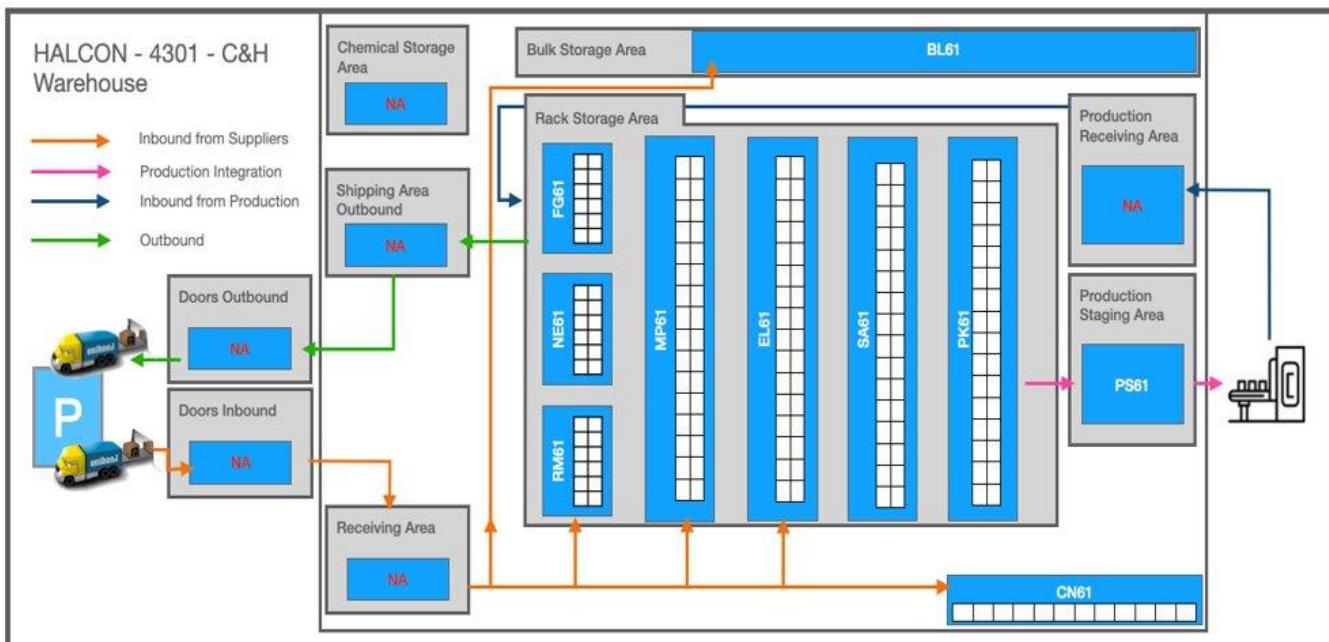
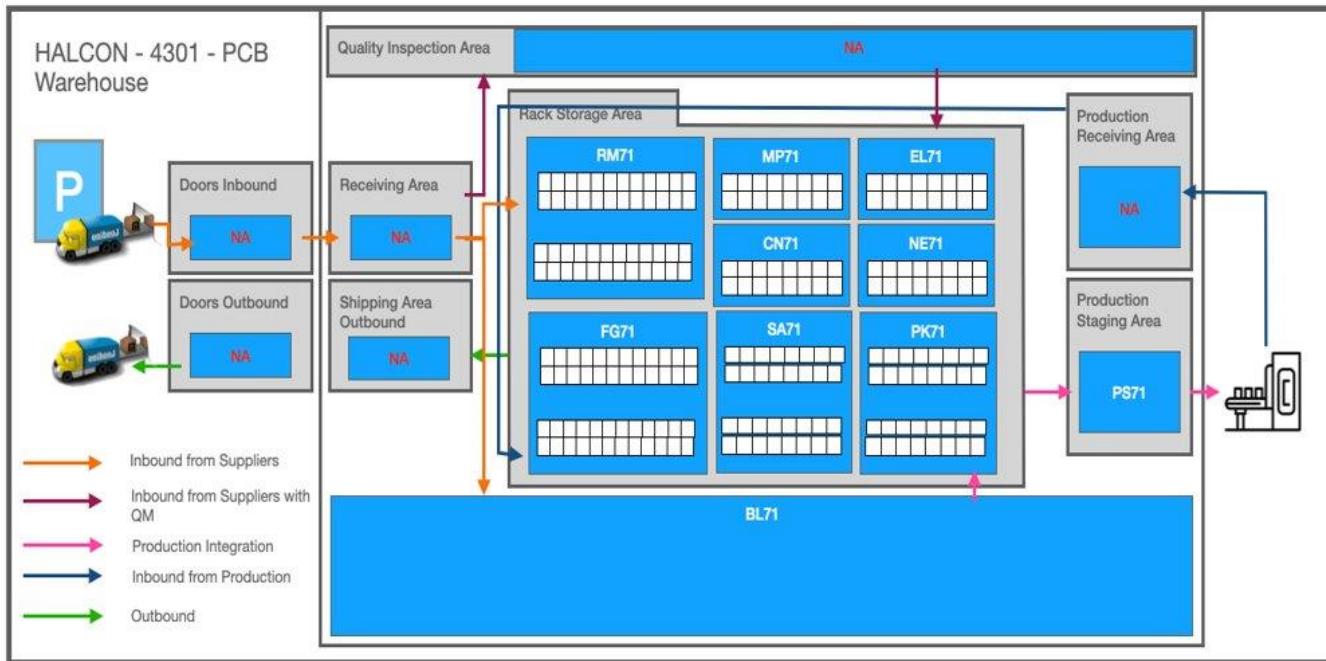


Figure 12: Warehouse Layout – PCB Halcon



2.7 Extreme automation

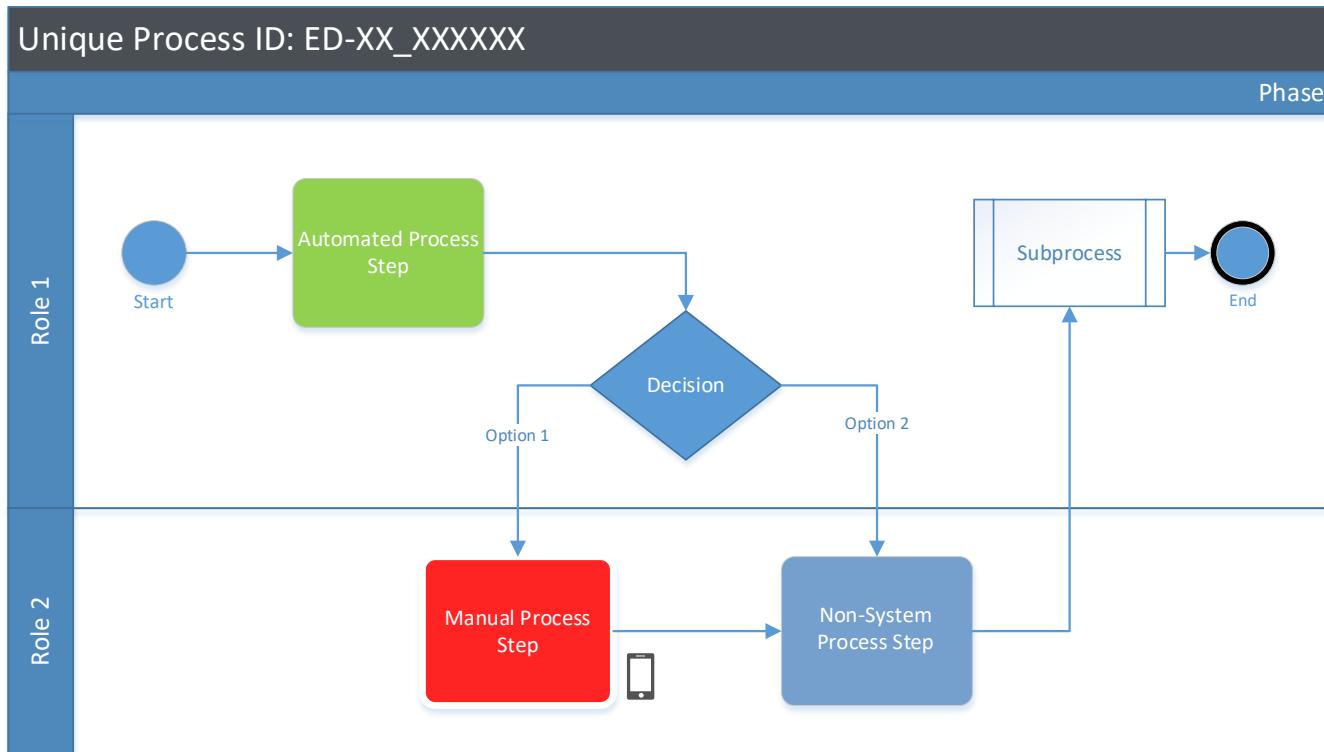
All the relevant use cases under consideration for extreme automation are updated (with EBS input if required) in before the initiation of validation phase.

Detailed key-stroke level process details will be captured through walkthrough sessions in the Extreme automation PDD section. ERP PDD's and ERP training manuals shall be leveraged to capture information that is readily available for the identified automations

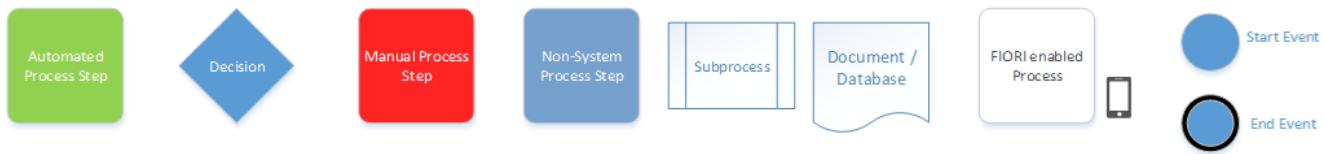
3. PROCESS DESIGN

In the following chapters processes are described in swimlane flow diagrams, in which the swimlanes represent responsible roles and the flow is shown in process steps of different kinds (see legend).

Example for swimlane flow chart:

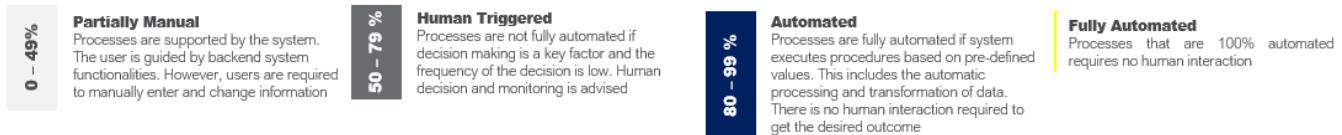


Legend



For each swimlane flow diagram, a corresponding activity list exists, with additional details:

- Process Step - Number of process step (Pxxx)
- BPH ID - BPH ID of L4 process
- Description - Short description of the step
- Role - Responsible role for executing the step
- SAP-Automation - Options: Partially Manual, Human Triggered, Automated, Fully Automated, Sub-Process/Non-System (blank); details on definition see below
- Tcode - SAP Transaction Code (SAP EWM in Italic letters)
- Fiori - Y, if Fiori App is available



In the following processes, Handheld devices are mainly used for physical movements and performed by warehouse operative:

- Bin to bin movement: triggering and confirming the task
- Goods issued to production
- Goods receipt from production
- Split of pallets of HU: triggering and confirming the task
- Initiate label print for relabeling
- Inventory counting
- Change inventory type (eg. blocked status)
- Change the status of Kanban
- Info scan on item and HU level

3.1 Move materials and goods within the warehouse (ED-13_020101)

In this chapter 3 main movement types will be covered as follows:

Main steps	Brief description	Forms & labels	Hardware use	Integration
Physical movement within the warehouse	Covering all the physical movements within the warehouse including bin to bin movement, storage location change, etc.	Goods Movement Document Putaway label	HHT/Desktop	IM/EWM
Issuing material on-demand	Issuance of material against any reservation	Goods Movement Document Putaway label	HHT/Desktop	IM/EWM
Information change	Covering batch to batch change and WBS to WBS change	-	HHT/Desktop	IM/EWM/ PS
Open/split Hus	Allowing reprint of HUs in case of HU split	HU label	HHT/Desktop	IM/EWM

3.1.1 Physical movement within the warehouse

3.1.1.1 Process Description

All goods movements within the warehouse are executed with mobile devices (HANDHELD Barcode Scanner). To move items or HUs within the warehouse a warehouse task (WT) needs to be created. Creating a warehouse task can be manual (ad hoc movement) to assign available Warehouse Operator WO to the task. This will be done as per viability and availability of resources on the floor, therefore no automatic assignment required. However, the assigned WT needs to be visible to the respective WO on his designated app credentials of the Handheld Device. In cases where a printout of the Warehouse Task is required (only in cases where the Handheld device is not functional or as per entity's preference) picking list can be printed.

When there is a movement between storage locations where there is a transfer of responsibility, the goods movement document will be printed (figure: 13).

Below a summary of labels and forms involved in the process:

Label / Form	Type	Trigger	Print / Digital	Format	NIMR	HALCON	AI TARIQ	ADASI
Picking list	Form	Warehouse Task	Digital (opt. Print)	A4	Ok	Ok	Ok	Ok

Picking list post confirmation	Form	Warehouse Task – After Picking	Digital (opt. Print)	A4	Ok	-	-	-
Putaway label	Label	Warehouse Task - putaway	Print	A6	Ok	Ok	Ok	Ok
Goods Movement Form - Issuance	Form	Goods movement type of issuance	Print	A4	Ok	Ok	Ok	Ok

Figure 13: Picking list

Entity Logo		Picking List						Date DATE_FIELD	
								Time TIME_STAMP	
Picking List				Ref Doc Type OUTBOUND DELIVERY Ref Doc Number 95351135					
		9 0 5 1 3 8 5 0 9 1							
S No	Material Number	Material Description		Handling Unit	Batch	Quantity	UOM	Source Bin Type & Bin	Destination Bin Type & Bin
1	93821414	Wing Cover Coated Small		9842194102	ABC1234	1	PC	AE-05-03-01	AE-05-03-01
2	93821414	Wing Cover Coated Small		9842194102	ABC5432	1	PC	AE-05-03-02	AE-05-03-02
3	93851335	Wing Cover Small		NA	XYZ123	20	PC	AB-05-03-01	AB-05-03-01
4	93851335	Wing Cover Small		NA	XYZ123	20	PC	AB-05-03-02	AB-05-03-02
5	93851335	Wing Cover Small		NA	XYZ436	10	PC	AB-05-03-04	AB-05-03-04
6	93851335	Wing Cover Small		NA	XYZ123	30	PC	AB-05-04-01	AB-05-04-01
7	93851335	Wing Cover Small		NA	XYZ123	40	PC	AB-05-05-01	AB-05-05-01
8	93851335	Wing Cover Small		NA	XYZ123	50	PC	AB-05-05-02	AB-05-05-02
9	93851335	Wing Cover Small		NA	XYZ123	10	PC	AB-05-05-03	AB-05-05-03
10	93851335	Wing Cover Small		NA	XYZ123	10	PC	AB-05-05-04	AB-05-05-04
TOTAL		2 MATERIALS				192	PC	From 10 Bins	From 10 Bins

"Footer"

Picker	Picker Signature	Date & Time	Controller	Remarks
PICKER_ID_FIELD	PICKER ID + CONFIRMATION NUMBER (if Already picked)	PICKED DATE & TIME (if already picked)		WT Header Text + Space for Manual Text

Printed by USER_ID_NAME on PRINT_DATE | PRINT_TIME

Figure 14: Post confirmation picking list

Entity Logo		Picking List						Date DATE_FIELD			
								Time TIME_STAMP			
Picking List				Ref Doc Type Prod Order / Delivery Ref Doc Number 95351135							
		9 0 5 1 3 8 5 0 9 1									
S No	Material Number	Material Description	Handling Unit	Batch	Serial Number	Quantity	Picked	Balance	UOM	Source Bin	Destination Bin
1	93821414	Wing Cover Coated Small	9842194102	ABC1234	421124125	1	1	0	PC	AE-05-03-01	AE-05-03-01
2	93821414	Wing Cover Coated Small	9842194102	ABC5432	421124126	1	1	0	PC	AE-05-03-02	AE-05-03-02
3	93851335	Wing Cover Small	NA	XYZ123	NA	20	20	0	PC	AB-05-03-01	AB-05-03-01
4	93851335	Wing Cover Small	NA	XYZ123	NA	20	20	0	PC	AB-05-03-02	AB-05-03-02
5	93851335	Wing Cover Small	NA	XYZ436	NA	10	10	0	PC	AB-05-03-04	AB-05-03-04
6	93851335	Wing Cover Small	NA	XYZ123	NA	30	-	30	PC	AB-05-04-01	AB-05-04-01
7	93851335	Wing Cover Small	NA	XYZ123	NA	40	-	40	PC	AB-05-05-01	AB-05-05-01
8	93851335	Wing Cover Small	NA	XYZ123	NA	50	-	50	PC	AB-05-05-02	AB-05-05-02
9	93851335	Wing Cover Small	NA	XYZ123	NA	10	-	10	PC	AB-05-05-03	AB-05-05-03
10	93851335	Wing Cover Small	NA	XYZ123	NA	10	-	10	PC	AB-05-05-04	AB-05-05-04
TOTAL		2 MATERIALS				192	52	140	PC	From 10 Bins	From 10 Bins

"Footer"

Picker	Picker Signature	Date & Time	Controller	Remarks
PICKER_ID_FIELD	PICKER ID + CONFIRMATION NUMBER (if Already picked)	PICKED DATE & TIME (if already picked)		WT Header Text + Space for Manual Text

Printed by USER_ID_NAME on PRINT_DATE | PRINT_TIME

Figure 15: Example of Goods Movement Document

HALCON		Goods Movement Document																																																														
		Movement Type: Material Issuance																																																														
		Goods Movement Barcode																																																														
Material Document #																																																																
		9 0 5 1 3 8 5 0 9 1																																																														
<table border="1"> <thead> <tr> <th>S No</th> <th>Material Number</th> <th>Material Description</th> <th>Handling Unit</th> <th>Batch</th> <th>Serial Number</th> <th>Quantity</th> <th>UOM</th> <th>Accounting Element</th> <th>Source Location</th> <th>Destination Location</th> </tr> </thead> <tbody> <tr><td>1</td><td>93821414</td><td>Wing Cover Coated Small</td><td>9842194102</td><td>ABC1234</td><td>421124125</td><td>1</td><td>PC</td><td>WBS / Cost Centre</td><td>Storage Location</td><td>Storage Location</td></tr> <tr><td>2</td><td>93821414</td><td>Wing Cover Coated Small</td><td>9842194102</td><td>ABC5432</td><td>421124126</td><td>1</td><td>PC</td><td>WBS / Cost Centre</td><td>Storage Location</td><td>Storage Location</td></tr> <tr><td>3</td><td>93851335</td><td>Wing Cover Small</td><td>NA</td><td>XYZ123</td><td>NA</td><td>190</td><td>PC</td><td>WBS / Cost Centre</td><td>Storage Location</td><td>Storage Location</td></tr> <tr><td colspan="2">TOTAL</td><td>2 MATERIALS</td><td></td><td></td><td></td><td>192</td><td>PC</td><td></td><td></td><td></td></tr> </tbody> </table>										S No	Material Number	Material Description	Handling Unit	Batch	Serial Number	Quantity	UOM	Accounting Element	Source Location	Destination Location	1	93821414	Wing Cover Coated Small	9842194102	ABC1234	421124125	1	PC	WBS / Cost Centre	Storage Location	Storage Location	2	93821414	Wing Cover Coated Small	9842194102	ABC5432	421124126	1	PC	WBS / Cost Centre	Storage Location	Storage Location	3	93851335	Wing Cover Small	NA	XYZ123	NA	190	PC	WBS / Cost Centre	Storage Location	Storage Location	TOTAL		2 MATERIALS				192	PC			
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TOTAL		2 MATERIALS				192	PC																																																									
Footer <table border="1"> <tr> <td>Created by</td> <td>Issued to</td> <td>Date & Time</td> <td>Security Check</td> <td>Received by</td> </tr> <tr> <td>USER_NAME_FIELD</td> <td>Receiver Name / Responsible person</td> <td>Issued DATE & TIME</td> <td></td> <td></td> </tr> </table> <p>Printed by USER_ID_NAME on PRINT_DATE PRINT_TIME</p>										Created by	Issued to	Date & Time	Security Check	Received by	USER_NAME_FIELD	Receiver Name / Responsible person	Issued DATE & TIME																																															
Created by	Issued to	Date & Time	Security Check	Received by																																																												
USER_NAME_FIELD	Receiver Name / Responsible person	Issued DATE & TIME																																																														

Physical Movement within the warehouse can occur with the following varying scenarios. For the ease of understanding these are termed as Process Variants:

Var No	Variant Description	Trigger Point	Serialised Goods	Pick	Putaway
1	HU managed and serialized goods	Warehouse Task	Yes	Through HHT	Through HHT
2	HU managed and non-serialized goods	Warehouse Task	No	Through HHT	Through HHT
3	Non-HU managed and serialized goods	Warehouse Task	Yes	Manual	Manual using a putaway label
4	Non-HU managed and non-serialized goods	Warehouse Task	No	Manual	Manual using a putaway label

Physical Movement - HU Managed Goods, Serialized Inventory / Non-Serialized Inventory (specific case of HALCON)

HU Managed Goods need to be moved based on HU scanning using the Handheld Terminal. The following two step procedure will be performed after the warehouse task has been assigned:

- Pick
- Put Away

The Picking strategy will vary in different circumstances and is covered in each section. For the internal warehouse movements, the Picking will be performed based on items selected while creating the Warehouse Task.

The Put-away strategy is uniform over all the processes. It will be based on the following criteria:

- If dimensions of the product and the bins are maintained in the system, the bin will be determined automatically, and a confirmation will be taken when the physical activity is performed.
- If the dimensions are not maintained, the user will select the bin / location manually as per requirement using the handheld device.

The following steps will be executed or initiated via the HANDHELD Device for the **Picking** operation:

- 1.01 - Log into the Handheld Device App with user specific secure credentials
- 1.02 - Select the Option of Transfer Post with HU on the Handheld Device App
- 1.03 - A List of Warehouse Tasks due for picking are listed
- 1.04 - Select the Warehouse Task being processed
- 1.05 - A pre-defined list of HUs will be listed that were selected on the WT
- 1.06 - The WO will scan one HU label from the physical goods and this HU will be selected from the list (if it is on the list)
- 1.07 - The WO repeats the operation on all the HUs while the scanned data remains in the App memory
- 1.08 - After completing all HUs to be picked, the WO will perform the Pick Complete option available on the App
- 1.09 - Picking Confirmation is posted in the system and the WT is completed.
- 1.10 - If the Warehouse Task is completed, it is removed from the APP list of Transfer Posting WTs.

The following steps will be executed or initiated via the HANDHELD Device for the **Put Away** operation:

- 2.01 - Log into the Handheld Device App with user specific secure credentials
- 2.02 - Select the Option of Transfer Post with HU on the Handheld Device App
- 2.03 - A List of Warehouse Tasks due for Put Away are listed

- 2.04 - Select the Warehouse Task being processed
- 2.05 - A pre-defined list of HUs will be listed that were selected on the WT
- 2.06 - The WO will scan one HU label from the physical goods and this HU will be selected from the list (if it is on the list)
- 2.07 - The WO repeats the operation on all the HUs while the scanned data remains in the App memory.
- 2.08 - After completing all HUs to be put away, the WO will select the respective bin / storage location to perform the Put Away
- 2.09 - After selecting the location, the WO will select Complete Put Away option available on the App.
- 2.10 - Put Away Confirmation is posted in the system and the WT is completed in SAP.
- 2.11 - If the Warehouse Task is completed, it is removed from the APP list of Transfer Posting WTs.

The above steps of **Picking** and **Put Away** are referred in other sections of the PDD as well depending on the process requirement.

Physical Movement – Non-HU Managed Goods, Serialized / Non-Serialized Inventory

The process steps will be similar as done for HU managed goods, however the HU label will not be available for scanning. Therefore, the warehouse task, its picking and putaway will be performable manually on the S4H desktop application or manually on the Handheld Terminal.

Items will be directly available for selection on the WT, and will be set for the picking instruction. Criteria for completing the WT will be based on the item serial numbers instead of HUs in case of serialized inventory.

In addition to the above physical movements, for the case of HALCON that is handling incoming goods on HUs, the following scenarios will also be required to be covered up on the Handheld Device:

- Reprint HU Label: To replace lost or damaged label
- Split HU: To allocate the quantity within the HU in 2 or more containers.
- Repack HU: To change the packaging material of the HU

Physical Movement – Through Automatic Replenishment

In the case of NIMR, there are two business scenarios to support automatic replenishment based on capacity triggers:

- Automatic Replenishment of Lightweight Items
- Automatic Replenishment of Heavy Items

NIMR follows a Three Bin Category Approach for Lightweight category items, the following bin categories are defined:

- Receiving Bins
- Storage Bins
- Issuance Bins

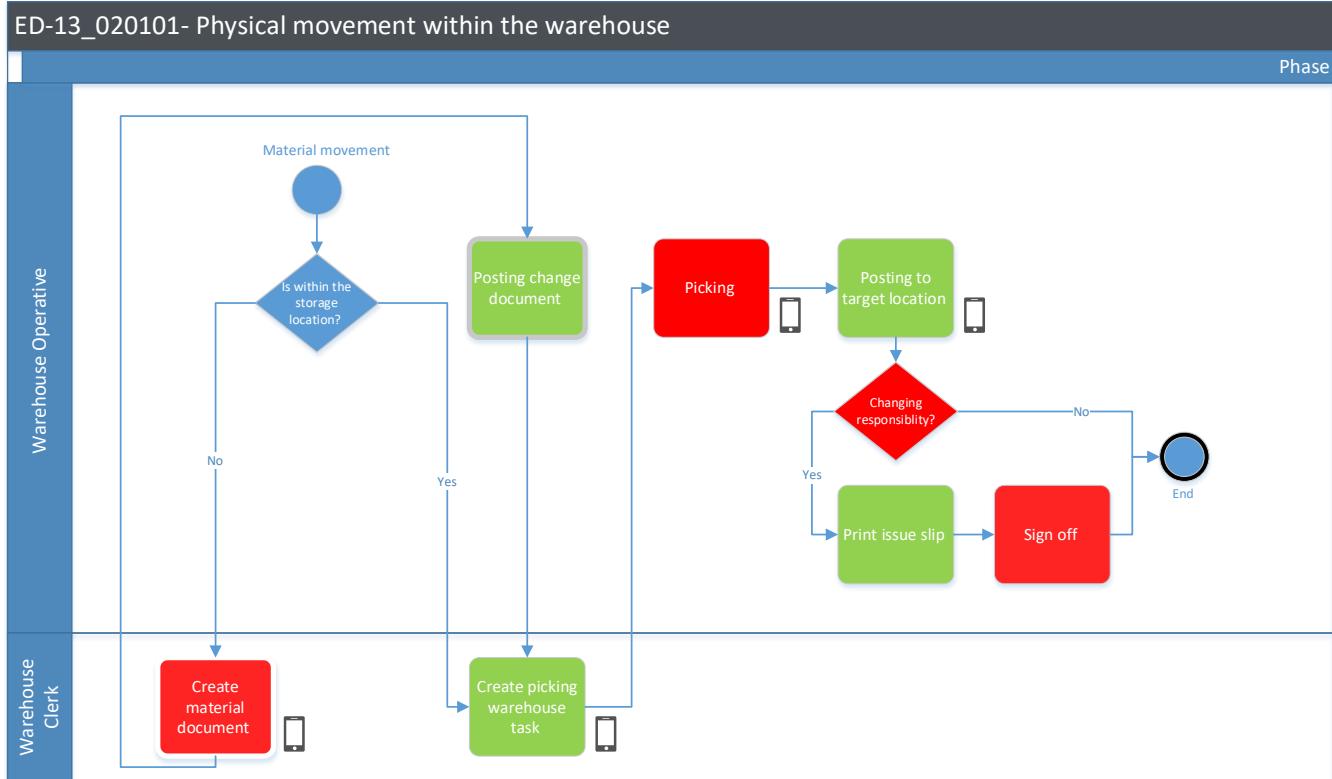
For the heavy items, the following two categories of bins are in place:

- Receiving Bins
- Multi-Purpose Bins (Storage and Issuance Bins)

Bins are designated for each material from all the above three / two categories, with maximum capacities defined per material per bin. An automatic replenishment process triggers an internal warehouse task to replenish requisite material quantity from the Storage Bins to the Issuance Bins or from the Receiving Bins to the Multi-Purpose Bins as explained in two scenarios above.

The replenishment process is handled as a physical movement warehouse task with both picking and put away performed against the automatic replenishment warehouse order. The picking and put away will follow the same operational sequence as defined in the above processes for packaged and serialized goods.

3.1.1.2 Process Diagram



3.1.1.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_020101	Material movement	Warehouse Operative	Human Triggered	NA	NA
P200	ED-13_020101	Is within the storage location?	Warehouse Operative	Human Triggered	NA	NA
P300	ED-13_020101	Create Material document	Warehouse Operative	Partially Manual	MIGO_GI	Yes
P400	ED-13_020101	Posting change document	Warehouse Operative	Partially Manual	/SCWM/IM_PC	Yes
P500	ED-13_020101	Create picking warehouse task	Warehouse Operative	Partially Manual	/SCWM/TODLV_O or /SCWM/MON	Yes
P600	ED-13_020101	Picking	Warehouse Operative	Partially Manual	/SCWM/RFUI	Yes
P700	ED-13_020101	Posting to target location	Warehouse Operative	Human Triggered	/SCWM/RFUI	Yes

					Or /SCWM/TO_CON	
P800	ED-13_020101	Changing responsibility	Warehouse Operative	Human Triggered	NA	NA
P900	ED-13_020101	Print Issue slip	Warehouse Operative	Automated	NA	NA
P1000	ED-13_020101	Sign off	Warehouse Operative	Human Triggered	NA	NA
P1100	ED-13_020101	End	Warehouse Operative		NA	NA

3.1.1.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Physical movement within the warehouse HU Managed Goods – Serialized Inventory	✗	✗	✗	✓
Physical movement within the warehouse HU Managed Goods – Non-Serialized Inventory	✗	✗	✗	✓
Physical movement within the warehouse Non-HU Managed Goods – Serialized Inventory	✓	✓	✓	✓
Physical movement within the warehouse Non-HU Managed Goods – Non-Serialized Inventory	✓	✓	✓	✓
Automatic Replenishment	✗	✗	✓	✗

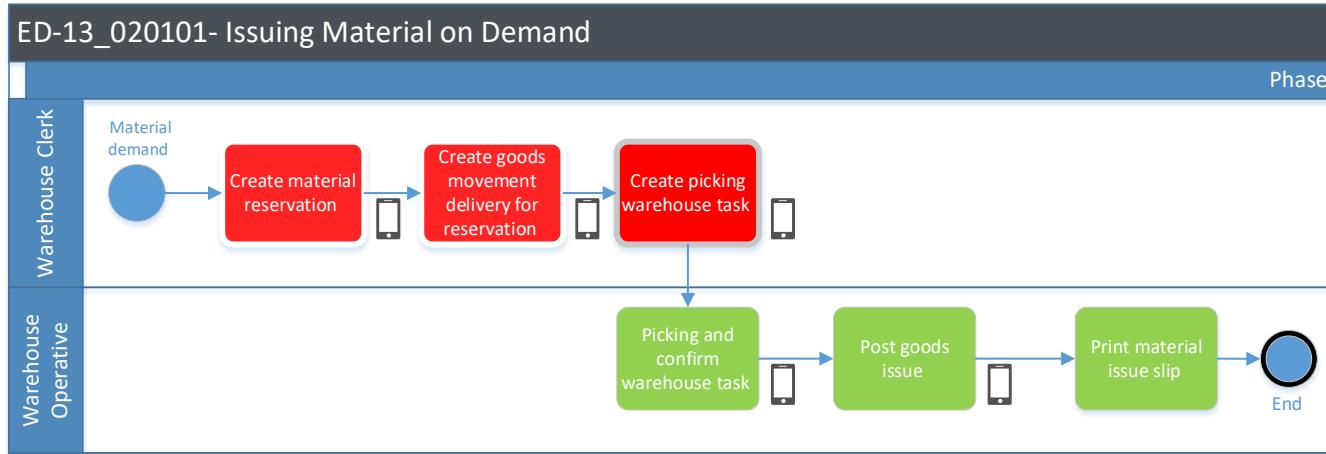
Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.1.2 Issuing Material on Demand

3.1.2.1 Process Description

The picking operation in the warehouse is to be performed against any reservation (against Cost Centre or Project) received for issuing material on demand, (for example against a Reservation against an IM managed location). The picking operation will be same as defined above respectively for HU managed, non-HU managed, Serial enabled and Non-Serialised Goods.

3.1.2.2 Process Diagram



3.1.2.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_020101	Ad hoc material on demand	Warehouse Clerk	Partially Manual	Human Triggered	NA
P200	ED-13_020101	Create material Reservation	Warehouse Clerk	Partially Manual	MB21	Yes
P300	ED-13_020101	Create goods movement delivery for reservation	Warehouse Clerk	Partially Manual	MIGO_GI	Yes
P400	ED-13_020101	Create picking warehouse task	Warehouse Clerk	Partially Manual	/SCWM/TODL_V_O or /SCWM/MON	Yes
P500	ED-13_020101	Picking and confirm warehouse task	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P600	ED-13_020101	Post goods issue	Warehouse Operative	Automated	/SCWM/PRDO	Yes
P700	ED-13_020101	Print material issue slip	Warehouse Operative	Automated	NA	NA
P800	ED-13_020101	End	Warehouse Operative		NA	NA

3.1.2.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Issuing Material on Demand – against Reservations	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.1.3 Information Change

3.1.3.1 Process Description

Batch to Batch Movement

In cases where a batch-to-batch movement is required for any category of material (HU, Non-HU, Serialized, Non-Serialized), the transaction will be performed from the system and a new HU Label (if applicable) and putaway label will be printed out to be updated physically on the goods.

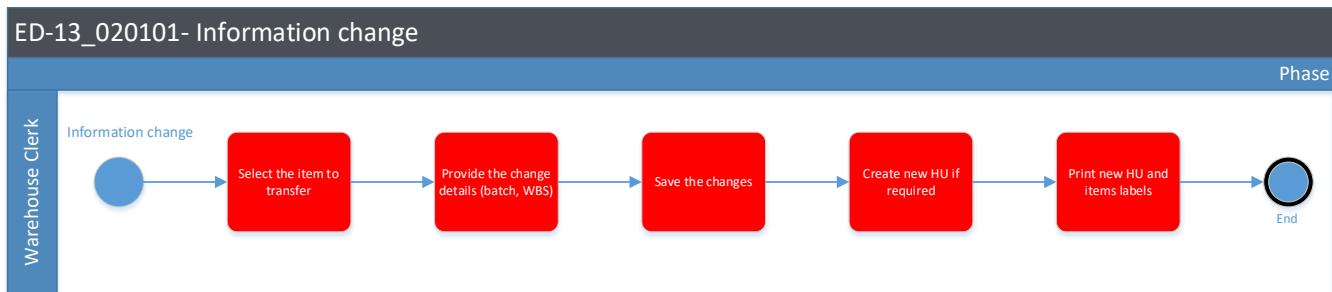
Movement between 2 WBS elements

A stock transfer between different WBS elements can be needed, in case there is a change in project requirements, or an excess stock in one WBS element, or shortage of stock in another WBS element, or another justified reasons. In this case, the stock transfer may happen physically or not, but should necessarily be done at the system level.

For this exception, the process to follow is:

- The project coordinator or warehouse clerk should initiate a transfer order specifying the quantities and items to be transferred as well as the source WBS and destination WBS. The following process is the same as defined above for moving materials within the warehouse.
- If the goods need to be moved physically: picking and putaway activities are to be performed as defined above.
- At the end of the process the stock quantities should be updated in both WBS elements.

3.1.3.2 Process Diagram



3.1.3.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_020101	Select the item to transfer	Warehouse Clerk	Partially Manual		
P200	ED-13_020101	Provide the change detail	Warehouse Clerk	Partially Manual		
P300	ED-13_020101	Save the changes	Warehouse Clerk	Partially Manual		
P400	ED-13_020101	Create new HU if required	Warehouse Clerk	Human Triggered		
P500	ED-13_020101	Print new labels if required	Warehouse Clerk	Human Triggered		

3.1.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Batch to Batch Transfers	✓	✓	✓	✓
WBS to WBS Transfers	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.1.4 Unpack/Split HUs

3.1.4.1 Process Description

The process of Unpacking, splitting and Repacking is an exception process that happens in HALCON only.

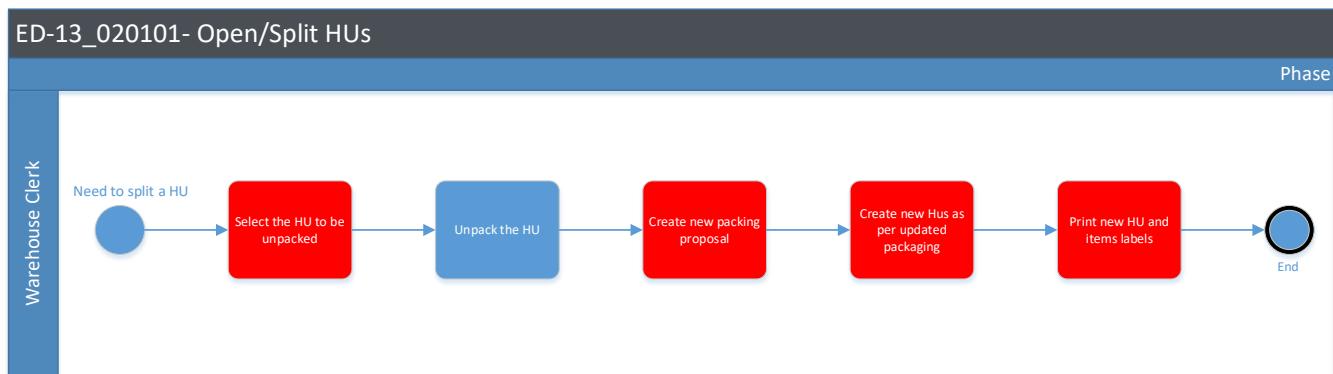
Goods that are received in packaging can be stored in the respective bins directly in the received packaging, however, that is not the case in all scenarios. The following exception processes can arise:

- Goods are unpacked to be stored at a lower level of packaging, for eg. Pallets are unpacked to be stored in the form of contained cartons
- Goods are unpacked to be stored without packaging, as in the case of steel sheets
- Goods are unpacked to split quantities in multiple packaging, this may mean splitting and repacking.

In all the above business cases, the Warehouse Operator will unpack the packaging and will issue new HU labels for the final form of the goods before moving them to storage.

Information of HUs at lower level can be provided by the supplier, however, in most cases it will be manually entered by the Warehouse Operator.

3.1.4.2 Process Diagram



3.1.4.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_020101	Select the HU to be unpacked	Warehouse Clerk	Partially Manual		
P200	ED-13_020101	Unpack the HU	Warehouse Clerk	Partially Manual		
P300	ED-13_020101	Create new packing proposal	Warehouse Clerk	Partially Manual		

P400	ED-13_020101	Create new HUs as per updated packaging	Warehouse Clerk	Partially Manual		
P500	ED-13_020101	Print new HU and items labels	Warehouse Clerk	Partially Manual		

3.1.4.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Unpack HUs	X	X	X	✓
Split HUs	X	X	X	✓
Rewrap HUs	X	X	X	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.2 Material movement to production (ED-13_020102)

This process describes the integration of warehouse execution with manufacturing operations. The warehouse execution for production orders is based on the production material request (PMR). The PMR contains the information of component materials and quantities, which are needed for production. Trigger for the PMR is the release of a production order. The release of the production order triggers the calculation of the component quantities based on the pre-authorised BOMs maintained in the system. The quantities on the PMR are not manually changeable.

The rules for releasing a production order are described in the P2P Manufacturing execution PDD.

Picking strategy is based on:

- FEFO: first expired first out (for material where applicable e.g., PCB boards) and/or
- FIFO: first in first out

To allocate tasks and workloads to employees for the picking process, the warehouse task will be assigned to available resource by warehouse clerk as warehouse operatives are not specialized. The printing of documents is disabled in standard. Print of documents is only used as backup in case mobile devices are not working.

Figure 16: Example for picking list

Entity Logo		Picking List							
									
Picking List		 WT Barcode		Date DATE_FIELD Time TIME_STAMP Ref Doc Type OUTBOUND DELIVERY Ref Doc Number 95351135					
		9 0 5 1 3 8 5 0 9 1							
S No	Material Number	Material Description		Handling Unit	Batch	Quantity	UOM	Source Bin Type & Bin	Destination Bin Type & Bin
1	93821414	Wing Cover Coated Small		9842194102	ABC1234	1	PC	AE-05-03-01	AE-05-03-01
2	93821414	Wing Cover Coated Small		9842194102	ABC5432	1	PC	AE-05-03-02	AE-05-03-02
3	93851335	Wing Cover Small		NA	XYZ123	20	PC	AB-05-03-01	AB-05-03-01
4	93851335	Wing Cover Small		NA	XYZ123	20	PC	AB-05-03-02	AB-05-03-02
5	93851335	Wing Cover Small		NA	XYZ436	10	PC	AB-05-03-04	AB-05-03-04
6	93851335	Wing Cover Small		NA	XYZ123	30	PC	AB-05-04-01	AB-05-04-01
7	93851335	Wing Cover Small		NA	XYZ123	40	PC	AB-05-05-01	AB-05-05-01
8	93851335	Wing Cover Small		NA	XYZ123	50	PC	AB-05-05-02	AB-05-05-02
9	93851335	Wing Cover Small		NA	XYZ123	10	PC	AB-05-05-03	AB-05-05-03
10	93851335	Wing Cover Small		NA	XYZ123	10	PC	AB-05-05-04	AB-05-05-04
TOTAL		2 MATERIALS				192	PC	From 10 Bins	From 10 Bins

Footer

Picker	Picker Signature	Date & Time	Controller	Remarks
PICKER_ID_FIELD	PICKER ID + CONFIRMATION NUMBER (if Already picked)	PICKED DATE & TIME (if already picked)		WT Header Text + Space for Manual Text

Printed by USER_ID_NAME on PRINT_DATE | PRINT_TIME

* Picking list should be sorted by bin number to optimize the picking route such that the Alphabetic denomination of the bin number is sorted first, and the numeric denomination is then put in sequence.

The Warehouse Task against a PMR is a **Picking Operation** that needs to be performed via the handheld device. The picking operation steps will be same as defined in the previous chapter. The following possible movements can happen:

Material movement to production is moved with two process variations as defined below:

Main steps	Brief description	Forms & labels	Hardware use	Integration
Moving methods	Detailing the different movement method to productions with process briefs			
Material movement to production – with MES	Process of issuing components from warehouse to production using the MES	Goods Movement Document	HHT/Desktop	MES/EWM
Material movement to production – without MES	Process of issuing components from warehouse to production without MES	Goods Movement Document	HHT/Desktop	IM/EWM

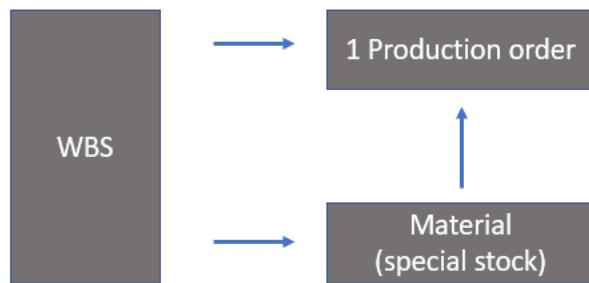
3.2.1 Staging methods

3.2.1.1 Process Description

Material staging for issuance to Production can happen for single order or cross order within the assigned WBS. Although this staging does not impact the warehouse operation, yet an understanding of the different material staging is vital, therefore it is defined as follows:

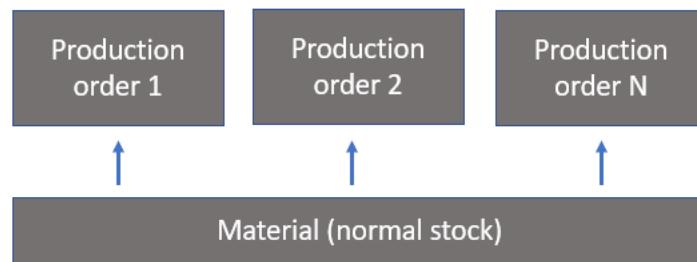
1- Single order staging:

Material is only available for one production order and can't be consumed within other production orders. Single order staging will be executed with WBS material. This material is considered as special stock and is dedicated to specific project/customer.



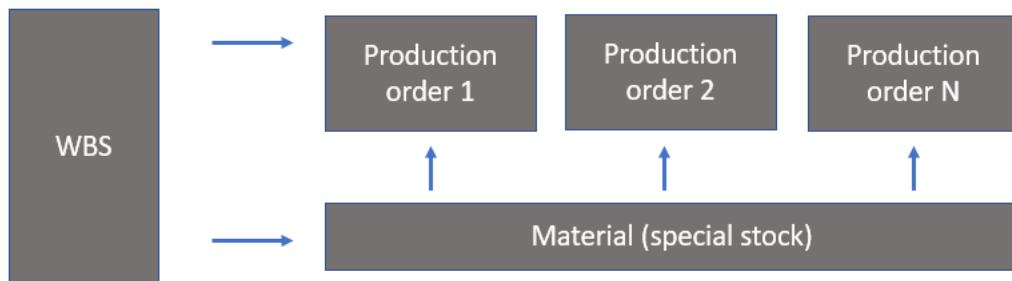
2- Cross order staging

Material can be used in multiple production orders. This principle is used with normal stock and is applicable within normal replenishment process as well as with Kanban process.



3- WBS & cross order staging

If there are multiple production orders within one WBS element, cross order staging within production orders is possible. Other production orders (other WBS) can't consume WBS stock.



System enables synchronization of the material flows between warehouse and production and can improve inventory visibility and control as material movements are posted in real time in the warehouse.

If there is a quality issue with material that has already been staged at production supply area, material should be moved out of PSA to blocked area. Changing the inventory status to “blocked” will not allow to consume parts at the PSA.

Batch determination for components will be performed at the time of movement from warehouse to PSA.

3.2.1.2 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Single order staging	✓	✓	✓	✓
Cross order staging	✓*	X	X	✓*
WBS and cross order staging	X	X	X	X

*Cross order staging is enabled for all 4 entities in case needed (mainly for Al Tariq and Halcon)

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	2 steps staging	2 steps staging

Group materials as a kit (NIMR & ADASI)

In the case of NIMR-Al Ain and ADASI-Al Ain (Polytech), materials are grouped in a kit in the warehouse where components are grouped per work centre for the production. The movement of kits will be done as per the following protocols:

- The quantity of components on the kit are recommended to be grouped as per work centre
- The tracking of movement is required at the component level

For NIMR, this process concerns material from Al Ain to TIP where a kit will contain components of ~2 vehicles per workstation name, the kits are transferred by own trucks between locations currently.

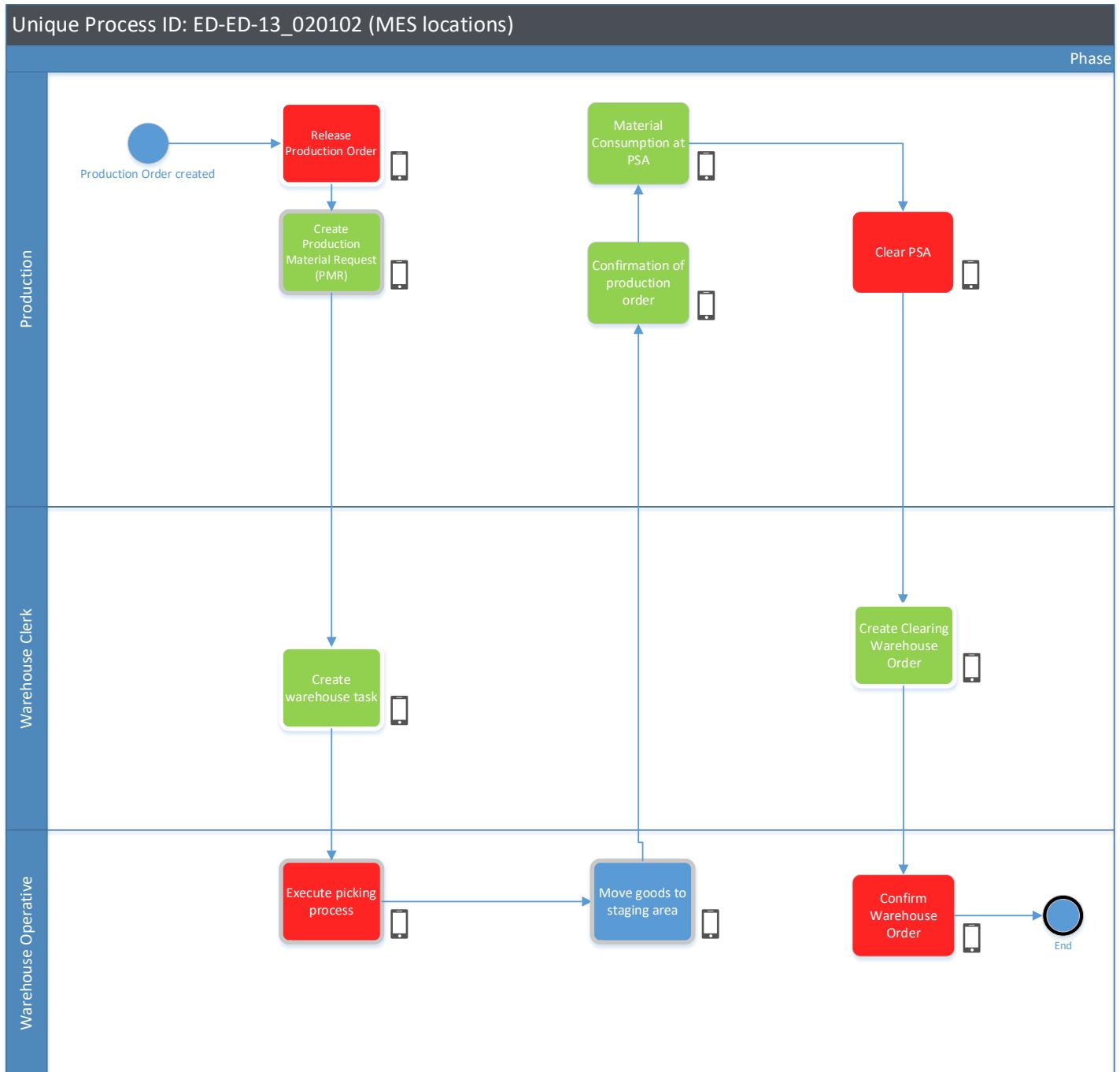
For ADASI, kits are issued from warehouse in Polytech to the PSA.

3.2.2 Material Movement to Production MES Locations

3.2.2.1 Process Description

In the case of MES locations, the material movement to production PSA will be carried out through the EWM transaction, however, the production confirmation will be carried out automatically through the yield information coming through MES integration, leading to a production confirmation being booked in the SAP production system. The consumption of goods will be triggered on the production confirmation.

3.2.2.2 Process Diagram



3.2.2.3 Activity List and Job Role Mapping

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_020102	Production Order creation	Production Planner	Partially Manual	NA	NA

P200	ED-13_020102	Release Production Order	Production Planner	Automated	F2336	Yes
P300	ED-13_020102	Create Production Material Request (PMR)	Warehouse Clerk	Partially Manual	/SCWM/MON	Yes
P400	ED-13_020102	Create warehouse task	Warehouse Clerk	Partially Manual	F7137	Yes
P500	ED-13_020102	Execute picking process	Warehouse Operative	Partially Manual	/SCWM/RFUI	Yes
P600	ED-13_020102	Move goods to staging area	Warehouse Operative	Partially Manual		
P800	ED-13_020102	Confirm production order	Production Operator	Automated		
P800	ED-13_020102	Material Consumption at PSA	Production Operator	Automated	/SCWM/MFG_CONSUMPTION	Yes
P900	ED-13_020102	Clear PSA	Production Operator	Automated	/SCWM/MFG_STAGING_REVERSAL	Yes
P1000	ED-13_020102	Create Clearing Warehouse Order	Warehouse Operative	Automated	/SCWM/MON	Yes
P1100	ED-13_020102	Confirm Warehouse Order	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1200	ED-13_020102	End	Warehouse Operative		NA	NA

3.2.2.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Material movement to production with MES	X	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.2.3 Material Movement to Production Non-MES Locations

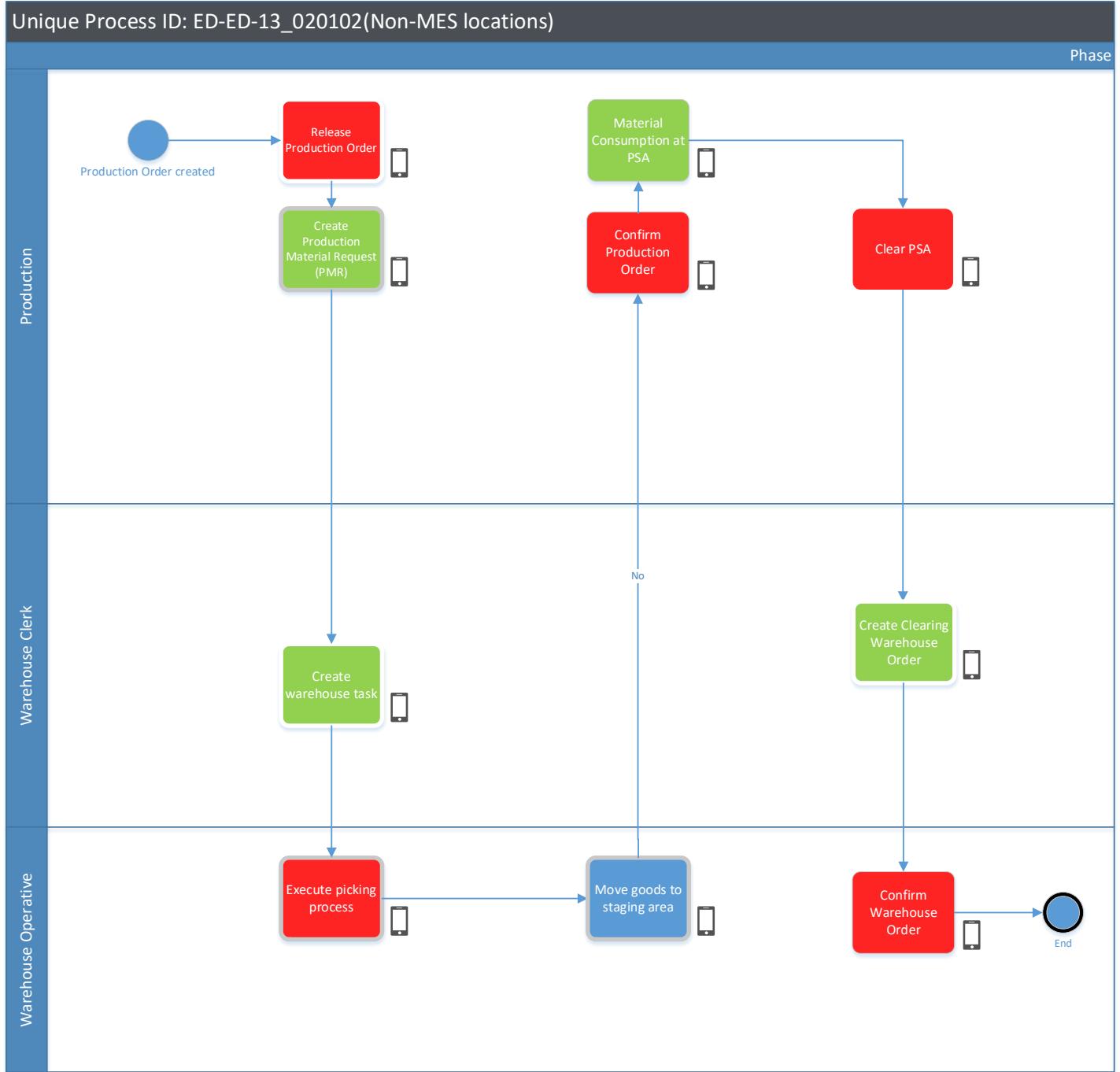
3.2.3.1 Process Description

In the case of Non-MES locations, the material movement to production PSA will be carried out through the EWM transaction as in MES enabled locations. Production confirmation will be carried out manually by the Production Floor operators leading to a charge / booking of consumption of goods / components. This consumption is triggering as a result of back flush entries associated with production confirmation.

3.2.3.2 Activity List & Automation

Process step	BPH ID	Description	Role	SAP Automation *	Fiori App ID	Fiori
P100	ED-13_020102	Production Order creation	Production Planner	Partially Manual	NA	NA
P200	ED-13_020102	Release Production Order	Production Planner	Automated	F2336	Yes
P300	ED-13_020102	Create Production Material Request (PMR)	Warehouse Clerk	Automated	/SCWM/MON	Yes
P400	ED-13_020102	Create warehouse task	Warehouse Clerk	Automated	F7137	Yes
P500	ED-13_020102	Execute picking process	Warehouse Operative	Partially Manual	/SCWM/RFUI	Yes
P600	ED-13_020102	Move goods to staging area	Warehouse Operative	Partially Manual		
P800	ED-13_020102	Confirm production order	Production Operator	Manual		
P800	ED-13_020102	Material Consumption at PSA	Production Operator	Fully Automated	/SCWM/MFG _CONSUMPTION	Yes
P900	ED-13_020102	Clear PSA	Production Operator	Automated	/SCWM/MFG _STAGING_REFRESH	Yes
P1000	ED-13_020102	Create Clearing Warehouse Order	Warehouse Operative	Automated	/SCWM/MON	Yes
P1100	ED-13_020102	Confirm Warehouse Order	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1200	ED-13_020102	End	Warehouse Operative		NA	NA

3.2.3.3 Process Diagram



3.2.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Material movement to production without MES	✓	x	x	x

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.3 Material movement to production - KANBAN (ED-13_020103)

3.3.1 Process Description

The KANBAN method for controlling production and material flow is based on the actual stock quantity in production. Material required on a regular basis is continually provided in small quantities in production.

This requires material movement from the warehouse in two steps:

- Material movement from the Warehouse to the Production Supply Area
- Material movement from the Production Supply Area to the Production Area

The following future scenario was discussed at NIMR for handling direct supplier movements.

- Material movement from the Supplier directly to the Production Supply Area

This scenario may arise where goods are required to be received directly in the Production Supply Area from the suppliers. An effective Supplier operated KANBAN will be applied in this case. In this scenario, the supplier will be dealt as per the warehouse protocols defined below for managing an effective KANBAN.

The protocols for picking material on a Production Material Requirement Slip as indicated in the previous chapter will apply the same way as indicated in the previous chapter for Material Movement to Production. However, the movement must happen in smaller quantities as defined in the KANBAN and the requirement will be termed as the KANBAN Replenishment.

When a higher production level requires the material, replenishment or the production of a material is triggered. Each Kanban represents a certain quantity of material and can correspond to a container. The Kanban acquires the status "Empty" when the quantity of material belonging to a Kanban has been consumed. The KANBAN is then sent back to the Production Supply Area. A KANBAN Replenishment is raised of the prescribed quantity of the material, and once the material is received status of the bin changes to "FULL".

Kanban method of material replenishment is normally implemented where there is a constant flow of material from Warehouse to Production area. Kanban Process can be implemented in EDGE entities (as requested by NIMR) for flow from warehouse to production.

To implement the KANBAN production control method, the demand source, supply source, and procedure to be used to replenish the material are defined in the control cycle. Control cycle also controls the number of Kanban's that circulate between the supply and demand source along with the quantity per Kanban. Bin quantity is defined in the control cycle. If the required quantity is more than the bin quantity, then multiple number of bins will get replenishment. If the requirement quantity is less than the bin quantity, then full bin with the quantity mentioned in the control cycle will get replenishment. Barcode scanning triggers the replenishment.

Standard process flow in SAP for EDGE entities – Kanban Internal Stock Transfer (Warehouse to Production)

This scope item allows you to replenish material from your warehouse to production. When the material gets consumed in the production and consumption is posted by system update, then the bin status at PSA automatically changes to EMPTY.

The KANBAN process starts with a notification of the empty container status in the system. By setting the Kanban status to EMPTY, the system triggers the creation of a warehouse task. A warehouse operative picks the material from the replenishment storage area, moves it to the production supply area storage bin, and confirms the task in the system. The Kanban container status is automatically set to FULL.

Internal stock transfer from Warehouse to PSA storage location will be managed through warehouse “Picking” task as indicated above.

Following will be the sequence of operations:

- Kanban container is set to empty at PSA level
- Trigger (Manually) Kanban replenishment through Kanban board.
- If there is no inventory in PSA, then material will be transferred from warehouse to PSA Storage location with a new task generation.
- Task will be confirmed by Warehouse Operative. This will set the Bin to full, and Inventory will be available at PSA.

Material Movement from Production Supply Area to the Production

Goods issue/consumption posting against production order from Production Supply area will be posted as a goods issue to production order. The material document will be generated, and the cost will be settled against the production order.

The detailed activities performed during this business process execution are as below:

Trigger Replenishment on the Flow Control

The existing full container is taken up in the production. The moment when the KANBAN is empty, the generation of the new KANBAN will be triggered manually through KANBAN board. The new container arrives and status change to full.

Kanban Replenishment without MRP

Replenishment is triggered exclusively by the Kanban signal between the warehouse and PSA. We need to define a Production supply area with reference to the storage location which is excluded from MRP run. The Material is stored in the fixed storage location.

Status Change/Kanban Signal

The status of the KANBAN containers controls and makes visible the course of Kanban processing. Usually, only the statuses "Empty" and "Full" are used. As a rule, if a material in a container has been used up and a container is then set to "Empty", this container status automatically triggers the replenishment process. The source of supply (Warehouse) receives the signal to fill up the container again. When the full container arrives back at the demand source (Production), the latter sets the container to the status "Full", and the goods receipt is posted for the material.

Below additional status can be configured:

- **Full:** Indicates that bin is full.

- **Waiting:** Indicates that although the material has been consumed, the supply source should not yet deliver more material. This status is also set by the system if a new Kanban container has been created.
- **"In process":** Indicates that the requested material is currently being produced by the supply source.
- **Empty:** Indicates that although the material has been consumed, and bin is empty.
- **Error:** Indicates that although the material has been consumed, the supply source should not yet deliver more material. This status is also set by the system if a new Kanban container has been created.

NOTE: As aligned with P2P team there is no integration between MES and KANBAN

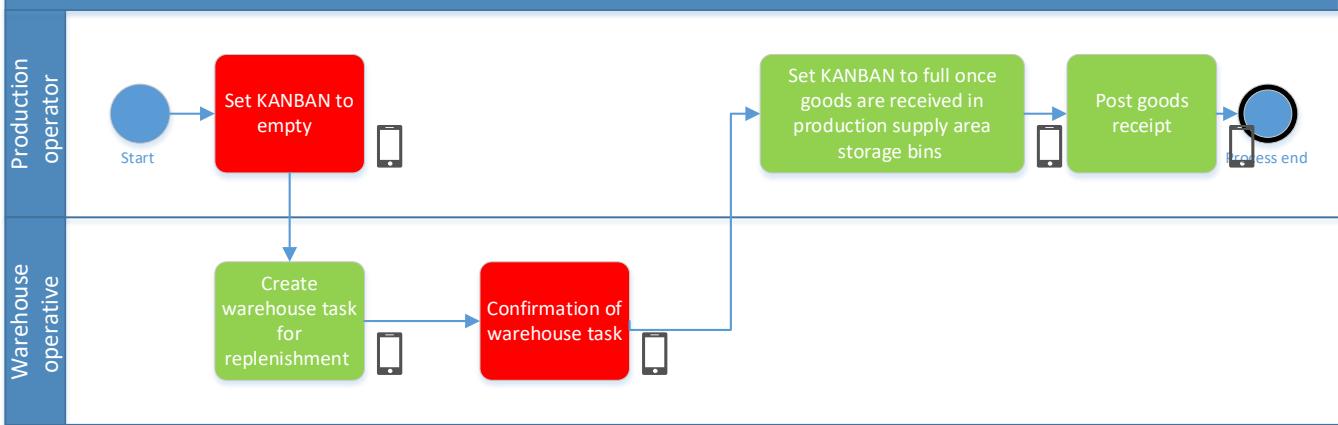
Figure 17: Layout of Kanban card

KANBAN CARD		"KANBAN ID Barcode"	
		 9 0 5 1 3 8 5 0 9 1	
Material Number	24915801590		
Ref WBS	FY1241ABC100		MATERIAL DESCRIPTION - LONG TEXT UPTO 40 CHAR SPACE
Warehouse Location	WH-B01-011		
Quantity	5 PCs QTY + UOM	Move to Station	PSA-WH-0001

3.3.2 Process Diagram

Internal KANBAN from Warehouse to Production

Unique Process ID: ED-ED-13_020103



3.3.3 Activity List & Automation

Internal KANBAN from Warehouse to Production

Process Step ID	BPH ID	Process Step Description	Role	Automation*	Fiori App ID	Fiori
P100	ED-13_020103	Start	Production operator	Partially Manual	NA	NA
P200	ED-13_020103	Set KANBAN to empty	Production operator	Partially Manual	F4630	Yes
P300	ED-13_020103	Create warehouse task for replenishment	Warehouse operative	Automated	/SCWM/TODLV_O	Yes
P500	ED-13_020103	Confirmation of warehouse task	Warehouse operative	Partially Manual		Yes
P600	ED-13_020103	Set KANBAN to full once goods are received in production supply area storage bins	Production operator	Human Triggered	F4630	Yes
P700	ED-13_020103	Post goods receipt	Production operator	Partially Manual	MIGO or /SCWM/PRDI	
P800	ED-13_020103	Process end	Warehouse operative		NA	NA

3.3.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Kanban	Not used currently – for future use			

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON

	NA	NA	Material movement from supplier to PSA	NA
--	----	----	--	----

3.4 Goods receipt from production (ED-13_020104)

3.4.1 Process Description

Receiving of finished goods and putting them away as they arrive from production into the warehouse is covered in this section. There are differences within the EDGE entities what step is the last step of production. There can be additional final quality inspections or packaging activities.

If the goods receipt is coming from an MES location, the receipt of goods is triggered from the MES integrated transaction. However, if the receipt of goods is triggered from a NON-MES location, then the receipt is triggered on a manual production confirmation leading to an automatic Goods Receipt in the SAP System.

Last step of production is printing the label for the final goods and put it on the finished good or packaging. Depending on entity specific routing to final quality approval zone can be necessary. After quality inspection a usage decision (UD) must be made. Depending on UD a warehouse task to final bin location or quarantine area gets created.

The trigger for a warehouse task to put away final products can be the closing of the work order, the posting of goods issue (automated warehouse task creation) or putting the final goods into a specific location for pick-up (manual warehouse task creation).

Logistics operators pick up the goods, confirm the pick-up and move them to destination bin. Completing the warehouse task by posting goods to finished goods storage. Afterwards finished goods are ready for picking process for the outbound process.

For HALCON and AL TARIQ the final steps take place in Zone 1. The final products are getting filled with explosives before they arrive to final assembly steps and quality inspection.

Adjustments in Production Confirmation

An exception scenario for return of goods from Production may arise resulting in a receipt back into the Warehouse. The following two scenarios may arise in such cases:

- Goods being returned from PSA without consumption

Where the goods are returned from the PSA directly, it will be handled as a normal return process from the PSA to the EWM designated bin for such returns. This can be triggered based on a manual Warehouse Order processed for such a movement back into the warehouse bins.

- Goods already consumed and require to be received back as wastage / damaged goods.

Where the goods are already consumed in Production, a reversal from Production will be required that will receive the component goods back in PSA. Once this adjustment is passed, and the goods are in PSA, a normal transfer of goods between PSA to the EWM can be passed for the goods to be returned to their designated return bin.

The Following labels will be used for receiving goods from production:

Figure 18: HU label for Finished Goods

"Entity Logo" 	Outbound Delivery Number 1240128401	Delivery Date 31.05.2023	
Ship To CUSTOMER NAME / SHIP TO PARTY	Ship To Address Ship To Address of Customer		
Package Number 111002412412 Single Item Package / Multiple Items Package *		Package Count 1	Total Packages 10
Package Dimensions L X W X H UOM 30 x 30 x 30 CM	Package Volume 90 CM³	Gross Weight 80 Kgs	Package Contents 4 Cartons
Entity Material Number 654000021 HS CODE	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space		

Figure 19: Putaway Labels for Finished Goods

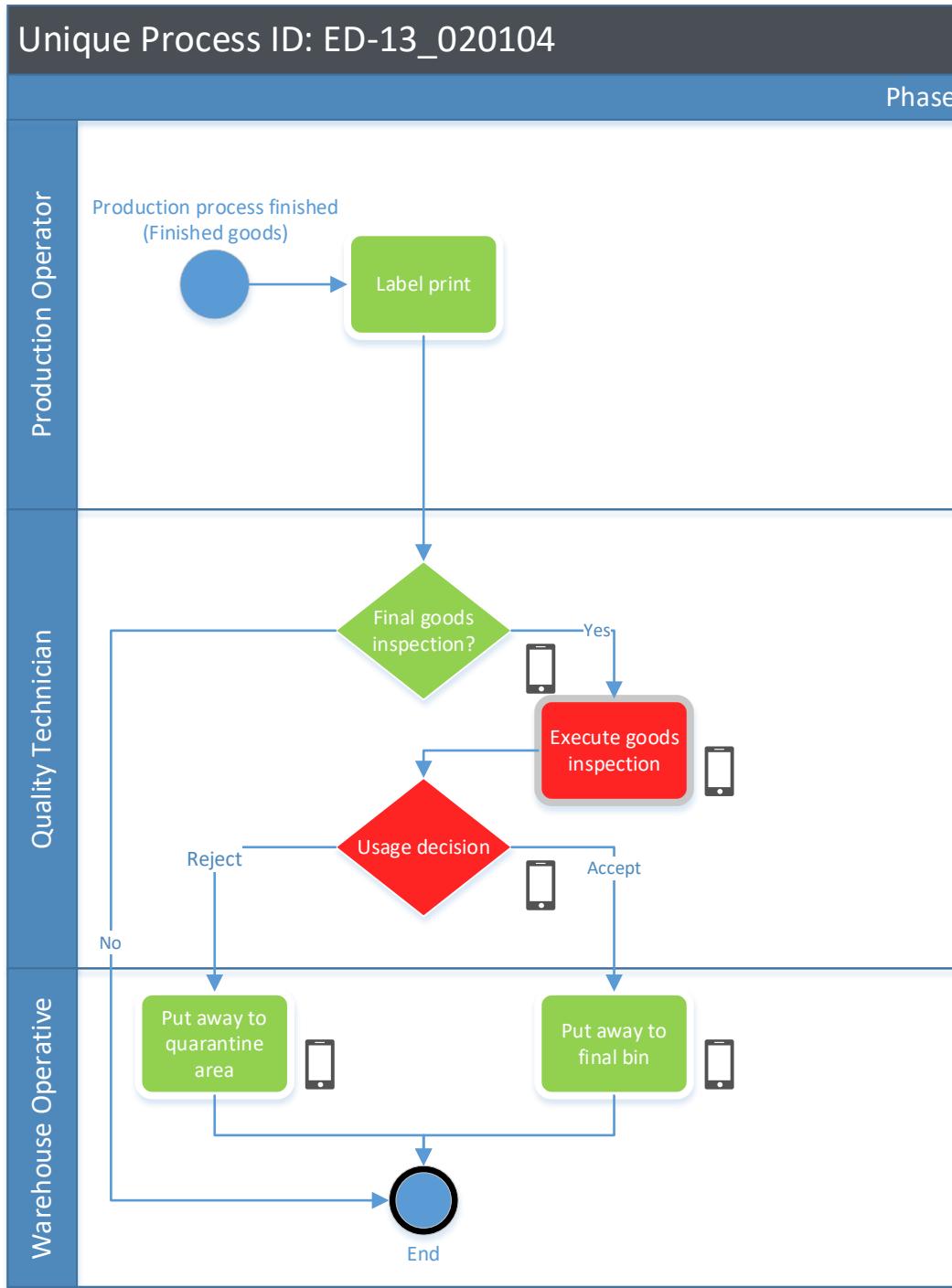
PUT AWAY LABEL - without Packaging - Multiple Units

"Entity Logo" HALCON		Queue Number Q01-WHS1	"WT Barcode"  45000024124	
Entity Material Number 111002412412	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space	Material Number	Date & Time 31.05.2023 4 : 35 PM	
HS CODE		Ref PO / Production Order 21958120581		
Entity Batch Number AABC45124				
Expiry Date				
Batch Number 	Inspection Lot Number 1240124128098	Quantity 5	UOM Pieces	
	Quality Inspector Name			
WBS CODE PJ.001.000124	Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001		
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Destination Storage Type:	

PUT AWAY LABEL - without Packaging 1 - Serial Code

"Entity Logo" HALCON		Queue Number Q01-WHS1	"WT Barcode"  45000024124	
Entity Material Number 111002412412	"Material Description" XYZ MATERIAL - up to 40 Characters of Print Space	Material Number	Date & Time 31.05.2023 4 : 35 PM	
HS CODE		Ref PO / Production Order 21958120581		
Entity Batch Number AABC45124				
Expiry Date				
Batch Number 	Inspection Lot Number 1240124128098	Quantity - UOM 1 - Piece	Serial Number 	
	Quality Inspector Name			
WBS CODE PJ.001.000124	Source Bin WM1-AB001-0001	Destination Bin WM1-AB002-001		
Print Date 31.05.2023	Print Time 5 : 35 PM	Printed by Mr XYZ	Destination Storage Type:	

3.4.2 Process Diagram



3.4.3 Activity List & Automation

Process Step	BPH ID	Process Step Description	Owner	Automation*	Fiori App ID	Fiori
P100	ED-13_020104	Production process finished	Production Operator	Partially Manual	NA	NA

P110	ED-13_020104	Label print	Production Operator	Automated	NA	NA
P200	ED-13_020104	Final goods inspection?	Quality Technician	Human Triggered	F2361	Yes
P300	ED-13_020104	Execute goods inspection	Quality Technician	Human Triggered	F2361	Yes
P400	ED-13_020104	Usage decision	Quality Technician	Human Triggered	F2361	Yes
P500	ED-13_020104	Put away to final bin	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P600	ED-13_020104	Put away to quarantine area	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P700	ED-13_020104	End	Warehouse Operative		NA	NA

3.4.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Goods receipt from production	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.5 Manage explosives and dangerous goods (ED-13_020201)

3.5.1 Process Description

Dangerous goods can be:

- Finished products - HALCON & AL TARIQ
- Semi-finished products (warheads)- HALCON & AL TARIQ
 - AL TARIQ buys from Lahab warhead through normal purchase process
 - HALCON sends empty cases and explosives to Lahab to be filled. They are sent back as semi-finished goods to HALCON. For this process, HALCON uses subcontracting purchase order, further details are available in Inbound logistics PDD and outbound logistics PDD regarding the subcontracting part
- Raw materials (explosives) – HALCON

These goods are strictly stored in a separated storage location called bunker (Zone 1). Entities concerned by these goods are HALCON and AL TARIQ.

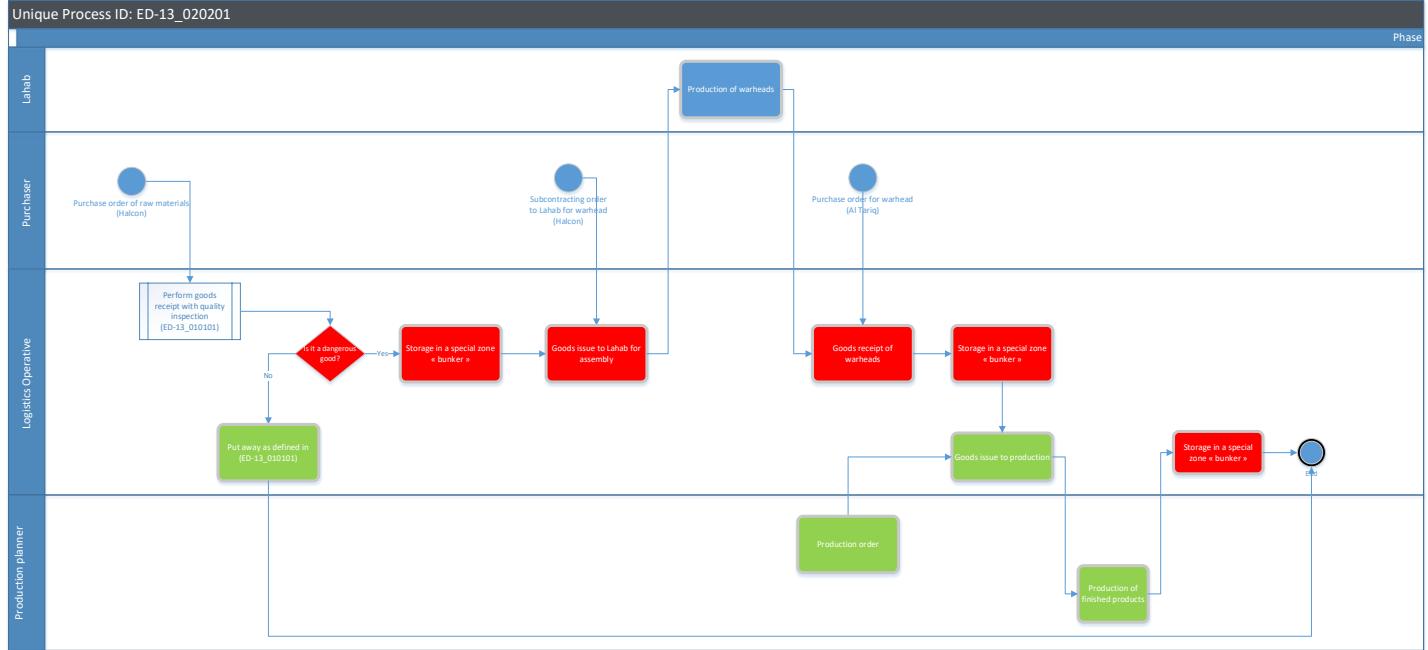
HALCON also considers chemicals as hazardous products and are stored in specific storage type (different from Zone 1).

Regarding dangerous management, business needs are as following:

- Visibility on the location

- Traceability of stock movements
- Stock quantity
- Stock type
- Reports

3.5.2 Process Diagram



3.5.3 Activity List & Automation

Process Step	BPH ID		Role	Automation	Fiori App ID	Fiori
P100	ED-13_020201	Purchase order of raw materials (HALCON)	Buyer	Partially Manual	NA	NA
P200	ED-13_020201	Subcontracting order from Lahab for warhead (HALCON)	Buyer	Partially Manual	NA	NA
P300	ED-13_020201	Purchase order for warhead (AL TARIQ)	Buyer	Partially Manual	NA	NA
P400	ED-13_020201	Perform goods receipt with quality inspection (ED-13_010101)	Warehouse Operative	Fully Automated	NA	NA
P500	ED-13_020201	Is it a dangerous good?	Warehouse Operative	Human Triggered	NA	NA
P600	ED-13_020201	Put away as defined in (ED-13_010101)	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P700	ED-13_020201	Storage in a special zone « bunker »	Warehouse Operative	Automated	/SCWM/RFUI	Yes

P800	ED-13_020201	Outbound process	Warehouse Operative	Partially Manual		
P900	ED-13_020201	Production of warheads	Lahab	Partially Manual	NA	NA
P1000	ED-13_020201	Inbound process	Warehouse Operative	Fully Automated		
P1100	ED-13_020201	Storage in a special zone « bunker »	Warehouse Operative	Automated	NA	NA
P1200	ED-13_020201	Production order	Production Planner	Automated		
P1300	ED-13_020201	Goods issue to production	Warehouse Operative	Automated	/SCWM/MFG_CONSUMPTION	Yes
P1400	ED-13_020201	Production of finished goods	Production planner	Automated		
P1500	ED-13_020201	Storage in a special zone « bunker »	Warehouse Operative	Automated	/SCWM/PRDI	Yes
P1600	ED-13_020201	End	Warehouse Operative		NA	NA

3.5.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Explosives	✓	X	X	✓
Chemicals	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.6 Raise quality issues in the warehouse (ED-13_020301)

3.6.1 Process Description

This process describes the management of quality inspection activities in stock handling processes. Quality inspection activities may be relevant for materials during the storage of goods.

The process steps include the following operations:

- Post material from unrestricted or blocked stock to quality inspection stock. By posting material to quality inspection, an inspection lot gets created. This will be a system activity. After performing the quality inspection, a usage decision must be made. This decision is made within the MRB (material review board)
- Execute physical quality inspection and record results against set parameters for each material
- Make usage decision

Based on the usage decision, the following actions can be taken:

- Move stock to unrestricted stock from quality inspection
- In case of positive result of QI, the stock can be posted to unrestricted stock again and moved back into the warehouse
- Reprocess (Reprocessing of parts is part of QM PDD)
- Scrap (Scrapping parts is described in chapter 3.7)
- Return to vendor (Return to vendor process is mentioned in Inbound PDD and is part of S2P PDD)

It is possible to block only one part of a HU. To do so, the HU must be split and a separated HU must be created. The new HU will have all relevant information for further processing. The blocking of parts of a material without HU management is still possible.

Affected items and HUs can be identified via:

- Material number,
- Batch number or
- Serial number(s)

After performing the quality inspection and taking a usage decision, a Putaway movement will be required to either put material in these possible locations:

- 1) Reprocess Zone (blocked stock)
- 2) Scrap Zone (Blocked stock) where material has to be scrapped
- 3) Return to Vendor Zone (blocked stock) material will be sent back to vendor

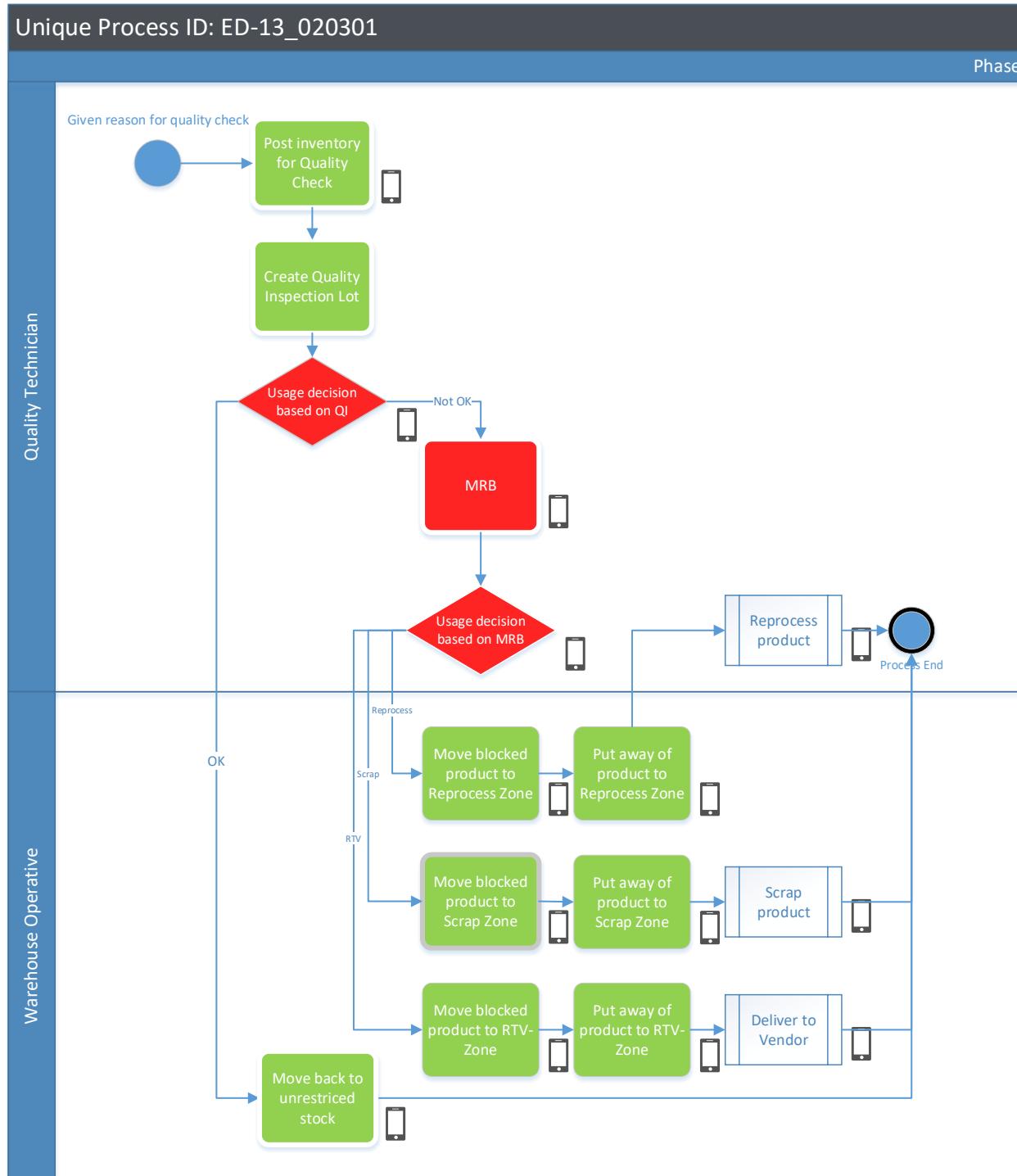
In case of a positive quality inspection, it will be a put back to unrestricted use.

The Put away operation will be performed using the Handheld Device as defined in section 3.1 with the following amendments:

2.02 - The App feature will be termed as “Put Away” instead of “Transfer Post”

Rest of the operations will be performed in the same manner as described in each of the scenarios for Put Away of HU managed, Non-HU Managed, serialized and Non serialized inventory items.

3.6.2 Process Diagram



3.6.3 Activity List & Automation

Process Step	BPH ID	Process Step Description	Role	Automation	Fiori App ID	Fiori
P100	ED-13_020301	Given reason for quality check	Quality Technician	Human Triggered	NA	NA
P200	ED-13_020301	Post inventory for Quality Check	Quality Technician	Automated	F2361	Yes
P300	ED-13_020301	Create Quality Inspection Lot	Quality Technician	Partially Manual	NA	NA
P400	ED-13_020301	Usage decision based on QI	Quality Technician	Human Triggered	F2361	Yes
P500	ED-13_020301	Move back to unrestricted stock	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P600	ED-13_020301	MRB	Quality Technician	Automated	F2361	Yes
P700	ED-13_020301	Usage decision based on MRB	Quality Technician	Automated	F2361	Yes
P800	ED-13_020301	Move blocked product to Scrap Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P900	ED-13_020301	Put away of product to Scrap Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1000	ED-13_020301	Scrap product	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1100	ED-13_020301	Move blocked product to Reprocess Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1200	ED-13_020301	Put away of product to Reprocess Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1300	ED-13_020301	Reprocess product	Quality Technician	Automated	F2361	Yes
P1400	ED-13_020301	Move blocked product to RTV-Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1500	ED-13_020301	Put away of product to RTV-Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1600	ED-13_020301	Deliver to Vendor	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P1700	ED-13_020301	Process End	Quality Technician		NA	NA

3.6.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Raise quality issues in the warehouse	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.7 Scrap material in the warehouse (ED-13_020302)

3.7.1 Process Description

In this process, scrapping of goods that are currently stored in any of the storage types in the warehouse is covered. The scrapping process can be initiated based on different reasons:

- Damaged goods
- Obsolete / non-moving stock
- Expired goods/End of Life
- Contaminated
- Replacement
- Other

Expired stock items can get identified in the Warehouse Monitor. The scrapping is initiated by creating the needed warehouse orders and tasks. The system supports scrapping for all storage types. The actual scrapping, including the financially relevant postings, are then either done manually or by a periodically scheduled program.

A Put away operation will be triggered on the Warehouse task, to be performed using the Handheld Device as defined in section 3.1 with the following amendments:

- 2.02 - The App feature will be termed as “Scrap” instead of “Transfer Post”
2.10 - The list of possible locations will be structured and limited to the location in the scrap zone only

Rest of the operations will be performed in the same manner as described in each of the scenarios for Put Away of HU managed, Non-HU Managed, serialized and Non serialized inventory items.

The complete scrap process is integrated with warehouse, quality, procurement and Finance. In the following, are explained all the integration aspects of inventory items as well as non-inventory items.

SCRAP PROCESS – INVENTORY ITEMS

The process describes the disposal of inventory items, obsolete and /or non-moving items.

1. Verification of Scrap Quantity:

Quality Control team identifies and confirms the list of items that needs disposal as per the Write-off form approved by the board.

**Quality – MRB scrap parts (Quarantine area)*

**Warehouse – Non-moving & excess items*

2. Identify & confirm the scrap category:

Quality Control & Warehouse team will start identifying and segregate the items as per the Scrap category (recyclable and non-recyclable).

3. Weighing of Scrap Material:

Quality Control & Warehouse team will be weighing the scrap material based on the scrap category (recyclable and non-recyclable material).

Scrap disposal form will be initiated in SAP pertaining all the details about the Scrap. Disposal form will follow the workflow for approval. Once Disposal form is approved completely then the Scrap items will be moved.

4. Acknowledge material transfer to scrap holding area:

After completed the scrap category activity, QC team will then acknowledge the material transfer to Warehouse Scrap area.

The segregated scrap materials are physically kept under the Scrap yard. In SAP, it should be separate storage movement type 551 (GI Scrapping). This Storage location should be exempted from MRP/Planning

5. Initiate a Scrap sale request to procurement:

Once the segregated Scrap material is weighed, Warehouse will then initiate a Scrap sale request to procurement.

6. Re-confirm the parts under export/ITAR controlled requirement

Procurement team to review and confirm the export/ITAR control requirement is applicable to the parts.

7. Special scrap procedures available. (Yes/No)?

If Yes: Initiate specific scrap procedures (i.e., tear down activity)

As per requirement from supplier, Warehouse will initiate the scrap procedures as related to regulations.

If No: Initiate bidding process with approved suppliers:

Procurement will initiate the bidding process to identify potential scrap dealers for the scrap sale

8. Receive Comparative statement of quotations from suppliers:

Procurement receives Comparative statement of quotations from suppliers with minimum of 3 bidders. Bid summary to be submitted to Finance for approval on the highest sales amount.

9. Award the highest bidding supplier:

Once Finance approved the Bid summary, the highest bidding scrap dealer is then awarded accordingly.

10. Execute Outbound Operations for Scrap Materials

After allotting the order to the highest bidder, the issuance process will follow the normal outbound operations protocol as defined in Order Management and Outbound Logistics PDDs.

SCRAP SALES PROCESS - NON-INVENTORY ITEMS

The process describes the disposal of non-inventory items activities.

Non-Inventory Item – is a type of product that not tracked/monitored in the inventory systems. This type of items exists as a waste from Operations and yet to be disposed as a scrap parts. (I.e., metal scrap from fabrication and damage/defective part, etc.)

1. Received scrap parts (non-inventory items) from Operations:

- Metal scrap from production (fabrication).
- Damage/Defective Parts

2. Identify & confirm the scrap category:

Warehouse team will start identifying and segregate the items as per the Scrap category (recyclable and non-recyclable).

3. Physical transportation of the material to scrap location:

The segregated scrap material is physically kept under the Scrap Yard. There is NO stock for these items in SAP. Scrap disposal form will be initiated in SAP pertaining all the details about the Scrap. Disposal form will follow the workflow for approval

4. Initiate a Scrap sale request to procurement:

Once the segregated Scrap material is weighed, Warehouse will then initiate a Scrap sale request to procurement.

Non-Inventory items should be treated as **Service Materials (Non-Stock Items)** – there should be some common Scrap Materials in SAP (example: Metal Scrap, Chemical Scrap, Parts Scrap, Hazardous Scrap, etc.) with UoM as KG/TON/MTON and UoM conversion should also be maintained in Material Master.

5. Re-confirm the parts under export/ITAR controlled requirement

Procurement team to review and confirm the export/ITAR control requirement is applicable to the parts.

6. Special scrap procedures available. (Yes/No)?

If Yes: Initiate specific scrap procedures (i.e., tear down activity)

As per requirement from supplier, Warehouse will initiate the scrap procedures as related to regulations.

If No: Initiate bidding process with approved suppliers:

Procurement will initiate the bidding process to identify potential scrap dealers for the scrap sale

7. Receive Comparative statement of quotations from suppliers:

Procurement receives Comparative statement of quotations from suppliers with minimum of 3 bidders. Bid summary to be submitted to Finance for approval on the highest sales amount.

8. Award the highest bidding supplier:

Once Finance approved the Bid summary, the highest bidding scrap dealer is then awarded accordingly.

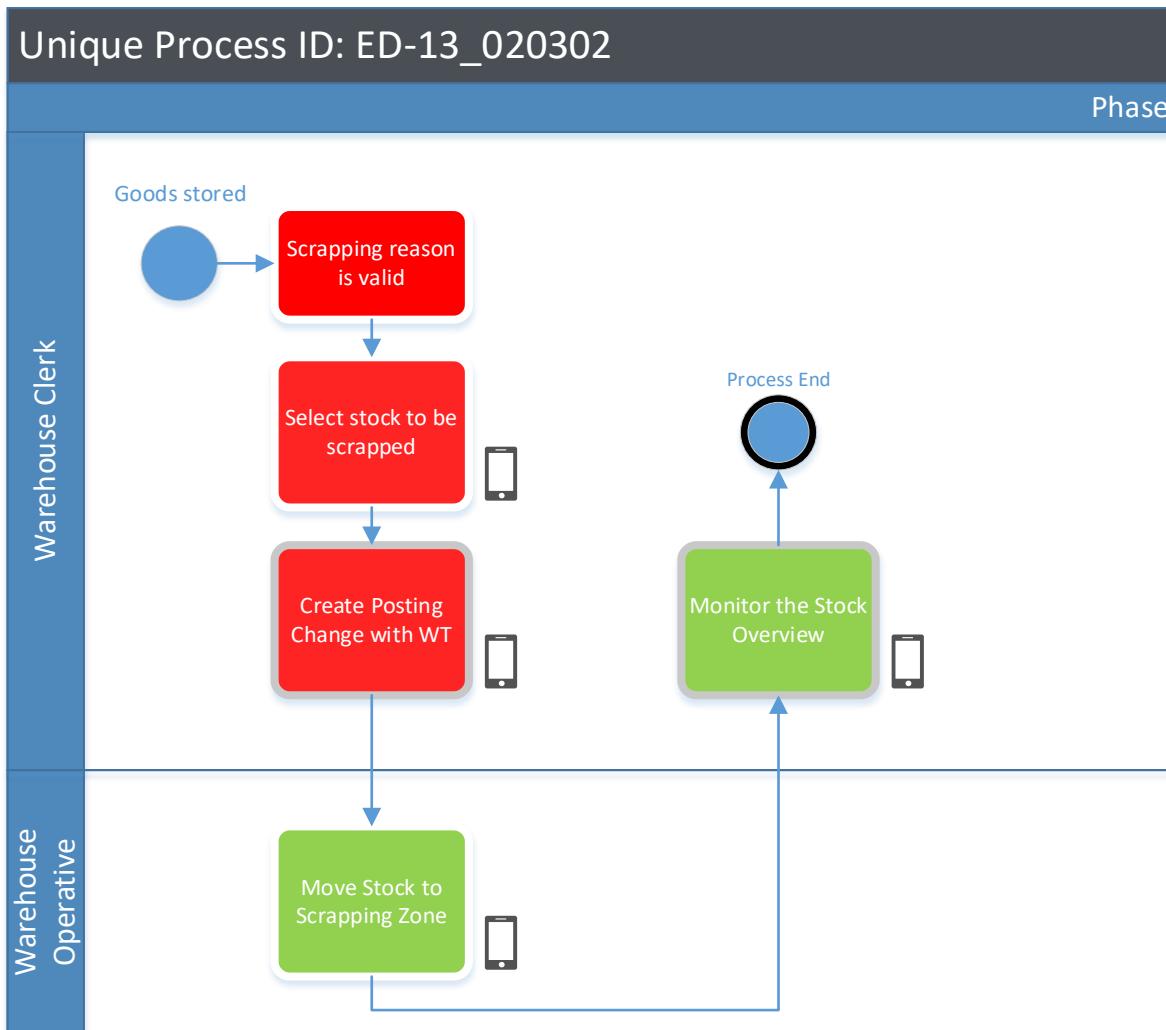
9. Execute Outbound Operations for Scrap Materials

After allotting the order to the highest bidder, the issuance process will follow the normal outbound operations protocol as defined in Order Management and Outbound Logistics PDDs.

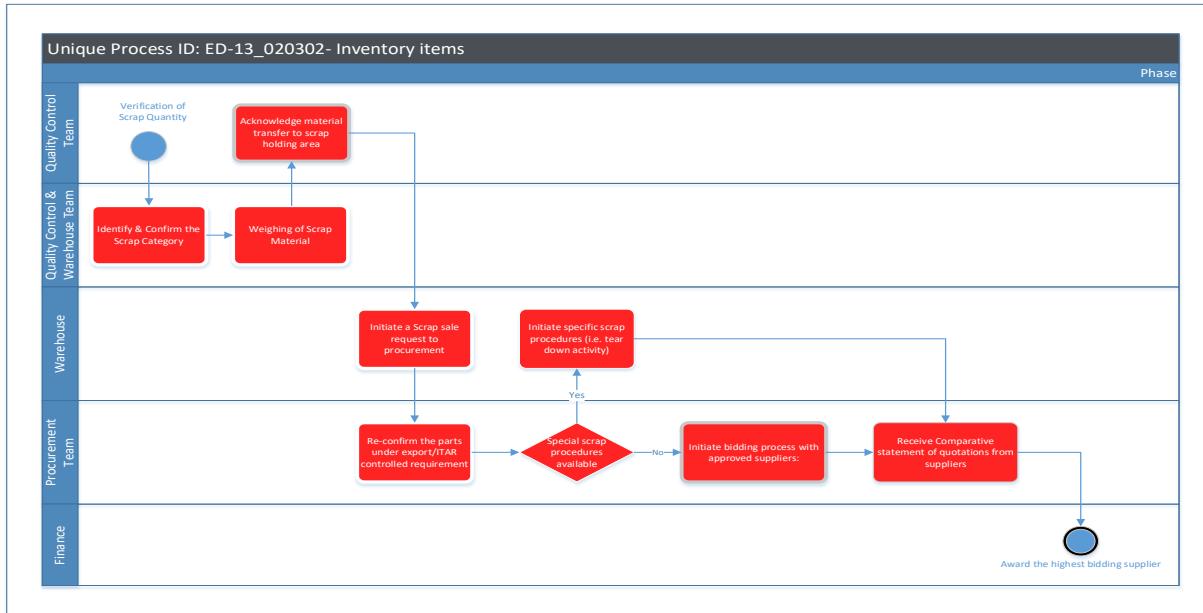
Approval mechanism for Inventory Scrap Sales

Warehouse Manager	Operations Director	Quality Director		CFO	Chief Executive Officer
Confirm the stock qty is correct and the material will be segregated in a specific location for scrap.	Confirm the above listed items are Obsolete/ scrap due, recommend to write-off	Confirm the above listed items are Obsolete/ scrap due, recommend to write-off		Endorsed (to Scrap the above listed items)	Approved (to Scrap the above listed items)
Approver Name:	Approver Name:	Approver Name:	Approver Name:	Approver Name:	Approver Name:
Approver ID:	Approver ID:	Approver ID:	Approver ID:	Approver ID:	Approver ID:
Approval Date:	Approval Date:	Approval Date:	Approval Date:	Approval Date:	Approval Date:
Approval Time:	Approval Time:	Approval Time:	Approval Time:	Approval Time:	Approval Time:

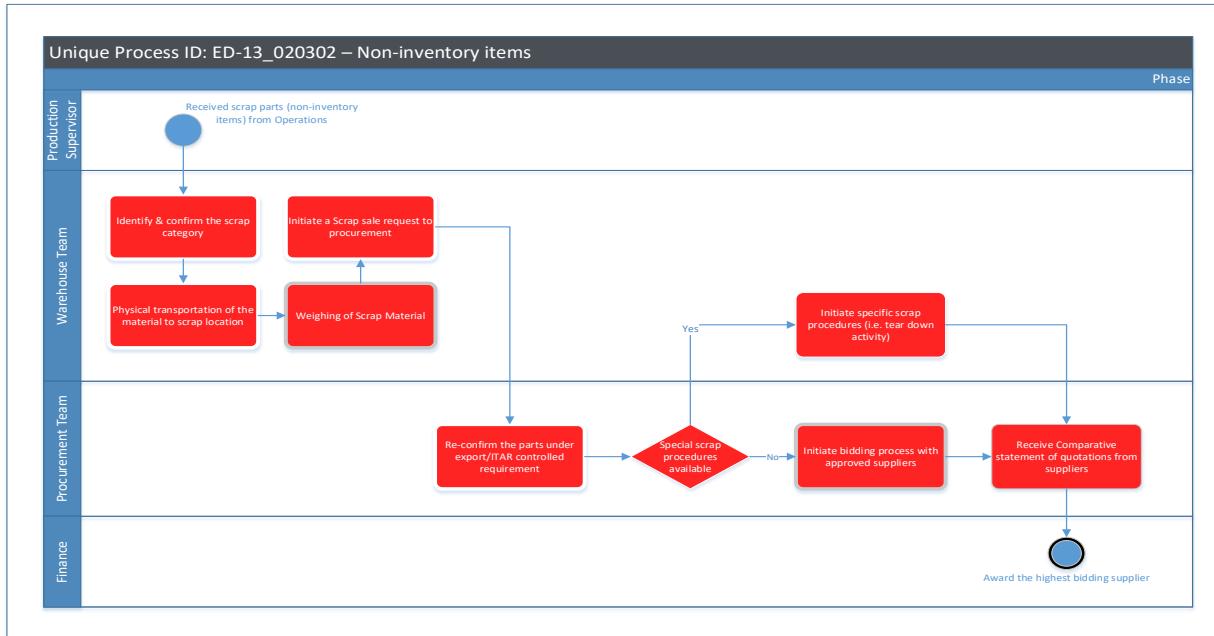
3.7.2 Process Diagram



Inventory items



Non-Inventory items



3.7.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Role	Automation*	Fiori App ID	Fiori
P100	ED-13_020302	Goods stored	Warehouse Clerk	Partially Manual	NA	NA

P200	ED-13_020302	Scraping reason is valid	Warehouse Clerk	Human Triggered	NA	NA
P300	ED-13_020302	Select stock to be scrapped	Warehouse Clerk	Human Triggered	/SCWM/POST	Yes
P400	ED-13_020302	Create Posting Change with WT	Warehouse Clerk	Partially Manual	/SCWM/POST	Yes
P500	ED-13_020302	Move Stock to Scraping Zone	Warehouse Operative	Automated	/SCWM/RFUI	Yes
P800	ED-13_020302	Monitor the Stock Overview	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes
P900	ED-13_020302	Process End	Warehouse Clerk		NA	NA

Inventory items

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation*	FIORI App
P100	ED-07_010302	Verification of Scrap Quantity	P200	Start	Quality Control Team	Partially Manual	NA
P200	ED-07_010302	Identify & Confirm the Scrap Category	P300	Process	Quality Control & Warehouse Team	Human Triggered	NA
P300	ED-07_010302	Weighing of Scrap Material	P400	Process	Quality Control & Warehouse Team	Partially Manual	NA
P400	ED-07_010302	Acknowledge material transfer to scrap holding area	P500	Process	Quality Control Team	Partially Manual	NA
P500	ED-07_010302	Initiate a Scrap sale request to procurement	P600	Process	Warehouse	Partially Manual	NA
P600	ED-07_010302	Re-confirm the parts under export/ITAR controlled requirement	P700	Process	Procurement Team	Human Triggered	NA
P700	ED-07_010302	Special scrap procedures available	P800	Process	Procurement Team	Human Triggered	NA

P800	ED-07_010302	Initiate specific scrap procedures (i.e., tear down activity)	P900	Process	Warehouse	Partially Manual	NA
P900	ED-07_010302	Initiate bidding process with approved suppliers:	P1000	Process	Procurement Team	Partially Manual	NA
P1000	ED-07_010302	Receive Comparative statement of quotations from suppliers	P1100	Process	Procurement Team	Partially Manual	NA
P1100	ED-07_010302	Award the highest bidding supplier		End	Finance	Partially Manual	NA

Non-inventory items

Process Step ID	BPH ID	Process Step Description	Next Step ID	Shape Type	Owner	Automation*	FIORI App
P100	ED-07_010302	Received scrap parts (non-inventory items) from Operations	P200	Start	Production Supervisor	Partially Manual	NA
P200	ED-07_010302	Identify & confirm the scrap category	P300	Process	Warehouse Team	Human Triggered	NA
P300	ED-07_010302	Physical transportation of the material to scrap location	P400	Process	Warehouse Team	Partially Manual	NA
P400	ED-07_010302	Weighing of Scrap Material	P500	Process	Warehouse Team	Partially Manual	NA
P500	ED-07_010302	Initiate a Scrap sale request to procurement	P600	Process	Warehouse Team	Partially Manual	NA
P600	ED-07_010302	Re-confirm the parts under export/ITAR controlled requirement	P700	Process	Procurement Team	Partially Manual	NA
P700	ED-07_010302	Special scrap procedures available	P800	Process	Procurement Team	Partially Manual	NA
P800	ED-07_010302	Initiate specific scrap procedures	P900	Process	Warehouse Team	Partially Manual	NA

		(i.e., tear down activity)					
P900	ED-07_010302	Initiate bidding process with approved suppliers	P1000	Process	Procurement Team	Partially Manual	NA
P1000	ED-07_010302	Receive Comparative statement of quotations from suppliers	P1100	Process	Procurement Team	Partially Manual	NA
P1100	ED-07_010302	Award the highest bidding supplier		End	Finance	Partially Manual	NA

3.7.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Scrap material in the warehouse	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.8 Monitor and control warehouse activities (ED-13_020401)

3.8.1 Process Description

The warehouse management monitor is a central tool for keeping warehouse managers constantly up to date as to the current situation in the warehouse, and to enable them to initiate appropriate responses considering this situation.

An overview of the monitored items as follows:

- Inbound Delivery Item
- Outbound Delivery Item
- Loading Workload per Route
- Warehouse Task
- Physical Inventory Documents
- Stock Overview
- Check expired and items with short expiry date
- Overview of available employees
- Turnover and warehouse utilization

System will support in monitoring shelf-life stock (e.g., batteries, chemicals). Automated stock reports can visualize quantity and locations of affected material. If needed, the warehouse tasks to move expired stock to QI-area or blocked area are created automatically. A recurring automatic job for checking of near to expire items on a weekly basis shall run in the background and notify the concerned from the warehouse so that they can take suitable measures for physical movement and tagging of stock items.

Inventory is managed at storage bin level. These storage bins can be defined according to the requirements. Every storage bin in the warehouse is mapped in the system. This enables to constantly track all stock movements in detail. It is visible where a specific product is in the warehouse. EWM can be used to optimize storage bin management, since EWM takes on a large part of optimizing the products, so that each product is assigned to the correct storage bin, depending on its size and frequency of access.

Inventory Management and EWM are fully integrated. Using the physical inventory procedures and the entry of stock differences, the system ensures that the book inventory balance in Inventory Management always matches the warehouse stock in EWM.

3.8.2 Process Diagram

There is no procedural aspect of this section that might be required to follow in a sequence, and therefore the process diagram has been omitted from this section. The business may carry out the review and monitoring of the above listed items on different frequencies based on their respective requirement.

3.8.3 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Role	Automation*	Fiori App ID	Fiori
P100	ED-13_020401	Inbound Delivery Item	Warehouse Clerk	Partially Manual		
P200	ED-13_020401	Outbound Delivery Item	Warehouse Clerk	Partially Manual		
P300	ED-13_020401	Loading Workload per Route	Warehouse Clerk	Automated	/SCWM/MON	Yes
P400	ED-13_020401	Warehouse Task	Warehouse Clerk	Automated	/SCWM/MON	Yes
P500	ED-13_020401	Physical Inventory Documents	Warehouse Clerk	Automated	/SCWM/MON	Yes
P600	ED-13_020401	Stock Overview	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes
P700	ED-13_020401	Labour Utilization Date and Processor	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes
P800	ED-13_020401	Check expired and items with short expiry date	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes
P900	ED-13_020401	Overview of available employees	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes
P1000	ED-13_020401	Turnover and warehouse utilization	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes

P1100	ED-13_020401	Exception Handling Report	Warehouse Clerk	Fully Automated	/SCWM/MON	Yes
P1200	ED-13_020401	Alert Overview	Warehouse Clerk	Human triggered		

3.8.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Monitor and control warehouse activities	✓	✓	✓	✓

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	NA	NA

3.9 Perform inventory counting (ED-13_020402)

3.9.1 Process Description

Warehouse stock requires to be checked for any discrepancy, and therefore a counting and checking exercise needs to be performed. This gives the warehouse and finance stakeholders the confidence that the reported stock numbers from the warehouse are authentic and helps comply with the legal reporting requirements and the internal and external audit requirements.

The methods that should be available in the system for all entities are the standard SAP available methods:

- Periodic inventory: involves counting and verifying all inventory items in the warehouse. It typically occurs at regular intervals, such as annually or quarterly, and involves a complete shutdown of warehouse operations during the counting process
- Continuous inventory: inventory counts are conducted continuously as part of daily warehouse operations
- Cycle counting: cycle counting is an ongoing process of counting a subset of inventory items on a regular basis. It involves dividing the warehouse into smaller sections or zones and counting a portion of inventory items in each cycle. The selection of items for cycle counting can be based on various criteria, such as ABC analysis, criticality
- Inventory sampling: counting a representative sample of inventory items to estimate the overall stock levels accurately. Statistical methods and sampling techniques are applied to determine the appropriate sample size and extrapolate the results to the entire inventory

Inventory counting can be performed on normal stock as well as special stock (project stock, customer stock/sales order stock, quality inspection, vendor stock, etc.).

In this process, physical inventory (PI) documents are created for a chosen number of storage bins or products. The PI document will contain all necessary information regarding batches, materials and their serial numbers in inventory that is to be counted. A material number will be listed batch wise to collect the serial numbers on batch level. System can also allow to count based on batches by creating count sheet with multiple batches.

The counting can be performed using a Handheld device (recommended) or a system stock-based count sheet printed on paper. Results are handled to the accountant clerk to be entered in the system, and in case of

discrepancy cost accountant can request a re-count. In this case, a recount sheet is printed, and physical re-count is performed. Refer to R2R_Product Costing and Inventory Accounting (3.5 Count inventory) for further details regarding the process from a Finance point of view.

This process is recommended as per industry best practice, however, at entity level, it is noted that the process is initiated by Finance and carried out entirely by the warehouse team where the posting of results is done by the warehouse manager. The roles should be assigned as per entity preference.

Currently, in case of discrepancies warehouse team can recount up to 3 times (3 recount sheets should be available in the system) by different counters. After investigation, only high discrepancies are reported to the management to take a decision (rare case) before posting the results (NIMR case). The posting of results is to be based on the approval which is subject to entity level tolerances based on DoA leading to posting in EWM.

Along with the above process, the progress of physical inventory counting should be visible on the warehouse monitor.

Inventory Counting Process

The following process steps are involved:

- Create PI documents and warehouse orders
- Count the bins or products
- Create recount documents and carry out the recounting
- Post the PI documents
- Set completeness
- Post the differences

Business requirement - Inventory Frequency

The business will determine based on their reporting requirements if the inventory count is to be performed monthly, quarterly, bi-annually or on ad-hoc if needed. However, as a legal reporting requirement, it must be carried out at least annually. The system should be configured to allow for multiple counts in a year to facilitate the business.

Business requirement - Inventory Stock %

The business will determine based on their requirements and criticality of the stock item, the percentage of stock to be checked and counted during the counting exercise. The system should allow for providing the sampling % so that the counting exercise can be carried out as per business requirements.

Layout of the document

If needed, items should be sorted as per the following hierarchy:

- HU, if material is HU managed
 - Batch (the batch number can identify the concession ID as they have a 1:1 relationship)
 - Serial number if serialized

Figure 20: Example for inventory counting sheet

Physical Inventory Count Document				Page: 1/1
Warehouse Number:	1710	Warehouse Cross Industries	Warehouse	2003900
Physical Inventory	Y021	Gen. Activity Area for Storage	Print Date:	09/23/2022
100034 / 1/2022				08/10/2022
Storage Bin	HS	Ad-hoc Physical Inventory (Product-Specific)	<input type="checkbox"/>	
021.01.05.02	UPLD	BP1710	1	
1	ENMS4-01	Small Part, Slow-Moving Item	F2	BP1710, PC
				07/26/2022
—				
Count Date:	_____	Count Time:	_____	
Counter:	_____	Signature:	_____	*

*SAP standard form

Figure 21: Example for inventory counting sheet with SN

Physical Inventory Count Document					Page: 1/1
Warehouse Number:	3412 NIMR Ajban	Warehouse	1000000333		
Physical Inventory	CS02 CENTRAL STORAGE BUILDING 1 -		Print Date:	11.07.2023	
Physical Inventory		Physical Inventory Reference	Reprint	Count Date	
Level	Physical Inventory			Storage Bin Empty	
	Reason			Priority	
	Handling Unit	Empty	Complete	Does not Exist	
	Product	Party Entitled	Batch	Quantity UoM	
	Product Description		StckCat	Proposed Quantity	
	Hazardous Substance	Owner	CoO	SLED	
	Cust. Document Cat.		Sales	Sales Order Item	
Document Category		Document	Item		
Serial Number					
1000000000/ 1/2023			X	11.07.2023	
Storage Bin	HS	Ad-hoc Physical Inventory (Product-Specific)		<input type="checkbox"/>	
CS02.01.01.01	UPLD		1		
I	1500000073	3401	0000001849	_____	, EA
	ROH_Physins_QI -1		F1		
		3401	AE	04.07.2023	
		00000000000000000000000000000073	<input type="checkbox"/>		
		00000000000000000000000000000074	<input type="checkbox"/>		
		00000000000000000000000000000075	<input type="checkbox"/>		
		00000000000000000000000000000076	<input type="checkbox"/>		
		00000000000000000000000000000077	<input type="checkbox"/>		
		00000000000000000000000000000078	<input type="checkbox"/>		
		00000000000000000000000000000079	<input type="checkbox"/>		
		00000000000000000000000000000080	<input type="checkbox"/>		
Count Date:		Count Time:			
Counter:		Signature:			

* EWM standard form

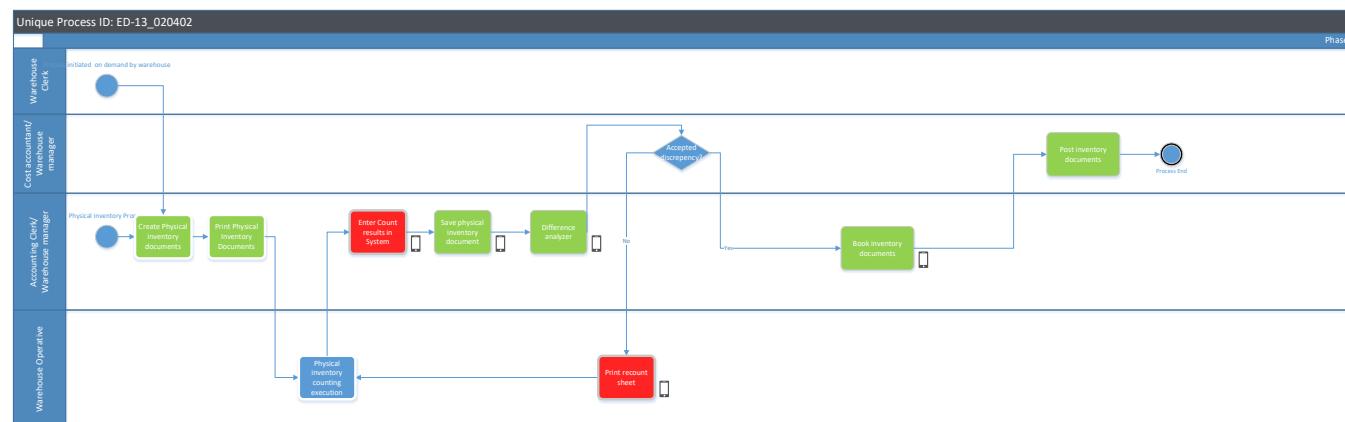
3.9.2 Activity List & Automation

Process Step ID	BPH ID	Process Step Description	Role	Automation*	Fiori App ID	Fiori
P100	ED-13_020402	Physical Inventory Process	Accounting Clerk	Partially Manual	NA	NA
P200	ED-13_020402	Process initiated on demand by warehouse	Warehouse Clerk	Human Triggered	/SCWM/PI_PR_OCESS	Yes

P300	ED-13_020402	Create Physical inventory documents	Accounting clerk/Warehouse manager	Partially Manual	/SCWM/PI_CC_CREATE	Yes
P400	ED-13_020402	Print Physical Inventory Documents	Accounting clerk/Warehouse manager	Automated	NA	NA
P500	ED-13_020402	Physical inventory execution	Warehouse Operative	Partially Manual	NA	NA
P600	ED-13_020402	Enter Count results in System	Accounting clerk/Warehouse manager	Human Triggered	F3340	Yes
P700	ED-13_020402	Save physical inventory document	Accounting clerk/Warehouse manager	Automated	NA	NA
P800	ED-13_020402	Accounting clerk	Accounting clerk/Warehouse manager	Automated	/SCWM/DIFF_ANALYZER	Yes
P900	ED-13_020402	Accepted discrepancy?	Cost accountant/Warehouse manager	Human Triggered	NA	NA
P1000	ED-13_020402	Print recount sheet	Warehouse Operative	Human triggered	NA	NA
P1100	ED-13_020402	Book inventory documents	Accounting clerk/Warehouse manager	Partially Manual	/SCWM/DIFF_ANALYZER	Yes
P1200	ED-13_020402	Post inventory documents	Cost accountant/Warehouse manager	Fully Automated	F1512	
P1300	ED-13_020402	Process End	Cost accountant/Warehouse manager		NA	NA

*) Options: Automated, Automated (WRICEF), Manual or Non-System

3.9.3 Process Diagram



3.9.4 Applicability Matrix and Special Requirements

Entities	AL TARIQ	ADASI	NIMR	HALCON
Perform inventory count - Periodic inventory	✓	✓	✓	✓
Perform inventory count - Continuous inventory	✓	✓	✓	✓
Perform inventory count - Cycle counting	✓	✓	✓	✓
Perform inventory count - Inventory sampling	✓	✓	✓	✓
Perform inventory count – Ad-hoc	✓	✓	✓	✓

*It has been agreed to enable all standard inventory methods for the entities even if they are not using all of them today, as the entities have the intention to evolve their current practices

Special entities requirements	AL TARIQ	ADASI	NIMR	HALCON
	NA	NA	Have 2 signatories in the inventory count sheet In case of discrepancy, system should generate up to 3 recount sheets assigning different user each time	NA

4. DETAILED SOLUTION DESIGN

Final update of solution design chapter will be done after considering the results of SIT/UAT

Manage master data

Master Data	Application	Primary	Secondary
Business Partner	S/4	S/4	
Product Master	S/4, EWM	S/4, EWM	
Shipping Location	EWM	EWM	
Warehouse	EWM	EWM	
Packaging Specification	EMM	EWM	
Storage Bin, Staging Area, Door, Check Point	EWM	EWM	
Bin Assignment	EWM	EWM	
Print, Label Condition	EWM	EWM	
Task/Order condition	EWM	EWM	
Work Center	EWM	EWM	
Consolidation Group	EWM	EWM	
User Master (Resource, Queue Assignment, Tolerance Group)	EWM	EWM	
Bin sorting	EWM	EWM	
PSA declaration	EWM	EWM	
QC set up	EWM	EWM	
Slotting	EWM	EWM	
Batch-Class and Characteristic	S4, EWM	S4	

Master data is the core data of an enterprise that exists independently of specific business transactions and is referenced in business transactions. It builds the foundation for the smooth execution of business processes and well-informed business decisions. Master data represents business objects rather than business transactions and is rarely changed over a long period of time.

Plant, shipping point, customer master and vendor master data are used by S4 and by EWM in general. EWM system have below master data of its own.

Warehouse product master:

The warehouse product is a warehouse-number-dependent view of the product master data. The warehouse product comprises all the properties of a product that relate to its storage in a certain warehouse within the framework of EWM, such as the put away control indicator.

Packaging specification:

The packaging specification defines all the necessary packing levels for a product in order, for example, to put away or transport the product. For a product, a packaging specification mainly describes in which quantities you can pack the product into which packaging materials in which sequence.

Storage bin

A storage type consists of a selection of storage spaces, which are called storage bins in Extended Warehouse Management (EWM). The storage bin is the smallest spatial unit in a warehouse. Therefore, the storage bin represents the exact position in the warehouse where products are and/or can be stored. Since the address of a storage bin is frequently derived from a coordinate system, a storage bin is often referred to as a coordinate. For example, the coordinate 01-02-03 could be a storage bin in aisle 1, stack 2, and level 3.

Resource group / Resource:

A resource is an entity representing a user or equipment, which can execute work in the warehouse.

Warehouse User:

Warehouse resource master data is created in EWM to enable warehouse worker to log on via HANDHELD presentation devices and execute HANDHELD transactions

Production Supply Area

An area in production or in the warehouse where products are staged or withdrawn

4.1 Solution prerequisites

Below is the list of prerequisites to run the process:

- Maintain users with the below roles:
SAP_BR_WAREHOUSE_CLERK_EWM
SAP_BR_WAREHOUSE_OPERATIVE_EWM
- Access to SAP Fiori launchpad
- Stock availability
- Open MM postings for the current date
- HANDHELD Resource assignment to the user ID
- Relevant Configuration is complete

4.1.1 Process predecessor and successor

Predecessor:

- N/A

Successor:

- Physical Inventory Completion

- Scrapping completion
- Financial account postings
- Stock change

4.1.2 Master data prerequisites

Below is the list of Master Data required:

- Product Master
- Packaging Material Master Data
- Organization Master Data
- Warehouse Specific Organization Data
- Warehouse Specific Master Data
- Queues
- Resources
- EHS Master Data

4.1.3 Organizational structure requirements

Below is the list of Master Data required

- Organization Structure is configured in the system
 - Company Code
 - Plant
 - Storage Location
 - Receiving Location
 - Shipping Point
 - Warehouse Number
 - Storage Type
 - Activity Area
 - Storage Section
 - Storage Bins

4.2 Detailed solution design

Components/Parts and HU can be moved within one storage type between bins and between storage types of different bins. The picker performed the transfer through Handheld device using RF Gun using std RF Menu /SCWM/RFUI -> Internal Processes-> Adhoc WT Creation ->

1. Replenishment of Stock
2. Create and Confirm Adhoc Product Warehouse Task - Bin to Bin transfer
3. Create and Confirm Adhoc HU Task.

With this replenishment processes, you can plan or automate the creation of replenishment warehouse tasks to maintain the right inventory levels for your products in the areas where picking is done. The replenishment process is activated per type of replenishment (such as planned replenishment or automatic replenishment) and storage type as part of the configuration. Within the automatic replenishment, the system automatically creates replenishment warehouse orders when stock falls below a predefined threshold during an outbound process. The system calculates the replenishment quantity according to the settings in the material master. Planned replenishment can be performed either interactively or in the background. The system creates replenishment

warehouse tasks because of a planned replenishment run if the current stock is below the threshold at the time when the program is executed.

Through HANDHELD Guns, picker can perform the required activities efficiently.

The same activities can be performed in desktop or tablet as well through **Replenishment of Stocks App.**

Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
MIGO_GI	Create Material document	HANDHELD	Warehouse Clerk	S/4HANA
/SCWM/POST	Posting change document	Terminal	Warehouse Clerk	S/4HANA
/SCWM/TODLV_Oor /SCWM/MON	Create picking warehouse task	Terminal	Warehouse Clerk	S/4HANA
/SCWM/RFUI	Pick	HANDHELD	Warehouse Operative	S/4HANA
/SCWM/RFUI Or /SCWM/TO_CON	Posting to target location	HANDHELD	Warehouse Operative	S/4HANA
Manual	Changing responsibility	NA	NA	S/4HANA
Automatic	Print Issue slip	Printer	NA	S/4HANA

Create and Confirm Adhoc Product Warehouse Task - Bin to Bin transfer

In day-to-day operation in a warehouse, business may transfer stock from one bin to another bin within same storage type or different storage type. This can be handled by Handheld device or tablet/desktop by the picker/operator in warehouse or it may be performed with Tablet/Desktop by warehouse Clerk. Technically internal stock transfer directly from storage bin A to storage bin B without an intermediate stop (such as packing

station). As a result, there is one picking and putaway bin for every internal stock transfer. EWM indicate these storage bins when creating warehouse requests.

Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
/SCWM/RFUI	1. Internal Processes-> Adhoc WT Creation-> Create and Confirm Adhoc Product Warehouse Task	HANDHELD Gun	Warehouse Operative	S/4HANA

4.2.1.1 Warehouse integration with production; Solution steps and elements (Level 5-6)

With this process, business can tightly integrate warehouse execution with manufacturing operations using the Advanced Production Integration functionality of Embedded/Advance warehouse management in SAP S/4HANA. The warehouse execution for Production Orders is based on the Production Material Request (PMR) document. The PMR contains the information of component materials and quantities, which are needed for production.

EDGE P2 entities will use SAP MES (Manufacturing Execution System) where there is a good integration with S4 EWM. You can enable synchronization of the material flows between warehouse and production and can improve inventory visibility and control as material movements are posted in real time in the warehouse. Business stage components from the warehouse to the production supply area as they're required for manufacturing operations and consume them from the production supply area. Entities receive finished goods and put them away as per the system proposed location. Each of the P2 entities have their own way of handling the Put away process. The finished goods are put away in the warehouse into the Bulk Storage except ADASI where their products can be managed with rack storage.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Check Material Coverage (F0251)	Release Production Order	Fiori	Production Supervisor	S/4HANA
Staging and Consumption				
Stage for Production (/SCWM/MFG_STAGING)	Plan the Staging of Components to PSA Staging Warehouse Order is created in the background	Fiori	Warehouse Clerk (EWM)	S/4HANA

Warehouse Monitor (/SCWM/MON)	Check Staging Warehouse Order	Fiori	Warehouse Clerk (EWM)	S/4HANA
HANDHELD Environment (/SCWM/RFUI)	Move pallets from Final bin to Production Supply Area (PSA)	Fiori	Warehouse Operative (EWM)	S/4HANA
Crate Part Replenishment				
Replenish Stock (/SCWM/REPL)	Schedule Replenishment stock for PSA refill Staging Warehouse Order is created in the background	Fiori	Production Supervisor	S/4HANA
Warehouse Monitor (/SCWM/MON)	Check Staging Warehouse Order	Fiori	Warehouse Clerk (EWM)	S/4HANA
	Consumption posting from EWM System updates Inventory document with 261 mvt type	Fiori	Production Supervisor	S/4HANA
Clear Production Supply Area (/SCWM/MFG_STAGING_REVERSAL)	The left-over stock in the PSA will be cleared and transferred to Final Bin	Fiori	Warehouse Clerk (EWM)	S/4HANA
Warehouse Monitor (/SCWM/MON)	Check clearing Warehouse Order	Fiori	Warehouse Clerk (EWM)	S/4HANA
HANDHELD Environment (/SCWM/RFUI)	Move pallets to Final Bin	Fiori	Warehouse Operative (EWM)	S/4HANA

4.2.2 Manage explosives and dangerous goods; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Planograph (F3434)	Get the holistic view of the explosive storage location and the explosives materials stored at this location.	Fiori	Warehouse Clerk (EWM)	S/4HANA

4.2.3 Raise quality issues in the warehouse; Solution steps and elements (Level 5-6)

In all of the EDGE P2 facility, during the production process, a quality operation within the production order triggers the quality inspection. The quality technician records the inspection results for inspection points. Based on the inspection point valuation, the quality operation is confirmed with the respective yield and scrap amounts and the inspection lot is closed by making a usage decision. In case of rejected characteristics, a defect is automatically recorded.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System

Warehouse Monitor (/SCWM/MON)	Raise Quality Issue. System will create Quality Inspection document	Fiori App	Warehouse Clerk (EWM)	S/4HANA
Pick Warehouse Order (/SCWM/RFUI)	Move Pallets to Quality Center	Handheld device	Warehouse Operative (EWM)	S/4HANA
Record Inspection Results (F1685)	Quality Inspection team will record the inspection results	Fiori App	Quality Technician	S/4HANA
Record Usage Decision (QA11)	Usage Decision is made both on the Partial Quantity Level as well as on the Global Level. Follow-up Action is triggered respectively	Fiori App	Quality Technician	S/4HANA
Move pallets to Final Bin (/SCWM/RFUI)	Pallets are transferred to Final Bins	Handheld device	Warehouse Operative (EWM)	S/4HANA

4.2.4 Scrap material in the warehouse; Solution steps and elements (Level 5-6)

All the EDGE P2 entities scrap components/SF goods as per the guidelines of the respective entities. Once finance confirmed to scrap the identified components/SF, required stakeholders do the necessary postings in system.

In this scrapping process, business can decide to scrap goods that are currently stored in any of the storage types in the warehouse. The scrapping process can be initiated based on the expired shelf life of a stock item (Chemicals, Lubricants, Tires etc.), or it can be triggered by discovering damaged goods in the warehouse in daily work.

For the first approach, business can search for expired stock items in the Warehouse Monitor. The warehouse manager with proper approval then initiates the scrapping by creating the needed warehouse orders and tasks. The system supports scrapping for all storage types. Depending on the physical layout of the warehouse, the system automatically creates the warehouse orders and tasks and assigns them to the corresponding HANDHELD queues. The actual scrapping, including the financially relevant postings, can be done manually or with a periodically scheduled program.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Warehouse Monitor (/SCWM/MON)	Select Stock to Be Scrapped	Fiori App	Warehouse Clerk (EWM)	S/4HANA
Create Posting Changes (/SCWM/MONNAV_CR_PC)	The system will change the stock type to Scrapping. Warehouse Task is created in the background to move the stock from Final bin to Scrapping Zone	Fiori App	Warehouse Clerk (EWM)	S/4HANA
Move Pallets (/SCWM/RFUI)	Move the Pallets from Final Bins to Scrapping Zone by logging into Handheld device	Fiori App	Warehouse Operative (EWM)	S/4HANA

Empty Scrapping Zone and Post Goods Issue (GI)	Unplanned Goods Issue is posted Scrapping zone is empty and the stock is reduced for Inventory	Fiori App	Warehouse Clerk (EWM)	S/4HANA
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4.2.5 Monitor and control warehouse activities; Solution steps and elements (Level 5-6)

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Warehouse KPIs – Operations (F4024)	<p>The user can access Fiori App to check the status of below:</p> <ol style="list-style-type: none"> 1) The number of outbound delivery order items without goods issue by ship-to party 2) The number of outbound delivery order items by goods issue status 3) The number of overdue outbound delivery order items without goods issue by ship-to party 4) The number of blocked outbound delivery order items by planned goods issue time 5) The number of outbound delivery order items without pick warehouse tasks by planned goods issue time 6) The number of outbound delivery order items without goods issue by planned goods issue time 7) The number of outbound delivery order items without goods issue by ship-to party 8) The number of outbound delivery order items by goods issue status 9) The number of outbound delivery order items with goods issue by actual goods issue time 10) The number of outbound delivery order items with incomplete wave assignments by planned goods issue time 	Fiori	Warehouse Clerk (EWM)	S/4HANA

	11) The number of confirmed warehouse orders by queue 12) The number of open warehouse orders by queue 13) The number of open pick warehouse tasks by activity area 14) The number of open putaway warehouse tasks by activity area 15) The number of open warehouse tasks by activity area 16) The number of open warehouse tasks by overdue time in hour 17) The number of open warehouse tasks by warehouse process category 18) The number of open warehouse tasks by warehouse process type			

4.2.6 Perform inventory counting; Solution steps and elements (Level 5-6)

In this process, business would count the current stock by creating Physical Inventory (PI) documents for a chosen number of storage bins or products on a regular basis to distribute the workload for physical inventory over the year. Warehouse perform the counting using a radiofrequency (HANDHELD) device or paper. By posting the PI documents, you adjust the book inventory in the storage bins to align it with the physical inventory counts. To adjust the stock accounts, the system automatically posts all differences up to a certain value with a background job. At different points in the process, tolerance checks control the count results and final postings that adjust the stock situation. Along with this process, you monitor the progress of your physical inventory within the warehouse monitor.

Fiori App / Transaction /Handheld application/ WRICEF	Description of activities at Process step	Device to be used	Role	System
Create Physical Inventory (PI) Documents (F3197)	Create Physical Inventory Documents for required Storage Type	Fiori	Warehouse Clerk (EWM)	S/4HANA
Warehouse Monitor (/SCWM/MON)	Print PI Document.	Fiori	Warehouse Clerk (EWM)	S/4HANA
Count Physical Inventory (/SCWM/PI_COUNT)	Count the stock Enter the count in the system and post	Fiori	Warehouse Clerk (EWM)	S/4HANA
Warehouse Monitor (/SCWM/MON)	Recount if required	Fiori	Warehouse Clerk (EWM)	S/4HANA
Warehouse Monitor (/SCWM/MON)	Post PI document	Fiori	Warehouse Clerk (EWM)	S/4HANA

Post Differences - Automatic (/SCWM/WM_ADJUST)	Post Physical Inventory Difference	Fiori	Warehouse Clerk (EWM)	S/4HANA
Analyze Differences (/SCWM/DIFF_ANALYZER)	Review and post the difference using Difference Analyzer. This transaction will post the Goods movement and updates the Inventory management	Fiori	Warehouse Clerk (EWM)	S/4HANA

4.2.7 Associated Fiori Apps

Fiori Application Name	App Type	App Description	Device Type
Create Inventory Documents - Cycle Counting	SAP GUI	Create Inventory Documents - Cycle Counting	Desktop, Tablet
Count Physical Inventory	SAP GUI	Count Physical Inventory	Desktop
Count Physical Inventory - List	SAP GUI	Count Physical Inventory - List	Desktop
Create Physical Inventory - Documents	SAP GUI	Create Physical Inventory - Documents	Desktop
Create Inventory Documents - Physical Inventory	SAP GUI	Create Inventory Documents - Physical Inventory	Desktop, Tablet
Download Bins or Stock Items - Physical Inventory	SAP GUI	Download Bins or Stock Items - Physical Inventory	Desktop
Process Physical Inventory	SAP GUI	Process Physical Inventory	Desktop
Upload Bins or Count Results - Physical Inventory	SAP GUI	Upload Bins or Count Results - Physical Inventory	Desktop
Assign Tolerance Group - Count Confirmation	SAP GUI	Assign Tolerance Group - Count Confirmation	Desktop, Tablet
Assign Tolerance Group - Differences	SAP GUI	Assign Tolerance Group - Differences	Desktop, Tablet
Print Count Documents - Physical Inventory	SAP GUI	Print Count Documents - Physical Inventory	Desktop
Post Goods Issue - Unplanned	SAP GUI	Post Goods Issue - Unplanned	Desktop, Tablet
Print Inventory List - For Fire Department	SAP GUI	Print Inventory List - For Fire Department	Desktop
Posting Change Requests	SAP GUI	Posting Change Requests	Desktop
Maintain Posting Changes	SAP GUI	Maintain Posting Changes	Desktop

Maintain Stock Transfers	SAP GUI	Maintain Stock Transfers	Desktop
Prepare Goods Receipt - Production	SAP GUI	Prepare Goods Receipt - Production	Desktop
Production Material Requests	SAP GUI	Production Material Requests	Desktop
Post Goods Receipt for Production Order	Transactional	Post Goods Receipt for Production Order	Desktop, Smartphone, Tablet
Transfer Stock for JIT Supply to Production	Transactional	Transfer Stock, Transfer Stock for JIT Supply to Production	Desktop, Smartphone, Tablet
Post Goods Receipt for JIT Supply to Production	Transactional	Post Goods Receipt - JIT Supply to Production	Desktop, Smartphone, Tablet
Warehouse Monitor	SAP GUI	Warehouse Monitor	Desktop, Tablet
Assign Bin to PSA - Warehouse	SAP GUI	Assign Bin to PSA - Warehouse	Desktop
Maintain Follow-Up Actions	SAP GUI	Maintain Follow-Up Actions	Desktop
Quality Inspection Documents - Delivery Header	SAP GUI	Quality Inspection Documents - Delivery Header	Desktop
Quality Inspection Documents - Handling Unit	SAP GUI	Quality Inspection Documents - Handling Unit	Desktop
Quality Inspection Documents - Product	SAP GUI	Quality Inspection Documents - Product	Desktop
Quality Work Center - Warehouse	SAP GUI	Quality Work Center - Warehouse	Desktop
Quality Work Center	SAP GUI	Quality Work Center	Desktop
Maintain Quality Level	SAP GUI	Maintain Quality Level	Desktop
Maintain Inspection Rules	SAP GUI	Maintain Inspection Rules	Desktop
Test HANDHELD Environment	SAP GUI	Test HANDHELD Environment	Desktop
Confirm Warehouse Tasks	SAP GUI	Confirm Warehouse Tasks	Desktop
Display Warehouse Tasks	SAP GUI	Display Warehouse Tasks	Desktop
Overview Inventory Processing	Analytical	Overview Inventory Processing	Desktop, Smartphone, Tablet
Count Physical Inventory	Transactional	Count Physical Inventory - Paper-Driven Counting	Desktop, Tablet

Process Warehouse Tasks - Internal Movements	Transactional	Process Warehouse Tasks - Internal Movements	Desktop, Tablet
Process Warehouse Tasks	Transactional	Process Warehouse Tasks	Desktop, Tablet
Schedule Staging - Production Integration	SAP GUI	Schedule Staging - Production Integration	Desktop

4.2.8 Reporting Overview

Warehouse Management Monitor

- Provides reporting of all types of warehouse activities, as well as stock and Storage bin lists.
- Advanced analytics, dashboard and reporting are possible using SAP business intelligence (BI) content
- EWM uses the easy graphics framework (EGF) to create visual representation of warehouse layouts.
- Fiori app “Warehouse KPIs – Operations” to display KPIs

Report Name	Fiori App
Outbound delivery Order Cockpit	/SCWM/MON
Inbound Delivery Cockpit	/SCWM/MON
Warehouse Order list	/SCWM/MON
Warehouse task List	/SCWM/MON
Handling unit list	/SCWM/MON
PMR list	/SCWM/MON
PI Count Overview	/SCWM/MON
PI Difference Overview	/SCWM/MON
Physical inventory document List	/SCWM/MON
Physical inventory progress	/SCWM/MON
All Goods movement list for product in WH	/SCWM/MON
Posting change list	/SCWM/MON
Stock transfer list	/SCWM/MON
Storage Bin sorting report	/SCWM/MON
Resources Management- Maintain Resources	/SCWM/MON
Resource Management - Maintain Users	/SCWM/MON

Product master data Maintenance cockpit	/SCWM/MON
Display Queue messages	/SCWM/MON
Display Application log	/SCWM/MON

The content in this section will serve as input for the training and performance support team's deliverables.

4.3 Role/Skill Class Inventory

Role	Skills	Knowledge
Warehouse Clerk	SAP-D2S	Create material request, plan staging, manage scrapping process and create reports, monitor inventory counting
Warehouse Operative	SAP-D2S	Perform Goods receipt, execute internal goods movement, posting of documents, print issue slip, perform physical inventory counting
Buyer	SAP-S2P	Create and Change purchase order
Quality Technician	SAP-P2P	Perform usage decision
Production planner	SAP-P2P	Create and release of production order
Production Operator	SAP-P2P	Perform material consumption at PSA and initiate Kanban replenishment
Finance Controller	SAP-R2R	Approve Material Scraping (Manual)
Accounting clerk/Warehouse manager	SAP-R2R/SAP-D2S	Post inventory documents for physical inventory count
Cost accountant/Warehouse manager	SAP-R2R/SAP-D2S	Book inventory documents for physical inventory count

4.4 Security roles as per process design

Stream	Sub-Module	Master Role	Master Role Description	Warehouse Clerk	Warehouse Operative	Purchase	Quality Technician	Finance
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_ROUTE_DETERMINATION	EWM - Route Determination	X				

D2S	EWM	YSHM:D2SEWM:X XXX:EWM_SHIPR ECEVE	EWM - Shipping and Receiving	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_WORK_SCHEDL	EWM - Work Scheduling	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_EXEC_OFC	EWM - Work Execution Office	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_MD_WHSE	EWM - Warehouse Setup	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_YM	EWM - Yard Management	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_DAS	EWM - Dock Appointment Scheduling	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_SET_DAS	EWM - Dock Appointment Scheduling Setup	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_LM	EWM - Labor Management	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_SET_ADDL	EWM - Additional Settings	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_RCVG_PRODN	EWM - Receiving from Production	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_POSTG_CHG	EWM - Posting Changes	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_INT	EWM - Data Exchange	X				
D2S	EWM	YSHM:D2SEWM:X XXX:OUTB_ADVNCD	EWM - Outbound Processing (Extended)	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_MD_PROD	EWM - Product-Related Master Data	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_MDIST	EWM - Merchandise Distribution	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_PROD_N_SC	EWM - Production Staging and Consumption	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_MON	EWM - Monitoring	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_PI	EWM - Physical Inventory Processing	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_SET_PI	EWM - Physical Inventory Settings	X				

D2S	EWM	YSHM:D2SEWM:X XXX:EWM_QMG MT	EWM - Quality Management	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_SET_R F	EWM - HANDHELD Settings	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_TW	EWM - Transit Warehousing	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_INB_A DVNCD	EWM - Inbound Processing (Extended)	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_VAS	EWM - Value Added Services	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_OUTB_B SC	EWM - Outbound Processing (Basic)	X				
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_INB_B SC	EWM - Inbound Processing (Basic)	X				
D2S	EWM	YSHM:D2SEWM:X XXX:WORK_EXEC _F	EWM - Work Execution Floor (Basic)		X			
D2S	EWM	YSHM:D2SEWM:X XXX:EWM_EXEC_F ADVN	EWM - Work Execution Floor (Extended)		X			
S2P	Procurement	YSHM:STPM:XX :0000:CRE_PRC_O RD	STP-Buyer			X		
P2P	QM	YSHM:PTPQM:X X:0000:QLT_TEC H	Quality Technician Master Role				X	
R2R	CO	Finance Controller	Cost enter Manager					X

5. PROCESS FITNESS & GAP ANALYSIS

5.1 Process Variation (legal, geographical or business-led)

A sub process variation can be led by a business / geography or could be mandated by legal regulations or compliance requirements. Some of these variations can cut across sub process/ processes and will lead into integration requirements. Further additions

5.1.1 Sub-Process Variation

5.1.1.1 Business Unit Level

NIMR is executing a picking process on production order level in production supply. Based on the production order the warehouse operator picks every item and puts it on a trolley that will be the unit provided to production. The completed trolleys are waiting in a parking lot in front of production for replenishment. This equals the process of a pick HU. Since NIMR is not using HU management this is no option. Materials must be moved from source bin to “parking lot” bin and in case of replenishment from parking lot to PSA. Since there is no HU in place all movements must be executed with HANDHELD gun on item level.

5.1.1.2 Geography/Legal Entity Led

None.

5.2 GAP Register

Country/ Region/ Business Impacted	Gap Description	Legal Req. (Y/N)	Magnitude of Impact (H/M/L)	Solution Type	WRICEF No.	Ref. to Req. id.
ADASI NIMR HALCON ALTARIQ	Enable business approval matrix for Scrapping during Goods Receipt process	N	M	WRICEF	WRICEF_D2 S_014_E	N/A
ADASI NIMR HALCON ALTARIQ	Enable notification to notify QC team after Goods received	N	M	WRICEF	WRICEF_D2 S_015_E	N/A
ADASI NIMR	Recieve Customer Provided Material (CFM) at Warehouse to recognise as Customer Stock Requirement- Business needs an Intercompany subcontracting process for the tracability of the	N	M	WRICEF		N/A

	customer stock and also to receive Customer Provided Material (CFM) at Warehouse to recognise as Customer Stock Limitations in Standard S4- This feature is currently not available in standard S4					
ADASI NIMR HALCON ALTARIQ	Three level approval for Physical Inventory Process if there is a mismatch of book inventory to actual inventory in warehouse	N	M	WRICEF		Yet to be conformed by BC. Reference to revised open list 102.
ADASI NIMR HALCON ALTARIQ	Initiation if Material Staging should be automated not manual WT trigger	N	M	WRICEF		
ADASI NIMR HALCON ALTARIQ	NIMR, AL TARIQ, Halcon have an additional step for quality inspection before outbound process. Goods are moved physically to quality inspection zone	N	M	WRICEF		

5.3 Process Fitness

Req ID	Short Description	Long Description	Req. Type	Accenture Reusable Assets
NA	NA	NA	NA	NA

5.4 WRICEF Register

EDGE WRICEF#	WRICEF Type	Description	Complexity (H/M/L)	Comments	Assign system / SAP component
WRICEF_D2S_011_F	Form	Print (Hard Copy) during Production	Low	NA	EWM

		staging of Actual Qty			
WRICEF_D2S_013_E	Enhancement	Notification (Workflow) to be triggered during Scraping in EWM	Low	NA	EWM
WRICEF_D2S_013_E	Form	Material details with qty for Scrap (Scrap Slip) in EWM	Low	NA	EWM
WRICEF_D2S_2A_01	Development	In scrapping process, we can decide to scrap goods that currently stored in any of the storage types in warehouse. Scrapping process can be initiated based on expired shelf life of a stock item, or it can be triggered by discovering damaged goods in the warehouse in daily work. When stock is moved to	M	NA	EWM

		scrapping zone, a workflow need to be triggered to finance for approval.			
WRICEF_D2S_P2_44	Enhancement	Material Staging in PSA for single order staging	M	NA	EWM
WRICEF_D2S_P2_45	Enhancement	Material Staging in PSA for Cross order staging	M	NA	EWM
WRICEF_D2S_P2_10	Form	HU Label	L	NA	EWM
WRICEF_D2S_P2_11	Form	Item label	L	NA	EWM
WRICEF_D2S_P2_12	Form	Put away label	L	NA	EWM
WRICEF_D2S_P2_13	Form	Rejected label	L	NA	EWM
WRICEF_D2S_P2_14	Form	Picking list	L	NA	EWM
WRICEF_D2S_P2_15	Form	Material issue slip	L	NA	EWM
WRICEF_D2S_P2_16	Form	Inventory counting sheet	L	NA	EWM

6. INTEGRATION POINTS

Generic Integration touch points have been highlighted in this section. It covers dependencies or prerequisites arising from other processes or sub processes. This information should lead to cross functional discussions between different work streams to sort out the interdependencies Integration Issues.

6.1 Integration points

Process ID (L4 process)	Type (legacy system, DT Ops, functional)	Related technical scope	Leading stream	Business process Integration with domain	Description	In	out
ED-13_020600			D2S	P2P, S2P, R2R	Perform inventory counting	Executing Physical Inventory & Cycle Count Inventory Procedure in S4-EWM. -Periodic PI - Continuous PI (AdHoc)	
ED-13_020200			D2S	P2P, EHS, GTS	Manage explosives and dangerous goods	Manage explosives and dangerous goods movement in Warehouse	
ED-13_020300			D2S	P2P, R2R	Quality Check for Internal movement Process like Scrap, Rework	Manage Inventory after QC check to perform Scrap, Reprocess etc.	
ED-13_020100 ED-13_020200 ED-13_020300 ED-13_020400 ED-13_020500 ED-13_020600			D2S	HANDHELD	Execution over Mobile Device (HANDHELD)	Perform transaction/s execution over HANDHELD.	
ED-13_020100			D2S	P2P	Move materials and goods within and from the warehouse	Staging materials in PSA against the production order and receiving the finished goods into the warehouse after production order confirm	
			D2S	MDG	Packaging Material Creation	Packaging material required for Packaging specification creation.	

6.2 Inbound Communication

The Inbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Inbound communication includes any required emails, forms or handoffs between parties that are required to initiate the sub process. Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description
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6.3 Outbound Communication

The Outbound Communication needs to be specifically documented for the client specific situation, like interfacing with external systems, workflow, form & Medium of communication. Outbound Communication includes any emails, forms, handoffs between parties that result from the sub process. Typically, these are output results and documentation that result from the process.

Types could be email, form, handoff, etc.

Activity	Type	Automatic/Manual	Source	Destination	Description

6.4 Other Issues

7. KUT FEEDBACK AND NEW REQUESTS (IMPLEMENTATION TO BE DECIDED ON COMPLIANCE/CUSTOMER/BUSINESS CASE/USABILITY)

Observations or raised additional requirement has to be evaluated (compliance/legal, customer requirement, business case, usability) and decided in compliance the governance framework.

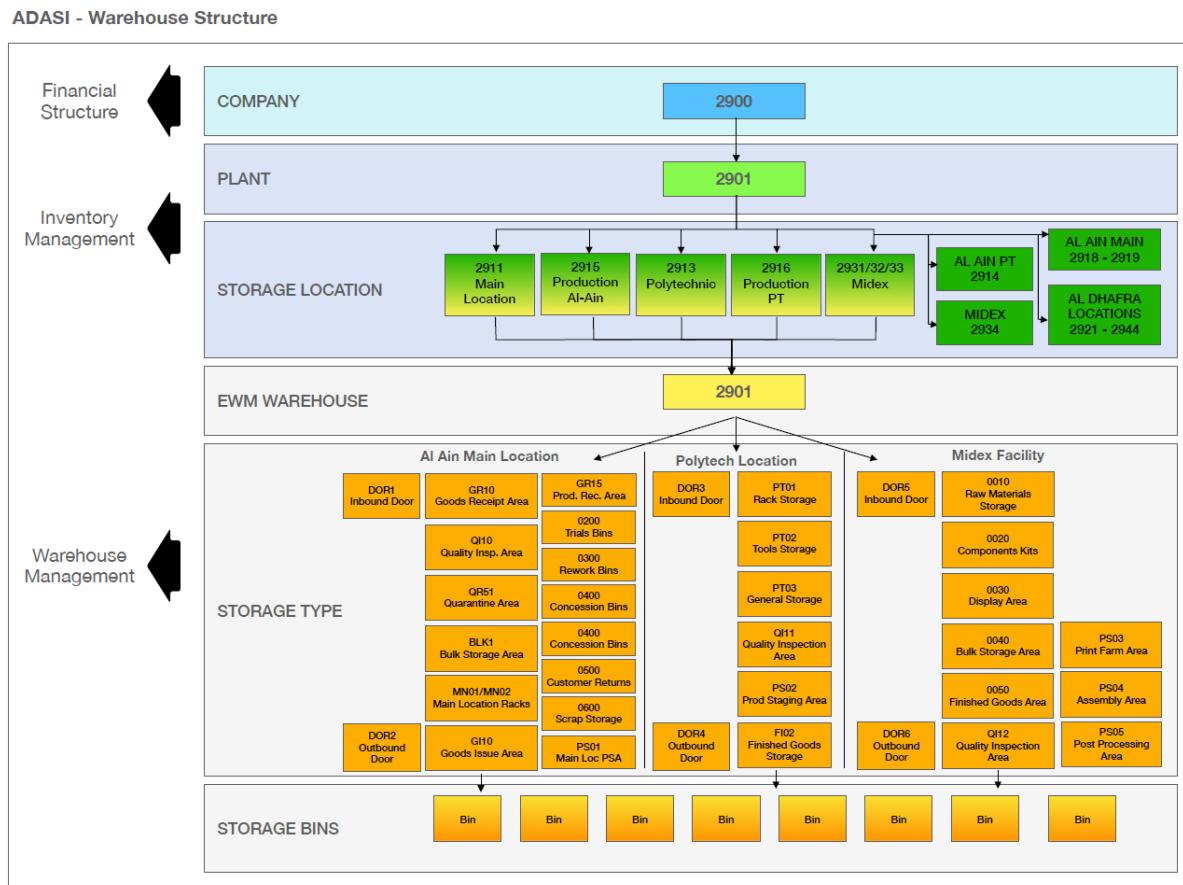
Topic	Raised by NIMR	Raised by HALCON	Raised by AL TARIQ	Raised by ADASI	Possible in standard in SAP
Periodic, Adhoc Inventory and Cycle Counting					<input checked="" type="checkbox"/>
All Batch managed product may not go with SLED or Production. Date should be an optional field not mandatory	x				<input checked="" type="checkbox"/>
Man power requirement to capture unload, time of putting away the pallet This is required for KPI					<input checked="" type="checkbox"/>
Warehouse Process type needs to be changed (name of the warehouse process type eg.BTB for bin to bin transfer)	x				<input checked="" type="checkbox"/>
Quarantine Stock should not be part of MRP	x				<input checked="" type="checkbox"/>
For bin to bin movement add to the HHT the split per batches for each bin	x				<input checked="" type="checkbox"/>
If the manufacturing order is already released, MES should not allow to send a new request for Picking unless the document is cancelled	x				<input checked="" type="checkbox"/>
During Picking if less quantity is available, than the Warehouse Order will be opened. What is the system behavior which are the parts which are not picked. --> Warehouse task will remain open, and only partial confirmation of picking will happen	x				<input checked="" type="checkbox"/>
SLOC to SLOC to transfer - In Transit Process	x				<input checked="" type="checkbox"/>
Date calculation of Component staging with picking	x				<input checked="" type="checkbox"/>
Schedule the picking based on production release	x				<input checked="" type="checkbox"/>
WBS request: need to have the visibility from the PMR of the material in all available WBS not only the WBS stock assigned to the PMR	x				<input checked="" type="checkbox"/>
Warehouse inventory posting: having 2 postings (1 one for the quantities at warehouse level , second one at Finance level for financial books)	x				<input checked="" type="checkbox"/>

Production order cannot be confirmed if the components are not all issued from the warehouse --> setting should be done for NIMR	x				<input checked="" type="checkbox"/>
KANBAN backflush	x				<input checked="" type="checkbox"/>
If Batch number is not found in the material tag, system should create a new batch for the material	x				<input checked="" type="checkbox"/>
Have a notification for expiring items (automatic email for all items)	x	x	x		<input checked="" type="checkbox"/>
Posting of the inventory count needs to be done by a different person than the counter	x				<input checked="" type="checkbox"/>
Delegation of Queue to another operator	x				<input checked="" type="checkbox"/>
Without HU, how can we add the 10 pallets to 5 users	x				<input checked="" type="checkbox"/>
New label print when Concession material assigned	x				<input checked="" type="checkbox"/>
Serial number field should be unrestricted in the system (not 18 characters max)	x				<input checked="" type="checkbox"/>
Quality Department has to assign the Concession Material	x				<input checked="" type="checkbox"/>
Wildcard search bin for NIMR in Handheld scenario	x				<input checked="" type="checkbox"/>
RF Screen enhancement - NIMR	x				<input checked="" type="checkbox"/>
In HHT, need to have a drop down list to show empty bins	x				<input checked="" type="checkbox"/>
When scanning an item the HHT should show the open warehouse task on that item	x				<input checked="" type="checkbox"/>
Need to have intermediate staging	x				<input checked="" type="checkbox"/>
Based on reason codes, the stock should be moved (warehouse task generated automatically)	x				<input checked="" type="checkbox"/>
Shortage Report in Production in EWM. Quantities Issues, Quantities shortage and how many have consumed	x				<input checked="" type="checkbox"/>

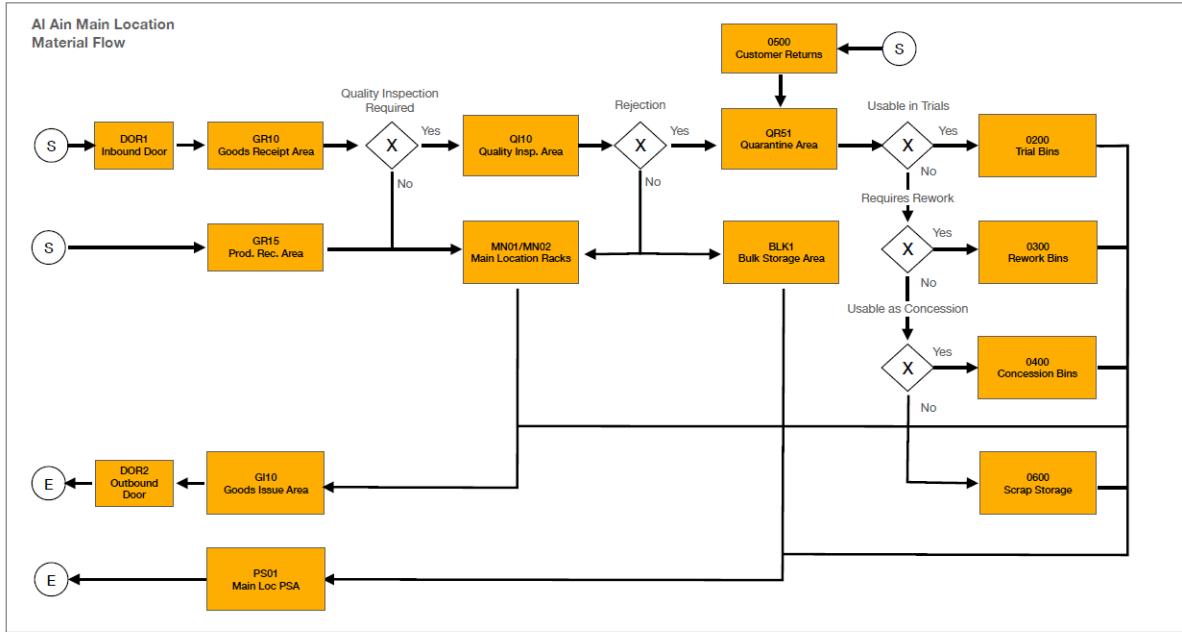
Interim Storage Type	x				x
In Transit stock - Warehouse Once confirm the task, system will create one more task that Production to confirm	x				x
2 steps staging to be set up	x	x			x
Print count sheet should have 2 signatories	x				x
Automated reverse flow in case of modification of batch master --> automatic communication to update material master (to discuss with MDG team)	x				x

1.1. WAREHOUSE LAYOUT

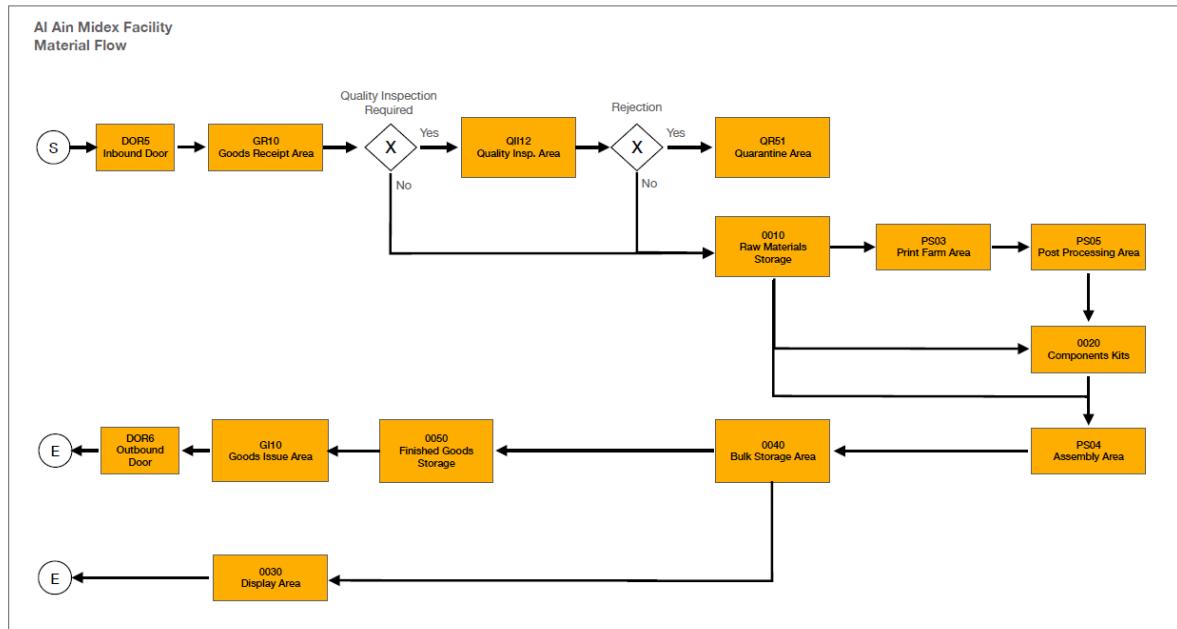
Warehouse structure: ADASI



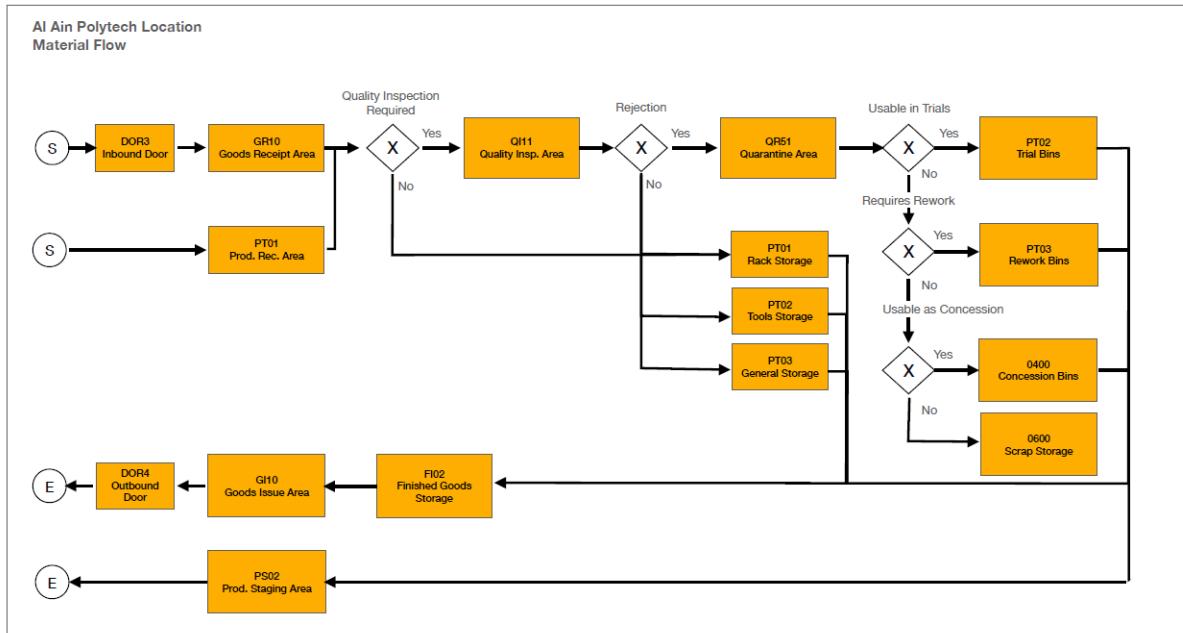
Material flow: ADASI – Alain (Main warehouse)



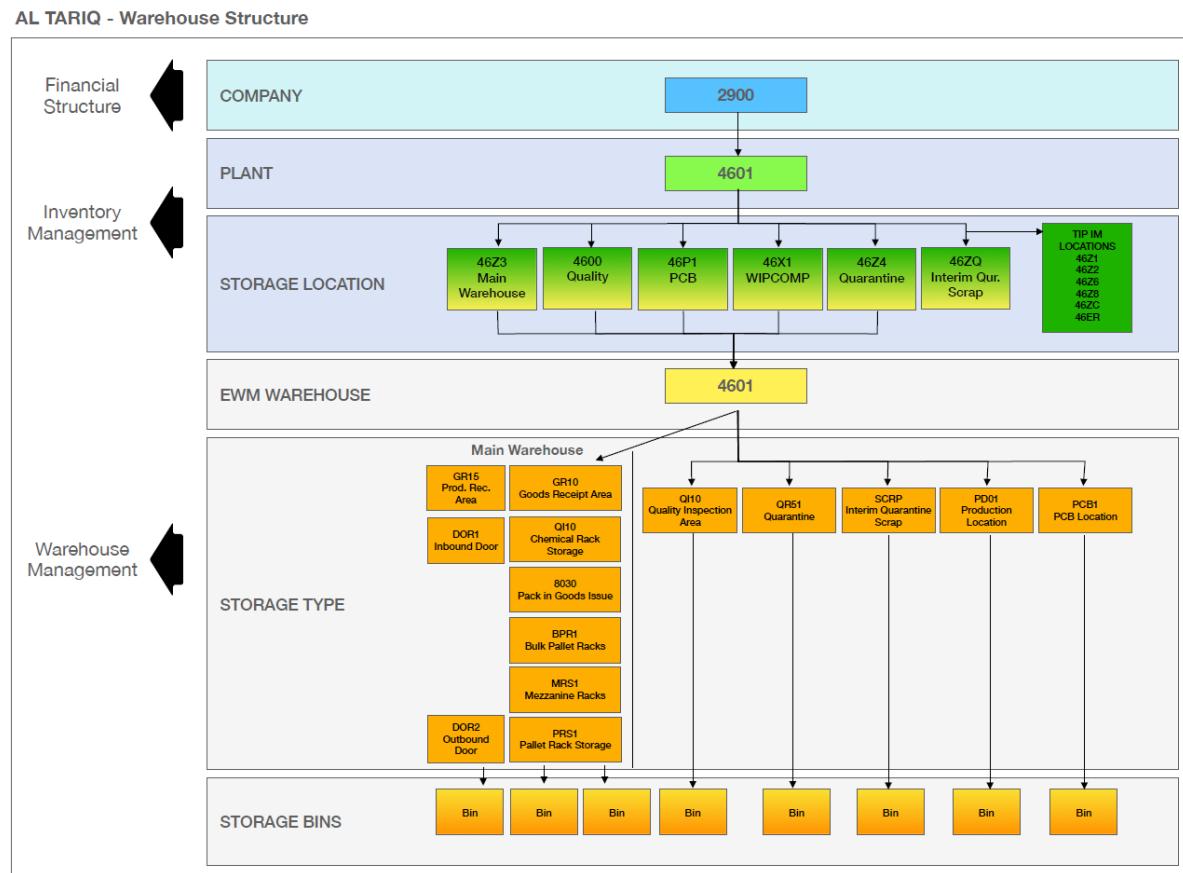
Material flow: ADASI – Alain (Midex)



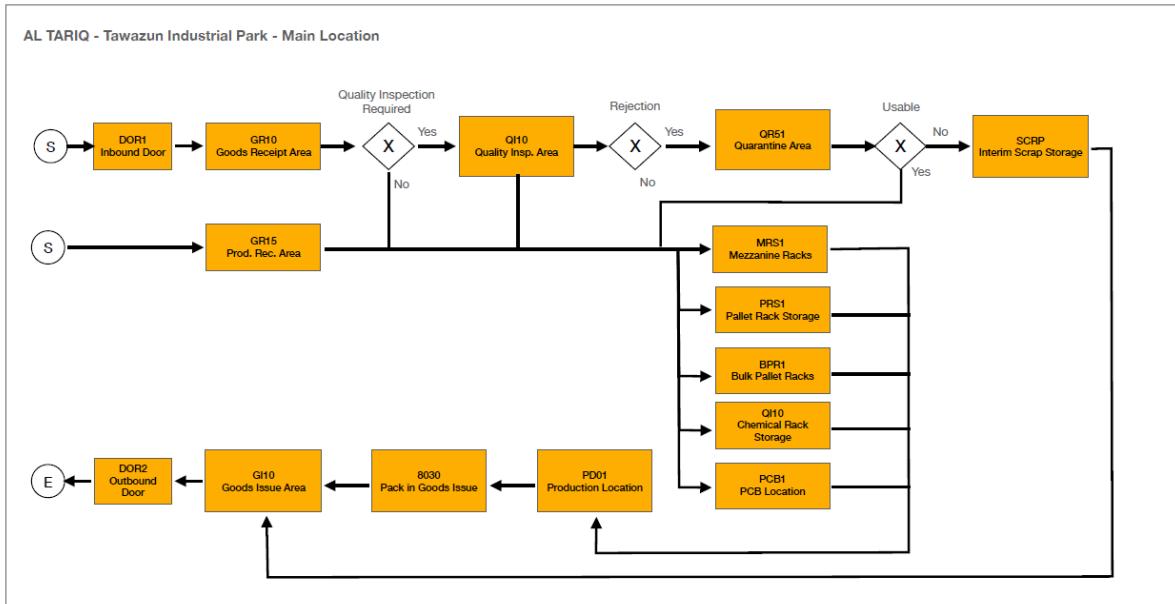
Material flow: ADASI – Alain (Polytech)



Warehouse structure: AL TARIQ



Material flow: AL TARIQ – Main location



HALCON

Warehouse structure: HALCON

Will be added once the respective KDS is approved

Material flow: HALCON (Main warehouse)

Will be added once the respective KDS is approved

Material flow: HALCON (C&H)

Will be added once the respective KDS is approved

Material flow: HALCON (PCB)

Will be added once the respective KDS is approved

NIMR

Warehouse structure: NIMR

Will be added once the respective KDS is approved

Material flow: NIMR (TIP)

Will be added once the respective KDS is approved

Material flow: NIMR (Al Ain)

Will be added once the respective KDS is approved