

# Functional Requirements Document- Production

Prepared for  
**Technica**

**Version: 2.0**

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# Introduction

## 1.1 Purpose

The Functional Requirements Document (FRD) describes in common terms:

- An overview of the processes comprising each Work stream
- An overview of each sub-process comprising the Work stream
- Major gaps between the business requirements and the functionality supported by the standard Microsoft Dynamics 365 solution
- The problem summary including current business/environment issues
- Proposed technology to support the new or altered business processes
- How implementation of the proposed solution will benefit the users/stakeholders

The FRD is the starting point of the solution and system development and is a collaborative effort between all business and technology stakeholders. The purpose of the Functional Requirements Document (FRD) is to document requirements for the requested system solution.

The objective of the Functional Requirements Document is to provide enhanced documentation for requirements that are a gap or will require a workaround or process change in order to fit the system solution of the client. The need for any modifications is clarified through the FRD. The FRD forms the basis of the subsequent task concerning the system design.

This document focuses on Production requirements.

## 1.2 Acronyms

Abbreviation	Explanation
FRD	Functional Requirement Document
System	Dynamics 365 Finance & Operation
D365	Dynamics 365 Finance & Operation
Backoffice	D365 F&O

## 1.1 Business Processes List

### 1.2 Processes List

To elaborate and define the functionality, the following processes have been presented in the subsequent sections:

Process ID	Name
PRD001	Production Order Lifecycle
PRD002	3D Drawing
PRD003	BOM
PRD004	Routes
PRD005	Track Open Purchase Order Lines
PRD006	Production Order Generation
PRD007	Production order Schedule
PRD008	Release Production Order
PRD009	Resource Consumption
PRD011	Shop Floor Execution
PRD012	Report As Finished
PRD013	Non-Conformance

Commented [EA1]: PRD005 missing from here.

## 1.3 Production Processes

### PRD001 – Production Order Lifecycle

#### 1.3.1.1 Process Overview

The production order lifecycle is as follows:

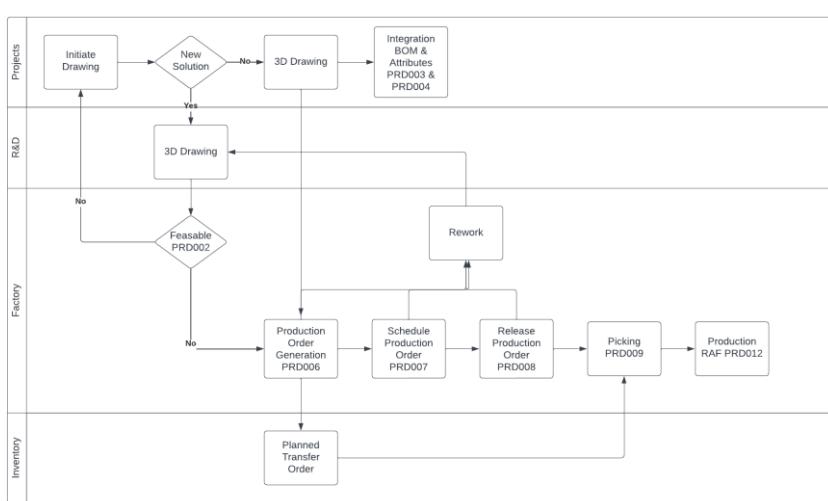


Figure 1 Factory Overview

1. 3D Drawing will be drawn up by the R&D if it is a new solution or by the Project Engineers if solution already exists.
2. BOM lines are Integrated from CAD to D365 F&O, refer to *Integration FRD for More details*
3. Once production orders are created or firmed from master planning the need to be scheduled by the production manager
  - a. The production manager can then accept or reject the drawing for feasibility, if not feasible, the drawing will be sent back as Re-work to be re-drawn

Commented [EA2]: No Re-Work in the workflow  
Commented [AK3R2]: done  
Commented [AK4R2]: Reusable No goes to R&D  
Commented [AK5R2]: Explain Re-work  
Commented [AK6R2]: Existing Solution Doesn't need feasibility check  
Commented [AK7R2]: Done

Commented [EA8]: How the integration is going to happen?  
Commented [AK9R8]: Refer to Integration FRD

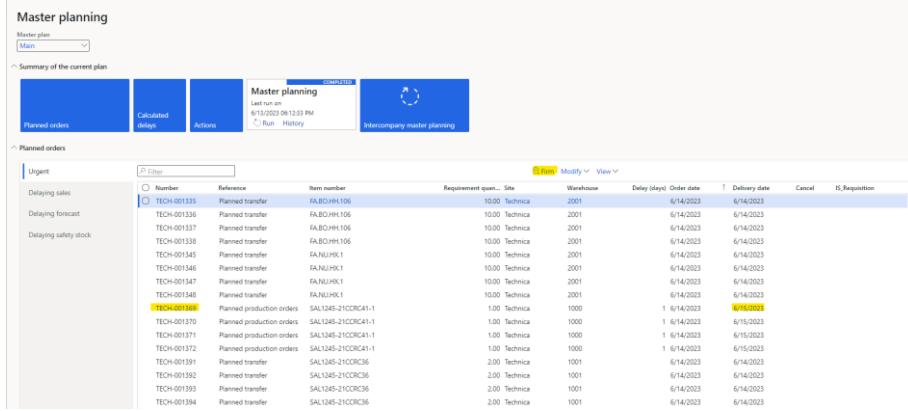
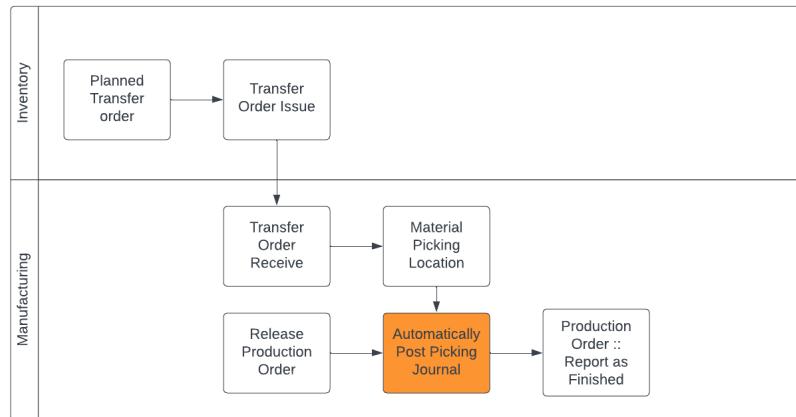


Figure 2 Master Planning

4. Once the Production manager has scheduled the production order, the production manager can release the production order for execution; once done, a picking journal is created and posted automatically; the picking Journal will consume parts needed during the execution from the Picking Location in the Manufacturing warehouse



- a. For the good to be transferred from the main warehouse to the Picking location, the MASTER Planning will generate planned transfer orders on certain dates respective of the production order lead time.

Transfer orders | My view ▾

**Transfer order: TECH-000033**

Lines Header

**Transfer order header**

From warehouse	To warehouse	Ship date	Receipt date	Status	VERTICAL WMS
0001	0001	7/19/2023	7/19/2023	Transfer status Created	VWMS number
Transfer number TECH-000033		SFA Code	Receipt date		Show on device <input checked="" type="checkbox"/> No

**Transfer order lines**

+ Add	+ Add products	Remove	Warehouse ▾	Charges	Deliver remainder	Inventory ▾	Functions ▾	Inquiries ▾	Setup ▾
Item number	Arabic Name	Transfer q...	CW transfe...	Ship date	Receipt date	Product name			
PRNCCRA25-b		4.00		7/19/2023	7/19/2023	zzz			

- b. The warehouse have to issue the transfer order by SHIPPING the transfer order and by moving the parts physically to the manufacturing picking location.

[←](#) [≡](#) [Edit](#) [New](#) [Delete](#) | Transfer order [Ship](#) [Receive](#) [Workflow](#) [Options](#) [🔎](#)

**Operations**

- Release to warehouse
- Picking list registration
- Generate picking list
- Ship transfer order**

**View**

- Picking list
- Load details
- Shipment details
- Bill of lading

**Transportation**

- Load planning workbench
- Outbound load planning workbench

Transfer orders | My view ▾

**Transfer order: TECH-000033**

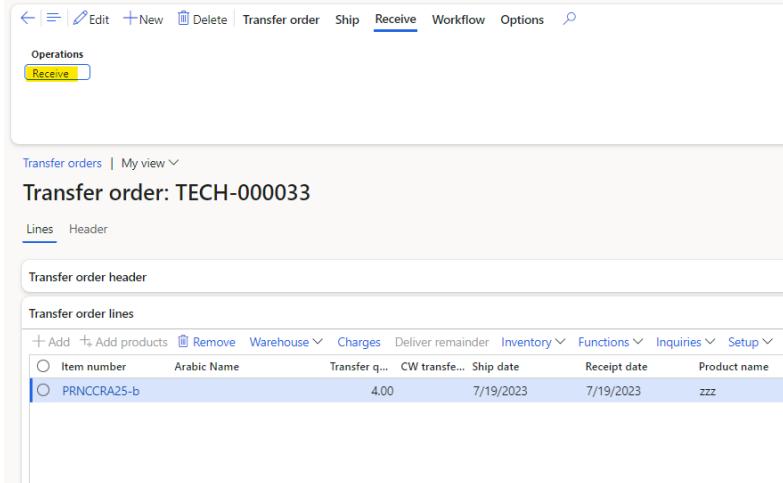
Lines Header

**Transfer order header**

**Transfer order lines**

+ Add	+ Add products	Remove	Warehouse ▾	Charges	Deliver remainder	Inventory ▾	Functions ▾	Inquiries ▾	Setup ▾
Item number	Arabic Name	Transfer q...	CW transfe...	Ship date	Receipt date	Product name			
PRNCCRA25-b		4.00		7/19/2023	7/19/2023	zzz			

- c. The manufacturing will then receive the parts/raw material in the picking location to confirm receipt. By receiving this transfer goods would have transferred from the **Main** to the **Factory** warehouse



5. Once the Production is done the Production order is reported as Finished. Any level of the assembly is a separate production order (Not assembly), so when we say a production order is reported as finished, we mean a semi-finished part of the assembly is ready.

**Commented [GB10]:** (If we are considering the order as a complete assembly in that case the order shouldn't be reported as finished)

**Commented [AK11R10]:** This is not an assembly , Assembly is PRD014

## PRD002 – 3D Drawing

### 1.3.1.2 Process Overview

The Projects initiate the 3d drawing order, it is requested from the R&D if it is a new solution otherwise the Projects' engineers will handle the drawing, the drawing is sent to the factory for feasibility checking, this is going to be a Activity in the WBS and the drawing will be attached to it, nevertheless the feasibility itself will be an activity in F&O if the design is not feasible it is sent back as re-work, otherwise if the design is feasible then the factory can proceed. A counter will be added on the WMS Activity details line to display the number of times that the BOM where integrated from CAD.

Once the production manager approves the 3D drawing, they can proceed with the manufacturing.

### 1.3.1.3 Requirements

ID	Description	Fit/Gap
----	-------------	---------

PRD002-01	Notification to Production Manager when engineer releases drawing to be executed	GAP
PRD002-02	Notification of Re-Work to certain key positions	GAP
PRD002-03	Put Production Order on Hold once Re-Work is issued	GAP
PRD002-04	Softcopy of drawing to be integrated from CAD to F&O	GAP
PRD002-05	Count number of times Integration was run as Rework	GAP

Commented [EA15]: Not clear! What do you mean? and why it's a Gap?

Commented [AK16R15]: The GAP is importing the URL from the CAD of this particular drawing to be displayed on Production order , to be later displayed on shop floor

## PRD003 – Bill of Material

### 1.3.1.4 | Process Overview

A bill of materials (BOM) defines the components that are required in order to produce a product. The components can be raw materials or semi-finished products. BOMs typically describe the *material resources* that are required.

Now in this can once the integration occurs CAD and F&O, the BOM lines are going to be integrated in D365 F&O.

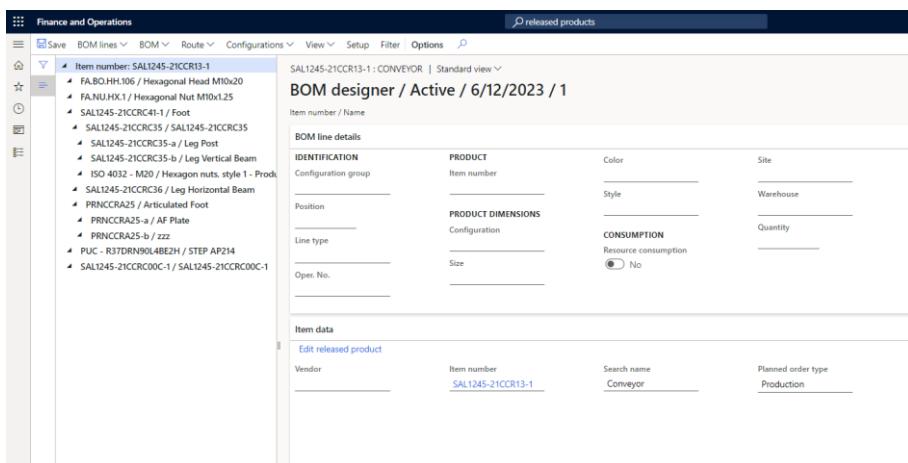


Figure 3 BOM

The BOM version will be populated from CAD system; the item can have a configuration variant which can be tracked;

In order for a BOM to be used in production, it first needs to be Approved & then Activated. This will give the user more control while managing the BOM's

Commented [EA17]: Need more clarification!! Nothing explained here concerning this BOM process.

BOM Configuration, explanation and usage?

Commented [AK18R17]: Expand on BOM Section

Commented [AK19R17]: Explain BOM form

In the BOM line section, the item type could be product or nested BOM; moreover the quantity on the BOM lines will specify how much quantity is needed for the production of the main item.

The BOM forms allows the user to track multiple BOM versions for the same product in order to maintain different configuration; not to mention, that depending on the item configuration, if the item is tracked by definition group, you can track your BOM by variant, depending on the configuration of the item

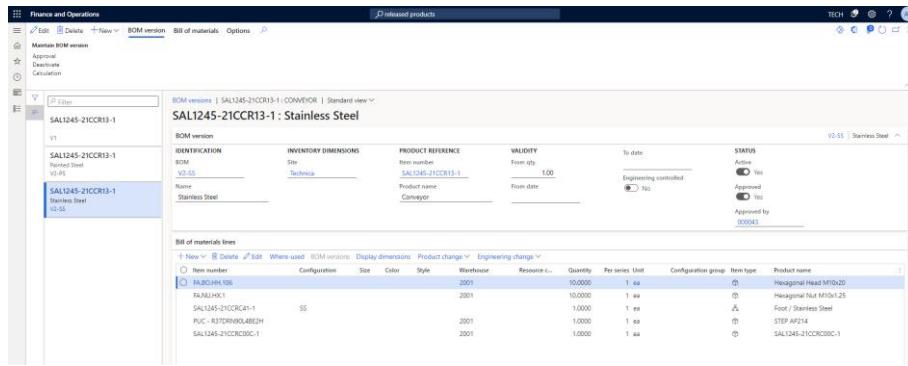


Figure 4 Multiple BOM Versions

From the his screen you can, run cost calculation for a specific BOM and specific configuration.

The nested BOM is a BOM in the line of a parent BOM; if you take any assembly, the parts used in it are going to be nested BOM , the nested BOM is a stand alone BOM that is used in an assembly and this nested BOM could have a BOM as a sub-part in it.

The screenshot shows the BOM designer interface with the following details:

- Item number:** SAL1245-21CCR13-1
- BOM line details:**
  - Identification:** Configuration group
  - Product Dimensions:** Item number
  - Line type:** Position
  - Configuration:** Style
  - Oper. No.:** Size
  - Reso.:** CON
- Item data:**
  - Edit released product:** Vendor
  - Search:** Item number (SAL1245-21CCR13-1)
- BOM:** A tree view of the Bill of Materials:
  - SAL1245-21CCR13-1 / Conveyor
  - SAL1245-21CCR13-1 / Standard view
  - Nested BOM:** SAL1245-21CCR13-1 / Active / 9/1/2023 / 1
    - Identification:** Configuration group
    - Product Dimensions:** Item number
    - Line type:** Position
    - Configuration:** Style
    - Oper. No.:** Size
    - Reso.:** CON
  - Components:**
    - FA.BO.HH.106 / Hexagonal Head M10x20
    - FA.NU.HX.1 / Hexagonal Nut M10x1.25
    - SAL1245-21CCRC41-1 / Foot
    - SAL1245-21CCRC35 / SAL1245-21CCRC35** (highlighted with a red arrow)
      - SAL1245-21CCRC35-a / Leg Post
      - SAL1245-21CCRC35-b / Leg Vertical Beam
      - ISO 4032 - M20 / Hexagon nuts, style 1 - Prod
    - SAL1245-21CCRC36 / Leg Horizontal Beam
    - PRNCCRA25 / Articulated Foot** (highlighted with a red arrow)
      - PRNCCRA25-a / AF Plate
      - PRNCCRA25-b / zz
    - PUC - R37DRN90L4BE2H / STEP AP214
    - SAL1245-21CCRC00C-1 / SAL1245-21CCRC00C-1

### 1.3.1.5 Requirements

ID	Description	Fit/Gap
PRD003-01	Ability to create BOM with Nested BOM	FIT
PRD003-02	Factory requests the BOM needed to be produced	FIT

Commented [GB20]: (BOM should be released automatically with the drawing)

Commented [AK21R20]: Resolved

## PRD004 – Routes

### 1.3.1.6 Process Overview

In the integration between CAD and D365, (in addition to the BOM mentioned in PRD003) the item attributes will also be integrated into D365 in order to identify the manufacturing route.

The Item Attributes are values that will be identified by the factory in order to give more information about the item, these attributes are yet to be provided by the factory; the attributes will be pushed from CAD to F&O and these will help identify which route should be used for the production of specific items.

The route will determine what operation is done in sequence for production to happen. Operations are the activities inside the route that need to happen during the manufacturing process.

Technica will have two types of Route

- **Manufacturing Routes:** These will be determined as per attributes that will be integrated from CAD system into F&O,
- **Assembly Routes:** these routes will determine how a final product is assembled once the manufacturing phase is complete; the route of the assembly will be chosen manually based on the Test Strategy Meeting by the Assembly Manager, which occurs after the kickoff of the projects; *the Manufacturing route will be determined automatically from the product attribute whereas the assembly route will be determined from the test strategy meeting that will define how the final product will be assembled and tested, which will contain the , schedule date backward*

Route details : TECH-000002   TECH-000002 : MANUFACTURING						
Standard view ▾						
○	Oper. No.	Priority	Operation	Name	Scrap perc...	Accumulat...
○	10	Primary	Cutting	Cutting	0.00	1.00
	15	Primary	Bending	Bending	0.00	1.00
	20	Primary	Welding	Welding	0.00	1.00
					15	All
					20	All
					0	All

+ New	Delete	Applicable resources	Maintain resource requirements
Overview	General	Setup	Times
Resource load	Resource requirements	Description	

Requirement type	Requirement	Description	Operation scheduling	Job scheduling
Resource	Cutting	Cutting	✓	✓

Figure 5 Routes

- Commented [EA22]: Should be PRD0003  
Commented [EA23]: Give example of item attributes.  
Commented [AK24R23]: Attributes where not provided during the analysis phase, we need this input from the factory  
Commented [AK25R23]: Expand on item Attributes needed for route selection  
Commented [AK26R23]: Done in beginning of p 11
- Commented [GB27]: (Routes selected should be reflected in the master schedule of the project based on manual entry from PM or assembly manager)  
Commented [AK28R27]: Assembly Manager

All routes need to be provided by Techica during the migration phase;

### 1.3.1.7 Requirements

ID	Description	Fit/Gap
PRD004-01	Ability to create Routes	FIT
PRD004-02	Ability to identify a route based on product family	GAP

## PRD005 – Track Open Purchase Order lines

### 1.3.1.8 Process Overview

If the production manager want to track any inbound purchase order lines, they can access the open purchase order lines view and track the delivery as well as the confirmed delivery date

Open purchase order lines									
Overview Purchase order									
Inventory									
○ Vendor account	Purchase order	Line number	Item number	Procurement category	Delivery date	↑ Confirmed delivery date	Deliver re...	Quantity	Voyage status
1003	TECH-000035	3	PRNCRA25		6/1/2023		100.00	100.00	
1002	TECH-000032	1	PRNCRA25-a		6/5/2023		1.00	1.00	TECH-000053
1003	TECH-000035	2	FA.NU.HX1		6/13/2023		30.00	30.00	
1003	TECH-000035	1	FABOHH.106		6/19/2023		20.00	20.00	
1002	TECH-000053	1	SAL1245-21CCRC...		7/6/2023		6.00	6.00	1-Test
1002	TECH-000051	1	SAL1245-21CCRC...		7/10/2023		12.00	12.00	1-Test
1002	TECH-000052	1	SAL1245-21CCRC...		7/10/2023		12.00	12.00	1-Test
1003	TECH-000021	1	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	2	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	3	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	4	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	5	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	6	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	7	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	8	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	9	PRNCRA25-b		7/19/2023		4.00	4.00	
1003	TECH-000021	10	PRNCRA25-b		7/19/2023		4.00	4.00	
1002	TECH-000022	1	SAL1245-21CCRC...		7/20/2023	7/3/2023	2.00	2.00	
1002	TECH-000022	2	SAL1245-21CCRC...		7/20/2023	7/4/2023	2.00	2.00	

Figure 6 Open Purchase Order Lines

### 1.3.1.1 Requirements

ID	Description	Fit/Gap
PRD005-01	Ability to track inbound purchases delivery date	FIT

Commented [GB29]: (He should be able also to track the percentage complete by order)

Commented [AK30R29]: If above comment is about Production order % of completion then it is mentioned in PRD011

## PRD006 – Manufacturing Order Generation

### 1.3.1.2 Proposed Process Flow

Technica differentiate between two groups of production orders: Manufacturing & Assembly; each group has a responsible HOD.

- Manufacturing Production orders: will contain all the production order that produce all components and subcomponents needed during the assembly process
- Assembly Production Orders: the assembly production order will assemble all produce & purchased items to form the final assembly.

There is no notification to inform that production manager that certain components are ready for assembly however there is a tool to be used for this specific purpose, (this is detailed in PRD008) **it's not clear in PRD008 how the assembly manager or assembly team will be aware when a manufacturing order is complete so they can proceed with the assembly**

*The master planning engine checks all item requirement and once run, will generate Planned Production orders (for items that need production) and planned purchase order (for items that need purchasing)*

Production orders are created by firming the planned production orders; these planned production orders can be generated by the master planning or by manual creation

***The Master Planning Engine job is to generate **Planned Production Orders , Planned Purchase orders & Planned Transfer Orders*****

*Planned Production Orders: are draft production orders that are generated by master planning and firm by the production manager with delivery date respective of the item requirement receipt date (which is when the customer was promised to get the assembly)*

*Planned Transfer Orders: transfer Raw Material/Components from Main Warehouse to Manufacturing Warehouse through planned transfer Order, that are firm by the procurement and by the warehouses on a specific date respective of the production order delivery date*

Commented [GB31]: (We have to clarify the link between the two types of orders, "so in case the parts for a specific assembly are completed in manufacturing how the assembly teams will be notified")

Commented [AK32R31]: Explained in PRD008

Commented [AK33R31]: Mention that there is no Notification

Commented [AK34R31]: Done

Commented [AK35]: Not Clear

Commented [EA36]: Not Clear!

Commented [AK37R36]: rephrased

Commented [EA38]: Must define what is Master Planning first!

Commented [AK39R38]: Explained

### 1.3.1.1 Requirements

ID	Description	Fit/Gap
PRD006-01	Ability to track two kinds manufacturing and assembly orders	FIT
PRD006-02	Ability to Create Production Orders Manually	FIT
PRD006-03	Ability to Generate Production orders from Master planning	FIT
PRD006-04	Ability to group Production order by pool ID	FIT

## PRD007 – Schedule Production Orders

### 1.3.1.2 Process Overview

Once the production orders are generated automatically from the master planning, the Production manager will release selected production orders for automatic scheduling as per the available capacity; production manager has the ability to update the schedule of the production order if required.

All production orders										
	Production	Item number	Site	Warehouse	Quantity	Report remainder as ...	Start date	T	Delivery	Status
	TECH4-0000041	SAL1245-21CCR13-1	Technica	2001	1.00	1.00	5/29/2023		Created	
●	TECH4-0000051	SAL1245-21CCR0001	Technica	5000	33.00	33.00	6/16/2023	6/16/2023	Scheduled	Report as finished
	TECH4-0000063	SAL1245-21CCR000A	Technica	2002	1.00	1.00	6/16/2023	6/16/2023	Started	Material consumption
●	TECH4-0000064	SAL1245-21CCR000A	Technica	2002	1.00	1.00	6/19/2023	6/19/2023	Scheduled	Material consumption
●	TECH4-0000062	SAL1245-21CCR000A	Technica	2002	1.00	1.00	6/19/2023	6/19/2023	Scheduled	Material consumption
	TECH4-0000051	SAL1245-21CCR13-1	Technica	2002	6.00	6.00	7/13/2023	8/29/2023	Released	Material consumption
	TECH4-0000052	SAL1245-21CCR13-1	Technica	2002	6.00	6.00	7/13/2023	8/29/2023	Released	Material consumption
	TECH4-0000061	PRINCR025	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Started	Material consumption
	TECH4-0000022	PRINCR025	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Reported as finished	Ended
	TECH4-0000033	PRINCR025	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Reported as finished	Ended
	TECH4-0000030	PRINCR025	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Reported as finished	Ended
	TECH4-0000035	SAL1245-21CCR035	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Reported as finished	Ended
	TECH4-0000036	SAL1245-21CCR035	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Reported as finished	Ended
	TECH4-0000037	SAL1245-21CCR035	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Released	Route consumption
●	TECH4-0000028	SAL1245-21CCR035	Technica	1002	1.00	1.00	7/19/2023	7/20/2023	Scheduled	Route consumption
	TECH4-0000029	SAL1245-21CCR041	Technica	1002	1.00	1.00	7/20/2023	7/21/2023	Reported as finished	Production line
	TECH4-0000030	SAL1245-21CCR041	Technica	1002	1.00	1.00	7/20/2023	7/21/2023	Reported as finished	Production line
	TECH4-0000031	SAL1245-21CCR041	Technica	1002	1.00	1.00	7/20/2023	7/21/2023	Released	Material consumption
	TECH4-0000032	SAL1245-21CCR041	Technica	1002	1.00	1.00	7/20/2023	7/21/2023	Scheduled	Material consumption

**Commented [GB40]:** (Not clear, the scheduling should be done automatically and the Production manager adjust the plan in case needed)

**Commented [AK41R40]:** It is automatic

**Commented [AK42R40]:** Explain more how Prod order are selected and scheduled

**Commented [AK43R40]:** done

Or if needed by the Production Manager access the Gantt chart and manually override the automated schedule previously suggested by the system; The scheduling engine automatically schedules production order based on capacity planning and the production calendar.

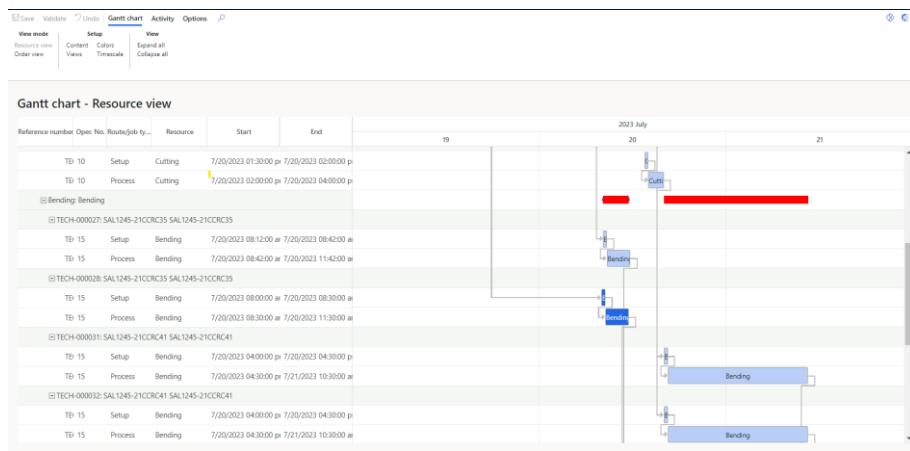


Figure 7 Gantt Chart

### 1.3.1.3 Requirements

ID	Description	Fit/Gap
PRD007-01	Ability to Manage Factory Master Plan	FIT
PRD007-02	Ability to manipulate production order delivery date	FIT
PRD007-03	Ability to push jobs forward and backward on time scale	FIT
PRD007-04	Ability for system to automatically schedule Production order jobs based on resource capacity	FIT

## PRD008 – Release Production Order

### 1.3.1.4 Process Overview

By Releasing a production order, the factory floor is ordered to start executing jobs for a specific production order

In order for the production manager to release a production order, he needs to have visibility whether the production order BOM components are available or not, to do that

1. The Production Manager accesses the Production Floor Management dashboard

Commented [GB44]: (Schedule should be generated automatically based on the capacity and occupation of each division, the production manager can modify manually the schedule in case needed)

Commented [AK45R44]: It is automatic

Commented [EA46]: Fix sentence!

Commented [AK47R46]: done

**Production floor management**

7/31/2023

Summary

Number of jobs: 4

Production orders to release: 6 (highlighted with a red box)

Planned absences: 0

Unreleased material lines needing attention: 0

Unprocessed waves needing attention: 0

Open warehouse work needing attention: 0

Production orders with changed products: 0

Jobs and people

Jobs to complete

Order	Operation	Name	Product number	Quantity	Resource	
21474836..	TECH-000034	Assembly	Assembly	SAL1245-21CCR13-1	1.00	Assembly W
21474836..	TECH-000034	Assembly	Assembly	SAL1245-21CCR13-1	1.00	Assembly W

Team

Favorite contacts

2. The **Production order to Release** will allow the **production manager** or the **assembly** to check which of the production order has all necessary components(BOM) and is ready to be Released

Commented [GB48]: or assembly manager

Commented [AK49R48]: Done

Production orders to release

Standard view

Production orders

Order	Name	Item number	Quantity	Unit	Start date	End date	Ready to be released	Last material checked date
TECH-000027	SAL1245-21CCR035	SAL1245-21CCR035	1.00	ea	7/19/2023	7/20/2023	✓	6/12/2023 1:53:47 PM
TECH-000028	SAL1245-21CCR035	SAL1245-21CCR035	1.00	ea	7/19/2023	7/20/2023	✓	6/12/2023 1:56:05 PM
TECH-000031	SAL1245-21CCR041	SAL1245-21CCR041	1.00	ea	7/20/2023	7/21/2023	■	6/12/2023 1:56:20 PM
TECH-000032	SAL1245-21CCR041	SAL1245-21CCR041	1.00	ea	7/20/2023	7/21/2023	△	6/12/2023 1:56:39 PM
TECH-000035	Conveyor	SAL1245-21CCR13-1	1.00	ea	7/21/2023	7/31/2023	△	6/12/2023 10:39:57 PM
TECH-000036	Conveyor	SAL1245-21CCR13-1	1.00	ea	7/21/2023	7/31/2023	△	6/12/2023 1:44:47 PM

Production

Display dimensions

Item number	Product name	Oper. No.	Location	Material is available	Requested date	Requested quantity	On-hand settled	Order settled	Planned order settled	Available physical
PRINCRA15	Articulated Foot	10	■	2.00	7/20/2023	-2.00	■ -2.00	3.00	ea	
SAL1245-21CCR035	SAL1245-21CCR035	10	△	2.00	7/20/2023	-2.00	△ -2.00	2.00	ea	
SAL1245-21CCR036	Leg Horizontal Beam	10	△	4.00	7/20/2023	-4.00	△ -4.00	2.00	ea	

Production orders that are marked as **✓**, means that all necessary BOM are available and the production order can be released.

Production orders that are marked as **■** mean that they have missing quantity and they can't be released; *in the above example, you will notice that the system will display which of the components can be covered by available ON-HAND quantity, Orders or Planned Orders.*

Once decided the production manager can release a production order

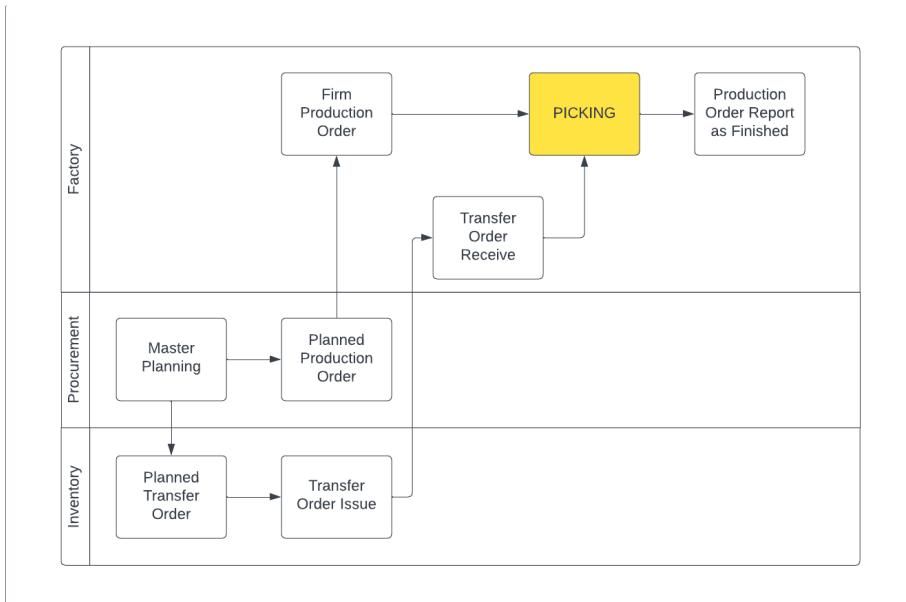
Production orders to release							
Standard view ~							
Production orders							
<a href="#">Release</a> <a href="#">Release all available</a> <a href="#">Update critical on-hand</a> <a href="#">View explosion</a> <a href="#">Display dimensions</a> <a href="#">Max. report as finished</a> <a href="#">Gantt chart</a> <a href="#">Material availability check</a>							
<input type="checkbox"/> Production	Name	Item number	Quantity	Unit	Start date	End date	Ready to be released
<input checked="" type="checkbox"/> TECH-000028	SAL1245-21CCRC35	SAL1245-21CCRC35	1.00	ea	7/19/2023	7/20/2023	<span style="color: green;">✓</span>
TECH-000032	SAL1245-21CCRC41	SAL1245-21CCRC41	1.00	ea	7/20/2023	7/21/2023	<span style="color: orange;">△</span>
TECH-000036	Conveyor	SAL1245-21CCR13-1	1.00	ea	7/21/2023	7/31/2023	<span style="color: red;">✗</span>

### 1.3.1.1 Requirements

ID	Description	Fit/Gap
PRD008-01	Ability to Release Production Orders	FIT
PRD008-02	Ability to check component availability	FIT

### PRD009 – Resource Consumption

#### 1.3.1.2 Process Overview



- Commented [GB50]: (Not clear)
- Commented [EA51]: Re-Work not included in the process
- Commented [AK52R51]: Not related to Re-work
- Commented [EA53]: What is "Planned Transact Order" in inventory section
- Commented [AK54R53]: fixed

Figure 8 Production Resource Consumption

The consumption of resources happens once the production order is released and depending on the resource consumption of the route operation;

The warehouse will get planned transfer order to be executed **on specific delivery dates** from the master planning, once firmed they will issue the transfer order **on their respective dates** and it will be received by the factory in a specific location; once the production order is released, the pick journal will be posted and will consume the (the components or parts or material) quantity needed from the PICK location.

Posting of item Consumption will be done automatically.

*Whatever remains in the PICK location once production is complete, will be transferred back to inventory once the production orders are completed or these material, parts or components are not needed anymore.*

Transfer orders can also be created manually (not through the master planning functionality) by the warehouse department from the Main warehouse to the Manufacturing Warehouse; the transfer order issue is executed by the warehouse while the transfer order receiving is executed by the Manufacturing department.

#### 1.3.1.1 Requirements

ID	Description	Fit/Gap
PRD009-01	The warehouse transfer goods to the factory picking area were the factory pick the need good in their manufacturing process	FIT
PRD009-02	Factory return the remaining goods to picking area	FIT

### PRD010 – Splitting Production Order

#### 1.3.1.2 Process Overview

Splitting of production order was a common practice in the legacy process for the production manager to manage production order,

But on F&O this will not be necessary as the production manager can release quantity less the total of the production order and track the remaining;

*The only reason we are addressing this scenario is because Technica used to get production orders with certain quantity (QTY 3) and for business and production reasons they decide to release partially less than that, in this situation the best practice is to update the production order quantity to the desired quantity and estimate and release it so that the Production order quantity will be equal to the produced quantity.*

In all cases if splitting a production order is needed, then a production order can be split automatically or manually, then the production manager can track two separate production orders with two separate delivery dates.

Commented [EA55]: Must mention the delivery of the receipt that will done on a specific planned date.

Commented [AK56R55]: done

Commented [GB57]: (Depend on the type of materials, for profiles the warehouse can directly issue a transfer order while for sheets he should get the requirements form laser team)

Commented [AK58R57]: Done

Commented [GB59]: Not clear, we have to clarify how the tracking is done in case of splitting (because two separate orders are being executed in the factory and each one has its own progress)

Commented [AK60R59]: done

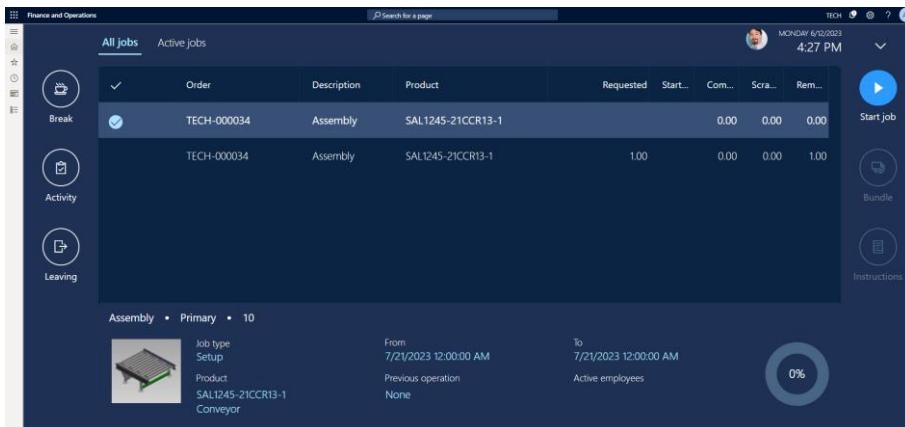
### 1.3.1.3 Requirements

ID	Description	Fit/Gap
PRD009-01	Ability to split production orders	FIT

## PRD011 – Shop Floor Execution

### 1.3.1.4 Process Overview

Once a production order is released the jobs (cutting, bending, drilling, welding...etc) in the route will be tracked on the shop floor application; this application will allow each resource to know which jobs he/she has and when to execute



Each job will be started by the responsible for each operation and ended once the job is done in order to track the time consumed to execute a specific job; jobs can't be updated, deleted or changed while the production order is in progress however a production order route or bill of material can be updated (line deleted, added) if the production order status is still in status Created.

Commented [EA61]: Must define jobs (is it one or a group of tasks?)

Commented [AK62R61]: Group of tasks depending on the route

Commented [EA63]: Can we update, delete change any job? Must explain more.

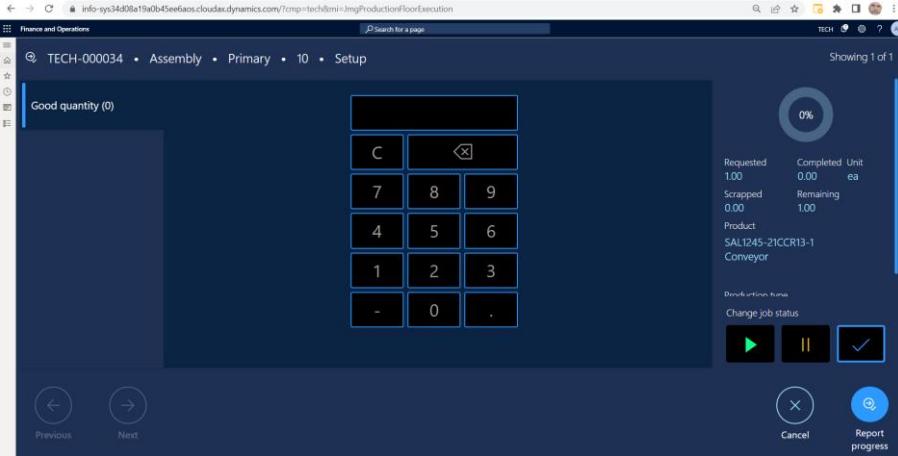
Commented [AK64R63]: done

Commented [GB65]: (Notification should be sent to the responsible team leader in case the execution time exceeded the estimated one, and the notification shouldn't disappear unless a reason is added)

Commented [AK66R65]: Mentioned as GAP

Commented [AK67R65]: Mention GAP or Screen in document

Commented [AK68R65]: Suggested workaround p 22 & 23



There is no notification sent to the responsible if a job exceeded the expected execution time however the team leader can check the Production Floor Management screen where he can track the jobs that are still open. *Technica want to be able to track the estimated time v/s the actual time to assist at the level of each production operation to assist the team leader to determine whether a operation is on track or going overboard in terms of effort.*

**Commented [AK69]:** Ability to track Estimated vs actual

Production floor management											
8/3/2013											
Jobs and people											
<b>Jobs to complete</b>											
Jobs with deviation											
Team	41	P000107	Assembly	Speaker assembly	D0001	184.00	1121	11/29/2016	11/29/2016	11/29/2016	
	42	P000155	Assembly	Speaker assembly	D0004 : 000005 :: :	147.00	1311	12/6/2016	12/6/2016	12/6/2016	
Favorite contacts	44	P000124	Assembly	Speaker assembly	D0003	6.00	1211	12/11/2016	12/11/2016	12/11/2016	
	36	P000124	Packing	Packing	D0003	6.00	1222	12/11/2016	12/11/2016	12/11/2016	
	43	P000123	Assembly	Speaker assembly	D0003	5.00	1211	12/11/2016	12/11/2016	12/11/2016	
	!	2		P000123	Testing	Speaker testing and calibr...	D0003	5.00	1225	12/11/2016	12/11/2016
		5		P000123	Packing	Packing	D0003	5.00	1222	12/11/2016	12/11/2016
		47		P000134	Assembly	Speaker assembly	D0004 : 000005 :: :	4.00	1311	12/13/2016	12/13/2016
		48		P000134	Finishing	Front grill mounting	D0004 : 000005 :: :	4.00	1311	12/13/2016	12/13/2016
		49		P000134	Testing	Speaker testing and calibr...	D0004 : 000005 :: :	4.00	1312	12/13/2016	12/13/2016
		50		P000134	Packing	Packing	D0004 : 000005 :: :	4.00	1312	12/13/2016	12/13/2016
		53		P000153	Assembly	Speaker assembly	D0004 : 000005 :: :	25.00	1311	12/18/2016	12/18/2016
		51		P000104	Wiring	Installation of wiring	D0001	21.00	1111	12/18/2016	12/18/2016
		52		P000104	Assembly	Speaker assembly	D0001	21.00	1121	12/18/2016	12/18/2016
		56		P000155	Finishing	Front grill mounting	D0004 : 000005 :: :	147.00	1311	12/18/2016	12/18/2016
		**		*****	*****	*****	*****	*****	*****	*****	

Also, the production manager can track the jobs in progress from the Production Jobs inquiry

The Production manager can also check the Production floor Management workspace to track each project status, which operation it is at and which resource is assigned to it

### 1.3.1.5 Requirements

ID	Description	Fit/Gap
PRD010-01	Ability to track production orders execution jobs	FIT

PRD010-02	Notification should be sent to the responsible team leader in case the execution time exceeded the estimated one, and the notification shouldn't disappear unless a reason is added	GAP
-----------	---	-----

PRD010-03	Ability to track Estimate v/s actual operation time	GAP
-----------	---	-----

## PRD012 – Report As Finished

### 1.3.1.6 Process Overview

Once all the jobs are completed for a production order, its status will be *automatically* updated to **Reported as Finished**. At this time the inventory for the item produced would be increased.

Once the Parts are produced, the factory can assign whichever put-away location they need.

### 1.3.1.7 Requirements

ID	Description	Fit/Gap
PRD011-01	Ability to track quantity reported as finished	FIT

## PRD013 – Non-Conformities

### 1.3.1.8 Process Overview

The production floor detects non-conformities and Reports them as Bad Quantity. **Bad** quantities will carry the cost of the items already consumed until they are scrapped.

As Rework, the WBS needs to be updated to include a new activity on the existing WBS, and add an activity as Re-work, this activity will be pushed to CAD through the integration, so that when the re-drawing is done, it can be re-integrated to this specific line. *The re-work can be scheduled manually or automatically as the production manager will decide what to do next based on their action plan.*

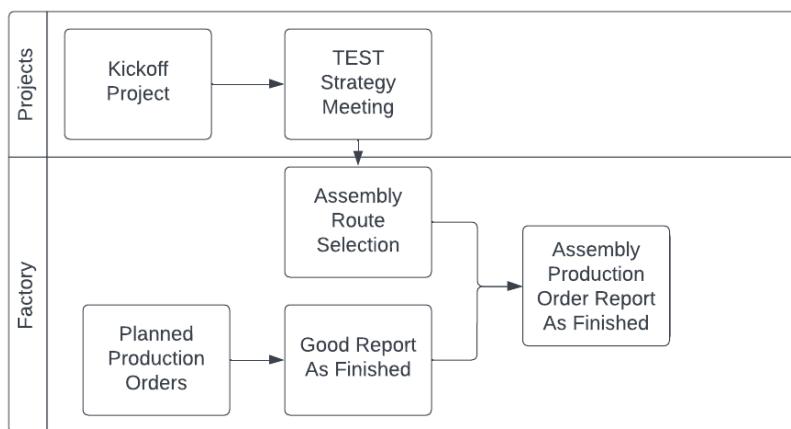
**Commented [EA70]:** Explanation required of what will happen.  
How to produce? What happens to cost already consumed?

**Commented [GB71]:** (How the non-conformities are detected, reported and re-released through the system)  
How the revised drawings from engineers will be managed through the system (as sometimes it could be completely new part and sometimes a modification on old one)

ID	Description	Fit/Gap
PRD012-01	Ability to track bad quantity	FIT

## PRD014 – Assembly

### 1.3.1.9 Process Overview



Once the project is kicked off, the projects department initiate the Test Strategy meeting which will determine the route for the assembly production order; once determined the Assembly Manager can update the Production Order route from the existing routes on F&O on the Production order

Routes					
Standard view ▾					
<input type="button" value="Filter"/> <input type="button" value="Print"/> <input type="button" value="New"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Copy"/> <input type="button" value="Move"/> <input type="button" value="Search"/> <input type="button" value="Help"/> <input type="button" value="Close"/>					
Route number	Name	Item group	Approved by	Approved	Engineering...
TECH-000001	Assembly	Assembly	000043	✓	
TECH-000002	Manufacturing	Assembly	000043	✓	

on a related note once manufacturing of all components is ready, the Assembly production order can be executed.

The scheduling of the assembly production needs to be done manually by the assembly manager.

In case of any re-work during the assembly process, a new activity in the WBS is added and once the drawing is redone, then the integration is run-again on the re-work activity and the new BOM lines are imported, then the new production order can be either generated manually or through master planning engine,

Commented [EA72]: Re-work must be included in assembling process

Commented [AK73R72]: Rework During Assembly Process???

Commented [AK74R72]: added

Commented [GB75]: The link between the assembly orders and the manufacturing orders is not clear.

Shelf number should be added to the system to identify the location of the finished parts in stock

Assembly can start before completing all the manufacturing parts (point discussed during the process review meeting)

Commented [AK76R75]: Added in PRD012

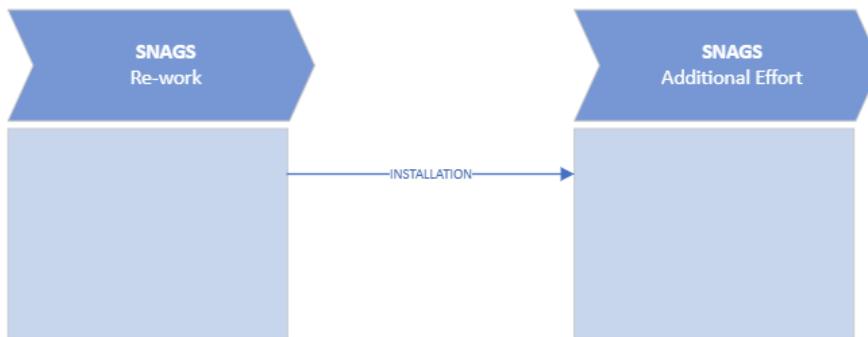
Currently the test reports of standard assemblies can't be generated automatically by the system and would require customization,

#### 1.3.1.10 Requirements

ID	Description	Fit/Gap
PRD013-01	Percentage of Completion on Assembly has to be manual	GAP
PRD013-02	Generate Test Report of Standard assemblies	<div style="border: 1px solid #ccc; padding: 5px;"><p>Commented [GB77]: Scheduling of assembly activities should be done manually</p><p>Commented [AK78R77]: Done</p></div>

## PRD015 – SNAGS

### 1.3.1.11 Process Overview



Snags happen all the time during the project lifecycle; all snags that occur before installation will be considered as re-work; Snags will be recorded in the case management and they will follow the appropriate workflow. Technica differentiate between two types of re-work; re-work that happens before manufacturing is initiated and after; Before manufacturing any recurring work on drawing is considered a re-work whereas after execution , then this is considered a SNAG.

#### Before Execution:

- As mentioned all Re-work before execution, means there is extra effort that is placed on the same WBS activity in terms of timesheet and the BOM lines are re-integrated again

#### After execution

- As for any re-work that is after execution in a SNAG, there is definitely going to be extra effort that will be covered by Timesheet for any extra effort, not to mention that if the line is already invoiced that a new line in the WBS need to be added called SNAG in order to track this task

Technica will provide the workflow steps during the implementation phase.

During the snag case lifecycle, the snag activity will be added on the WBS in order to track whatever cost or effort is assigned on it.

any kind of SNAG needs to be reflected in the WBS, so efforts will be collected in timesheets, under a category called "SNAGS" which allow tracking all efforts and cost that might arise , in addition, the production order will have their own production order group called "SNAG" which allow further tracking in the production cycle.

**Commented [GB79]:** We have to segregate between manufacturing and design snags (the re-work should be calculated separately for each department).  
Snags detected during assembly could be released as revision or new parts (but in both cases the time registered to execute should be considered as re-work)

**Commented [AK80R79]:** Refer SNAG to Engineering Change Request in R&D FRD.

**Commented [AK81R79]:** Differentiate between type of Re-WORK

**Commented [AK82R79]:** Done

**Commented [EA83]:** Not enough information. Very weak!  
The whole process of revision coming from snags is not mentioned.

The factory need to segregate between manufacturing and design snags; in order to do that whenever there is a snag, a new activity is added on the WBS with a category SNAG Design which allows them to track cost for this and all snags.

Work breakdown structure   TECH-000121   Black																																																
My view - TECH-000121: Black																																																
Draft																																																
+ New <input type="button"/> Delete <input type="button"/> Outdent <input type="button"/> Indent <input type="button"/> Move up <input type="button"/> Move down <input type="button"/> Expand to <input type="button"/> Details <input type="button"/> Import <input type="button"/> Export <input type="button"/> Attachments <input type="button"/> Auto scheduling <input type="button"/> Resource <input type="button"/> Product dimension																																																
<input type="checkbox"/> Filter <input type="button"/> View <input type="button"/> Scheduling <input checked="" type="radio"/> Auto scheduling <input checked="" type="radio"/> Show schedule errors																																																
<table border="1"> <thead> <tr> <th>WBS ID</th> <th>Scheduling error</th> <th>N... Task name</th> <th>Predcessors</th> <th>Category</th> <th>Effort in hours</th> <th>Task start date</th> <th>Task end date</th> <th>Duration</th> <th>Number</th> <th>Role ID</th> <th>Resources</th> <th>Staffing status</th> </tr> </thead> <tbody> <tr> <td>TECH-000121</td> <td></td> <td>Design SNAG</td> <td></td> <td>SNAGS</td> <td>8.00</td> <td>8/25/2023</td> <td>8/25/2023</td> <td>1.00</td> <td>1.00</td> <td></td> <td>Not staffed</td> </tr> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td>8.00</td> <td>8/25/2023</td> <td>8/25/2023</td> <td>1.00</td> <td>1.00</td> <td></td> <td>Not staffed</td> </tr> </tbody> </table>												WBS ID	Scheduling error	N... Task name	Predcessors	Category	Effort in hours	Task start date	Task end date	Duration	Number	Role ID	Resources	Staffing status	TECH-000121		Design SNAG		SNAGS	8.00	8/25/2023	8/25/2023	1.00	1.00		Not staffed	1					8.00	8/25/2023	8/25/2023	1.00	1.00		Not staffed
WBS ID	Scheduling error	N... Task name	Predcessors	Category	Effort in hours	Task start date	Task end date	Duration	Number	Role ID	Resources	Staffing status																																				
TECH-000121		Design SNAG		SNAGS	8.00	8/25/2023	8/25/2023	1.00	1.00		Not staffed																																					
1					8.00	8/25/2023	8/25/2023	1.00	1.00		Not staffed																																					

Snags detected during assembly could be released as revision or new part if needed; but in both cases, time is registered against the SNAG category to track its cost in timesheets.

### 1.3.1.12 Requirements

ID	Description	Fit/Gap
PRD014-01	Ability to track SNAGS	FIT

## Setup

### 1.3.1.13 Production Control Parameters

Reservation of material will done once the production order is scheduled,

#### Require Full Reservation : Definition

in addition the "Require Full Reservation" parameter will be set to TRUE so as to prevent any partial reservation to any production order. *If this parameter is set, then order lines can only be released when the entire quantity is reserved. If the total quantity is neither physically reserved nor planned for cross-docking, the order lines cannot be released.*

As for the Purchase orders reservation will occur as soon as the Purchase order receiving is done

Standard view ▾											
Production control parameters											
General			General			JOB SCHEDULING			CAPACITY PLANNING		
Journals	PRODUCTION CALCULATION	Number of production orders per...	PRODUCTION CREATION	Profit setting	Standard	Maximum job lead time	100	Block removal of approval	<input checked="" type="radio"/> No	Post report as finished in ledger	<input checked="" type="radio"/> No
Automatic update	Defers updates of cost calculation...	Reservation	Scheduling	ROUTEES	Routes	ROUTE NETWORK		Block editing	<input checked="" type="radio"/> No	Post edit transaction type	<input checked="" type="radio"/> No
Standard update	Parameter usage	By company	Ledger posting	Item and resource	Mandatory date		POSTING	Post picking list in ledger	<input checked="" type="radio"/> No	Requirement for material reserv...	<input checked="" type="radio"/> No
Status	Parameter usage	By company	Ledger posting	Item and resource	Mandatory date		ESTIMATION	Price calculation	<input checked="" type="radio"/> Yes	REPORT AS FINISHED	<input checked="" type="radio"/> No
Inventory dimensions										Delete capacity reservations	<input checked="" type="radio"/> No
Lean manufacturing										Use estimated cost price	<input checked="" type="radio"/> No
Unit of measure											
Number sequences											

- Commented [EA84]: Must specify reservation of what?
- Commented [AK85R84]: This is a general parameter for reservation, we added this specifically to cater to the requirement that unless all components are ready not to reserve
- Commented [AK86R84]: Add definition
- Commented [AK87R84]: done
- Commented [EA88]: To mention if reservation is done automatically and for what type?  
Define full reservation.
- Commented [AK89R88]: Production Reservation in General
- Commented [GB90]: Not clear

### 1.3.1.14 Calendar

Technica will use the following calendar for capacity planning for the weekdays and weekend's are off

WeekDays	FROM	TO
Working Time	8:00	10:00
Break	10:00	10:10
Working Time	10:10	12:30
Break	12:30	13:00
Working Time	13:00	15:00
Break	15:00	15:10
Working Time	15:10	17:00

### 1.3.1.15 Requirements

ID	Description	Fit/Gap
PRD016-01	Ability to maintain working hours	FIT

### 1.3.1.1 Resources

A resource can be a Machine, Human Resource, Vendor, Tool, Location or Facility:

The resources will be provided by Technica during the migration phase;

The team leader will be defined in the resource pool in order to track the team leader capacity|any resource including the Team leader can have it's own calendar so managing resource time and capacity can be done per resource per day.

Commented [GB91]: (Capacity of team leaders should be defined as percentage of his daily time, to be provided by Technica)

Commented [AK92R91]: To be checked by Technica

### 1.3.1.1.1 Requirements

ID	Description	Fit/Gap
PRD016-02	Ability to Maintain Resources	FIT
PRD016-03	Ability to define Team Leader as Resource	FIT

### 1.3.1.2 Warehouses

Technica will use the below Warehouse Structure

ID	Warehouses	Site
1000	Main Warehouse	Technica International
1001	Manufacturing In	Technica International
1002	Manufacturing Out	Technica International
2001	Assembly In	Technica International
2002	Assembly Out	Technica International

### 1.3.1.1 Operations

The operations are the activities that will be used in the route, each operation will be assigned a resource; Technica will provide these operations during the migration phase.

The screenshot shows the 'Operations' section in the 'Standard view'. The list contains the following items:

Operation	Name
Assembly	Assembly
Bending	Bending
Cutting	Cutting
Welding	Welding

### 1.3.1.2 Capacity

Technica need to be able to track all resource capacity; to do that the Setup and Run Time needs to be setup per resource as well as the production calendar (mentioned in section 1.3.1.14)

- Setup Time will be the time needed for the resource to be setup in order to start producing
- Run Time will be the time needed for the resource to run and produced the desired quantity

The screenshot shows the 'Resource' setup screen for a 'Cutting' machine. The 'General' tab is selected, displaying the following configuration:

- ROUTE**: Route group: 0000
- TIMES**: Queue time before: 0.00, Queue time after: 1.000, Hours/time: 1.000
- OVERLAP**: Run time: 0.00, Transfer batch: 0.00
- SCHEDULING**: Efficiency percentage: 100.00, Operations scheduling percentage: 100.00
- CAPACITY**: Capacity unit: Capacity unit
- Properties**: Faste property: No, Exclusive: No, Bottleneck resource: No, Sequence group ID: 0000

The 'Cost Categories' section includes:
 

- Setup category: Setup Cost
- Run time category: Setup Cost
- Quantity category: Quantity category

The 'Calendars' section shows:
 

- Calendar: Production
- Expiration: Never

Technica will provide the resource list during the migration phase

### 1.3.1.3 GAP

Capture setup time per resource; same item with different variant could need different setup time; The same goes for the execution time, which could be different; the execution or process time has to be related to the family of production

Commented [GB93]: (Not clear)

Commented [AK94R93]: During analysis with manufacturing

Commented [AK95R93]: Check workaround , check if attribute from CAD can identify the item family

### 1.3.1.4 Requirements

ID	Description	Fit/Gap
PRD001	Ability to check capacity on resources	FIT
PRD00	Setup time for same item can have different time	GAP

## DOCUMENT APPROVALS

I have reviewed the information contained in this document and approved it through sign off below:

Name	Department	Date	Signature

Comments:

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The specifications and conditions are hereby accepted. Info-Sys is authorized to execute the project as outlined in this document. This document is not valid until signed by the customer representative and returned to Info-Sys.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_