## Materials Management (MM)

Curriculum: Introduction to S/4HANA using Global Bike

#### **Teaching material - Information**



#### **Teaching material - Version**

- **3.3** (May 2019)
- Software used
  - S/4HANA 1809
  - Fiori 2.0
- Model
  - Global Bike
- Prerequisites
  - No Prerequisites needed



#### **Module Information**



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#### **Target Audience**

Beginner

#### **Module Information**



#### **Learning Objectives**

- Describe the purchase-to-pay business process
- Identify the organizational levels that support the purchase-to-pay business process
- Create a material master record
- Create a vendor master record
- List other vendor-specific master data
- Create a purchase requisition for stock and consumable materials
- Create a purchase order by referencing a purchase requisition
- Post a goods receipt for a purchase order
- Explain the warehouse structure in Warehouse Management (WM)
- Perform a putaway in WM using a transfer order (TO)
- Enter a vendor's invoice
- Process the automatic payment run
- Explain the integration points of the purchase-to-pay business process

#### **Functionality**

- Inventory Management
- Purchasing
- MRP
- Physical Inventory
- Valuation
- Service Master
- Invoice Verification
- Product Catalogs

#### **Unit Overview**

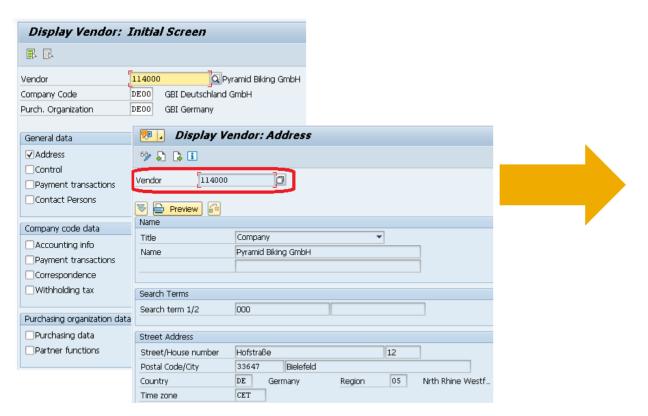
- Innovations in S/4HANA compared to ERP in Materials Management
- MM Organizational Structure
- MM Master Data
- MM Processes
  - Procure-to-Pay Process

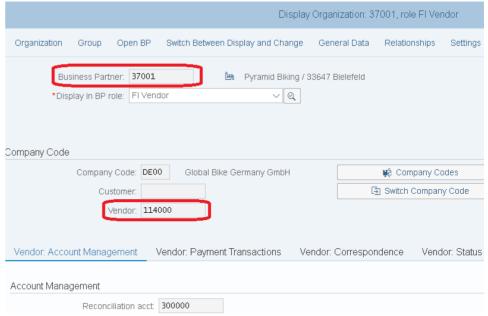
## Innovations in S/4 HANA compared to ERP in Materials Management

- 1) Business Partner (BP) is the Single Point of Entry for master data such as customer, vendor or contact person
  - → Transaction BP replaces: FD01, FD02, FD03, FD05, FD06, FD0 FK01, FK02, FK03, FK05, FK06, FK08 MAP1, MAP2, MAP3, MK01, MK02, MK03, MK05, MK06, MK12, MK18, MK19, V-03, V-04, V-05, V-06, V-07, V-08, V-09, V-11, V+21, V+22, V+23, VAP1, VAP2, VAP3 VD01, VD02, VD03, VD05, VD06 XD01, XD02, XD03, XD05, XD06, XD07 XK01, XK02, XK03, XK05, XK06, XK07
- 2) The maximum length of the material field (material number) has been extended from 18 to 40 characters
- 3) Data model has been changed significantly
- 4) Obligatory to use the Material Ledger
- 5) Simplifications in transactions MM01/02/03
- 6) Simplification in transaction Request for Quote
- 7) Cloud Integration: Ariba
- 8) In Output Management, the target architecture is based on Adobe Document Server and Adobe Forms
- 9) Change in the data model in MM Inventory Management
- 10) Transactions for executing and displaying goods movements are replaced by transaction MIGO
  - Transaction MIGO replace: MB01, MB02, MB03, MB04, MB05, MB0A, MB11, MB1A, MB1B, MB1C, MB31, MBNL, MBRL, MBSF, MBSL, MBST, MBSU

## Innovations in SAP S/4HANA Business Partner

- The core function of SAP S/4HANA is the simplification of data structures
- > various transactions, such as the management of customers or suppliers, are brought together
- It is (so far) still possible to navigate through the well-known tree paths





A unique business partner number is assigned to creditor 114000. This business partner number is assigned to various roles such as the customer, creditor, contact person.

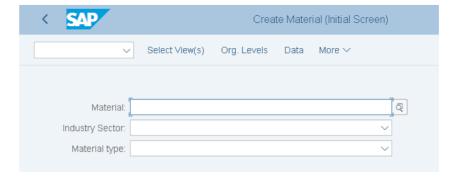
Relationship: n:m

### Innovations in SAP S/4HANA Business Partner

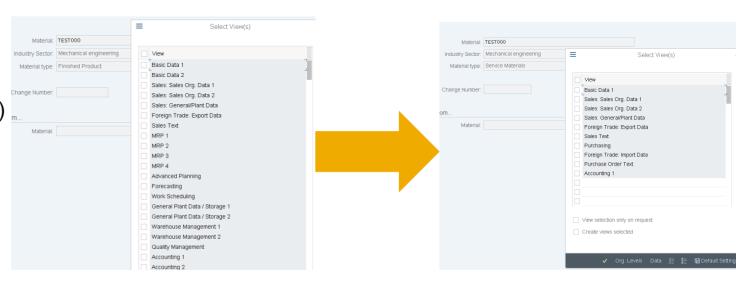
- There are redundant object models in the traditional ERP system where the vendor master and customer master is used.
  - The (mandatory) target in SAP S/4HANA is the Business Partner approach.
- Business partners can be categorized as a person, group, or organization as follows:
  - An organization represents units such as a company (for example, a legal person), parts of a legal entity (for example, a department), or an association. Organization is an umbrella term to map every kind of situation in the day-to-day business activities.
  - A group represents a shared living arrangement, a married couple, or an executive board.

The maximum length of the material field (material number) has been extended from 18 to 40 characters



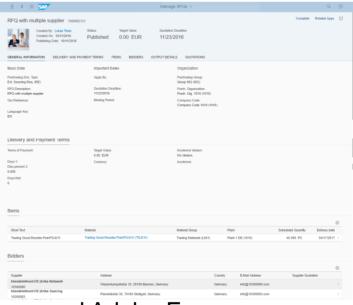


- Simplifications in transactions MM01/02/0
  - Relevant views are displayed only for material type, e.g. Material type SERV (Service material)

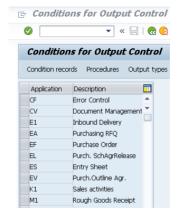


- Data model has been changed significantly
  - the new denormalized table, MATDOC, has been introduced which contains the former header and item data of a material document as well as a lot of further attributes.
  - Material document data will be stored in MATDOC only and no longer in MKPF and MSEG.
  - Actual stock quantity data will be calculated on-the-fly from the new material document table MATDOC
  - With the new MM-IM data model, the system works on database level in an INSERT only mode without DB locks.
- Obligatory to use the Material Ledger
  - This simplification makes it obligatory to use the Material Ledger in all SAP S/4HANA systems.
  - Material Ledger, as the inventory subledger, valuates material inventories in multiple currencies and GAAPs in paralle
  - In addition, Material Ledger is a base prerequisite for the use of Actual Costing.
  - tables need to be updated less often, which leads to a higher throughput due to fewer database locks.
  - In MM02 and MR21, material prices can now be maintained in multiple currencies. I
  - The inventory account balances are calculated separately for each currency and result, therefore, in a cleaner and more consistent valuation in currencies other than the local currency.

- Simplification of the Request for Quote transaction
- So far supplier field is mandatory
  - Only one supplier offer per request could be maintained
  - Now you can send one RFQ via Fiori App to different suppliers



- Output Management in S/4HANA is based solely on Adobe Document Server and Adobe Forms
  - NAST (message control) is not supported any further
  - BRFplus (Business Rule Framework plus) is the new standard
  - Intrasystem, can be used by all SAP applications that are based on SAPNetWeaver
  - Also generate web services that can be offered in SOA principle in system landscape, regardless of the software platform







- Cloud Integration: Ariba
  - Ariba allows for the location of new suppliers, the streamlining of transaction processes, and the realization of savings with cloud-based procurement software
  - The Ariba network supports the entire source-to-pay process.

#### Big Picture: SAP S/4HANA cloud integration with SAP Ariba solutions



- Performance optimizations within Material Document Processing lock behaviour
  - no UPDATE processes on the actual stock quantity fields 

    INSERT Only
  - from a data base perspective there are no locks 
     — enables from a DB perspective parallel execution of material document processing
  - logical locks still required because:

Consistency with material master data by parallel change --> locigal lock at one field

Defined sequence of material documents (e.g. for moving average price).

Consistency with stock quantity (check availability if negative stock is not allowed).

- The consistency check with master data and stock quantity (1 + 3) is necessary in any case. The defined sequence of material documents (2) is ensured only in the case that exclusive lock is chosen in the customizing
- Transactions for executing and displaying goods movements are replaced by transaction MIGO
   Transaction MIGO replace: MB01, MB02, MB03, MB04, MB05, MB0A, MB11, MB1A, MB1B, MB1C, MB31, MBNL, MBRL, MBSF, MBSL, MBST, MBSU

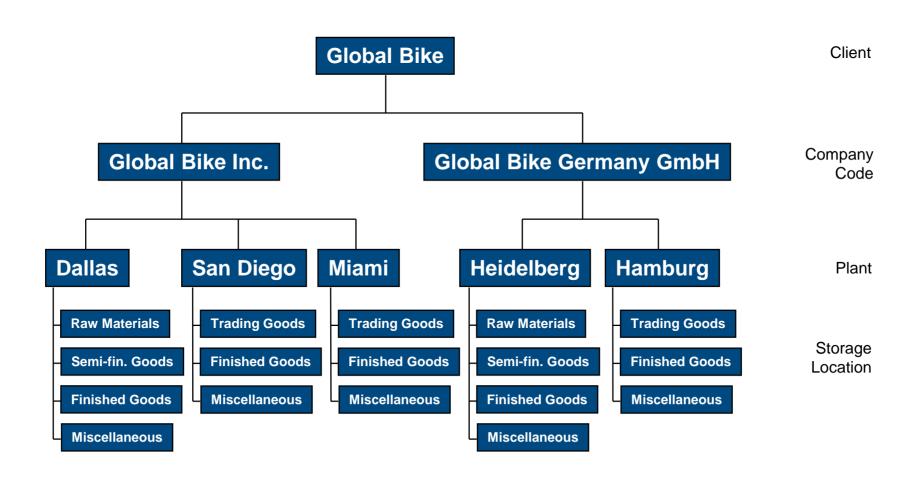
#### MM Organizational Structure (Materials Mgmt.)

- Client
  - An independent environment in the system
- Company Code
  - Smallest org unit for which you can maintain a legal set of books
- Plant
  - Operating area or branch within a company
  - Manufacturing, distribution, purchasing or maintenance facility
- Storage Location
  - An organizational unit allowing differentiation between the various stocks of a material in a plant

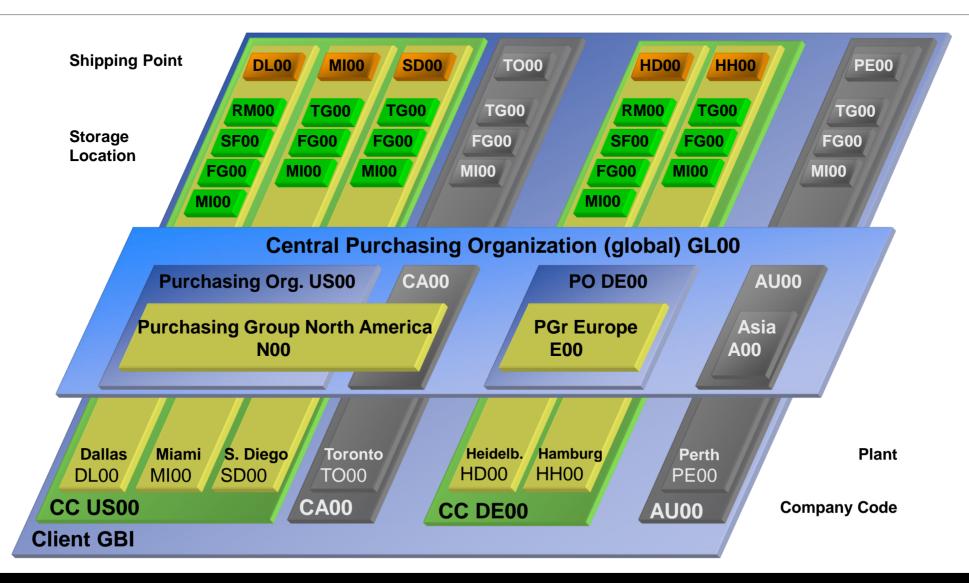
#### MM Organizational Structure (Purchasing)

- Purchasing Organization
  - The buying activity for a plant takes place at the purchasing organization
  - Organization unit responsible for procuring services and materials
  - Negotiates conditions of the purchase with the vendors
- Purchasing Group
  - Key that represents the buyer or group of buyers who are responsible for certain purchasing activities
  - Channel of communication for vendors

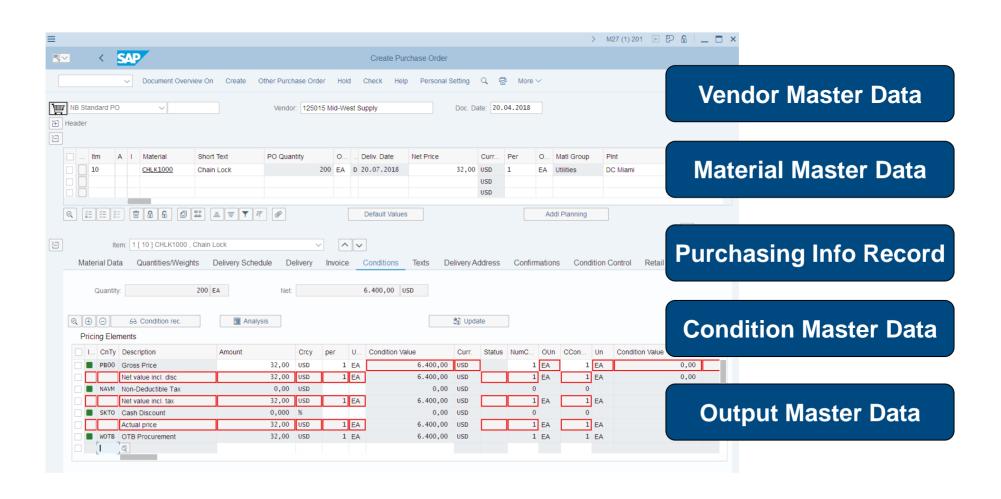
#### Global Bike Structure for Materials Management



#### Global Bike Enterprise Structure in SAP ERP (Logistics)

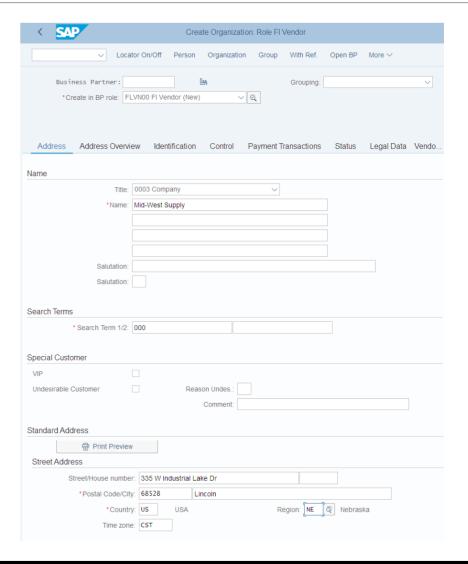


#### **MM Master Data**



#### **Vendor Master Data**

- Vendor Master
  - Contains all the necessary information needed to business with an external supplier
  - Used and maintained primarily by the Purchasing and Accounting Departments
  - Every vendor MUST have a master record



#### **Vendor Master Views**

- Client Level
  - Address
  - Vendor Number
  - Preferred Communication
- Company Code Data
  - Reconciliation Account
  - Terms of Payment
  - Bank Account
- Purchase Org Data
  - Purchasing Currency
  - Salesman's Name
  - Vendor Partners

**General Data** 

Company Code Data Financial Accounting (FI)

Purchasing Data
Materials Mgmt (MM)

#### **Vendor Master**

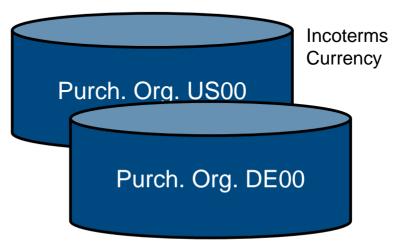
#### **General Information** relevant for the entire organization:



#### **Company Code specific information:**

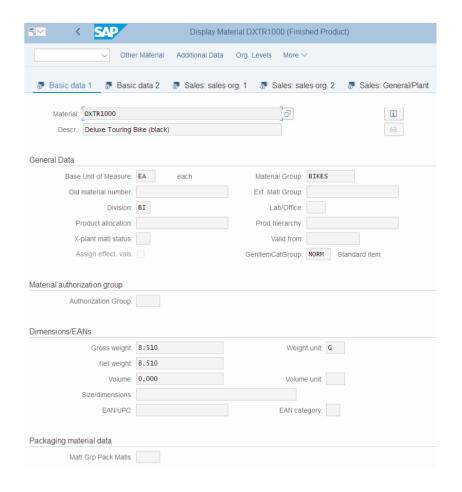
# Company Code US00 Acc. Mgmt Payment Bank Company Code DE00

#### **Purch. Organization specific information:**

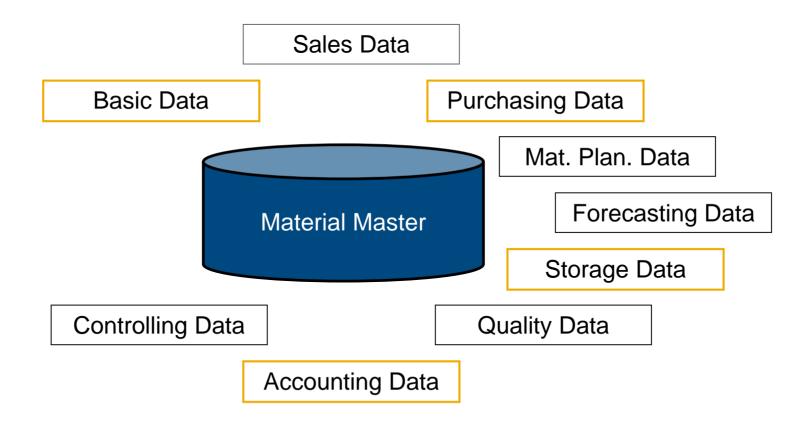


#### **Material Master Data**

- Material Master
  - · Contains all the information a company needs to manage about a material
  - It is used by most components within the SAP system
    - Sales and Distribution
    - Materials Management
    - Production
    - Plant Maintenance
    - Accounting/Controlling
    - Quality Management
  - Material master data is stored in functional segments called Views

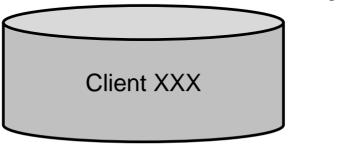


#### **Material Master Views**



#### **Material Master**

#### **General Information** relevant for the entire organization:

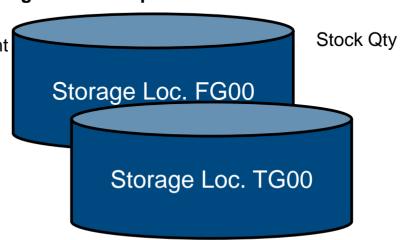


Name Weight Unit of Measure

#### Sales specific information:

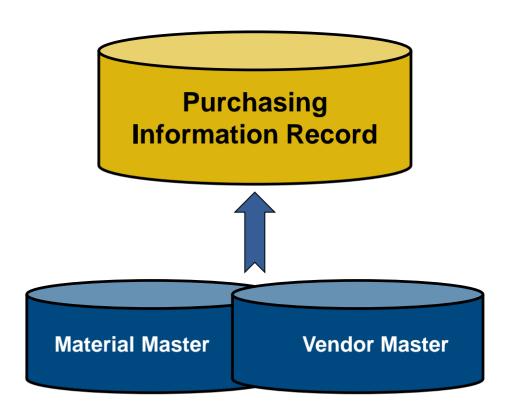
## Sales Org. UW00 Sales Org. UE00

#### **Storage Location specific information:**



#### **Purchasing Information Record**

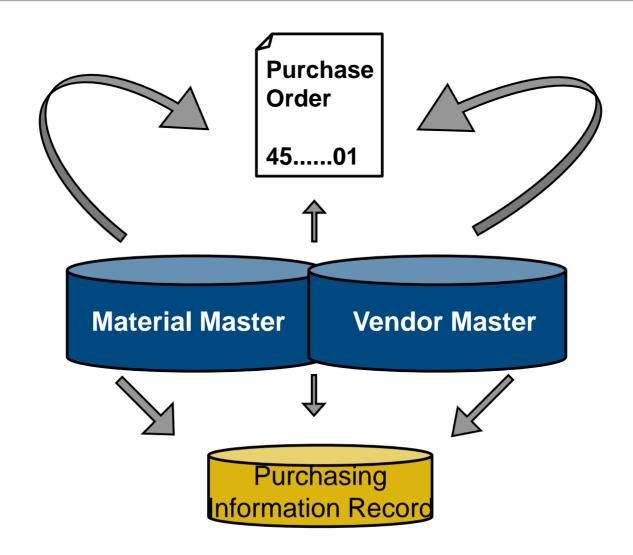
- Framework for Purchase Order
  - Contains the relationship between a vendor and a material
- Can be created:
  - Manually
  - Automatically Quotations
  - Automatically Purch. Orders
- Reporting
  - Vendor Evaluation



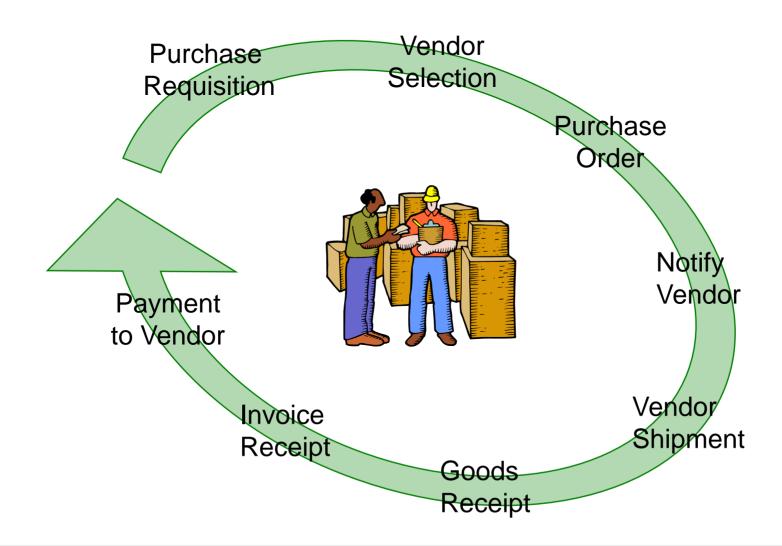
#### **Purchasing Information Record**

- Allows buyers to quickly determine:
  - Which vendors have offered or supplied specific materials
- Info Records contain:
  - Data on pricing and conditions
  - Last purchase order
  - Tolerance limits for deliveries.
  - Specific lead times
  - Availability periods
  - Vendor Evaluation data
- Serves as default information for Purchase Orders

#### **Master Data in Use**



#### **Procure-To-Pay Process**



#### **Purchase Requisition**

- Internal Document instructing the purchasing department to request a specific good or service for a specified time
- Requisitions can be created two ways:
  - Directly Manually
  - person creating determines: what, how much, and when
  - Indirectly Automatically
  - MRP
  - Production Orders
  - Maintenance Orders
  - Sales Orders

#### **Requisition Sourcing**

- Once the requisition has been assigned a source of supply it can be released for processing
- There are a variety of ways that a purchasing department can process a requisition to determine the appropriate Source of Supply:
  - Internal Sourcing Requirements
  - Source List
  - Outlined Agreement
  - RFQ

#### **Internal Sourcing**

- The requisition for materials could be satisfied by sources within our company.
  - It is possible that a plant within your firm could represent a potential source of supply for the material needed (centralized warehouse)
  - If an internal source is identified the requirement is covered by an internal procurement transaction (stock transport order)

#### **Source List**

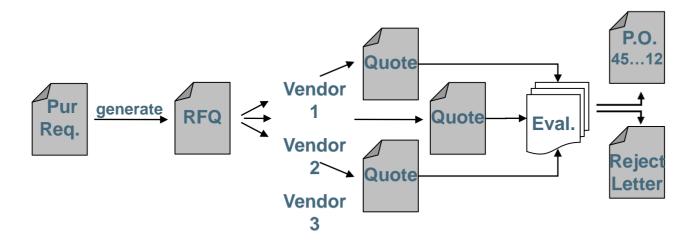
- A source list is a record that specifies the allowed means for procuring a material for a certain plant within a given time period.
  - If the list contains a sole source the system will assign the vendor to the requisition.
  - If several options exist the system will display a list of vendors for you to choose from.
  - If no source has been established the system will revert to search information records and outline agreements.

#### **Outline Agreement**

- Requisitions can be satisfied through existing longer-term purchasing agreement
- These agreements are subdivided into:
  - Contracts
  - Consists of items defining the individual materials, material groups, or services with prices and in many cases quantities
    - Quantity
    - Value
  - Scheduling Agreements
  - Total quantity of material is spread over a certain period in a delivery schedule, consisting of line items indicating quantities and their planned delivery date

#### **Request for Quotation**

- If nothing exist in the system we may need to submit a request for quotation to our vendors. An RFQ is an invitation to a vendor by a Purchasing Organization to submit a bid for the supply of materials or services
  - The accepted quotations will generate Purchasing Information Records
  - Perform Quotation Price Comparisons
  - Finally Select a Quotation



#### **Quotation from Vendor**

- The quotation received by your company is a legally binding offer, should decide to do business with the vendor, containing price's and conditions for the materials specified in the RFQ for a predefined period of time.
  - In SAP the RFQ and the Quotation will be become a single document, you will enter the vendor's response in the RFQ you created.

#### **Vendor Evaluation once Identified**

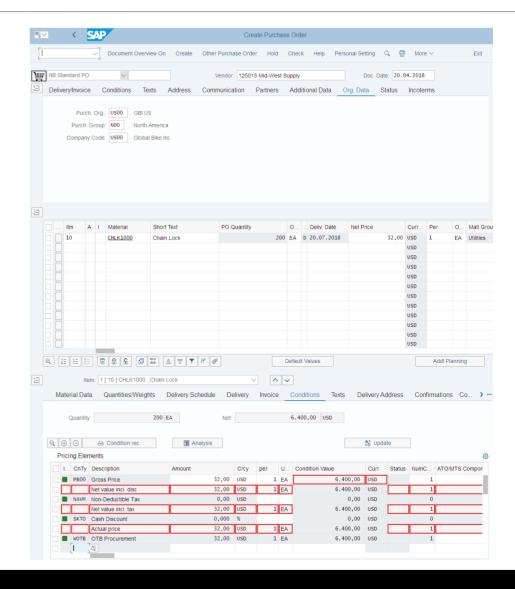
- Vendor evaluation helps purchasing evaluate vendors for sourcing while also enabling the company to monitor vendor relationships through performance scores and criteria you put in place.
  - Supports a maximum of 99 main criteria and 20 sub criteria for each main:
    - Price
      - Price Level
      - Price History
    - Quality
      - Goods Receipt
      - Quality Audit
      - Complaints/Rejection level
    - Delivery
      - o On-time delivery performance
      - Quantity reliability
      - Compliance with shipping instructions
      - Confirmation Date
  - You then must establish a scoring range (1 -100) and determine the weight factors of scores for each.

#### **Purchase Order**

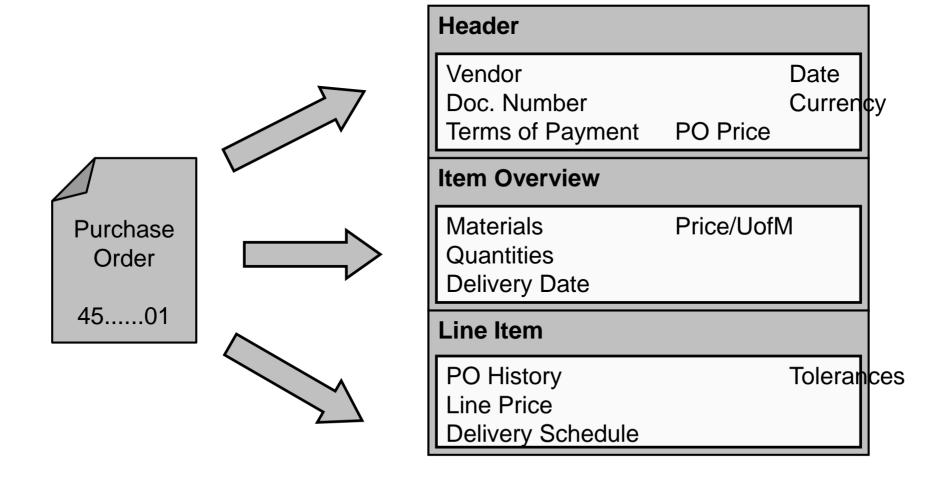
- A purchase order is a formal request to a vendor for a specific material or service under the stated conditions
- Purchase Orders can be created manually
  - Reference a Purchase Order
  - Reference a Purchase Requisition
  - Reference a RFQ/Quotation
  - Without Reference
- Purchase Orders can be create automatically

#### **Purchase Order**

- A purchase order can be used for a variety of purposes, the item category (procurement type) defined in the PO will dictate the use of the order and the process that the order will follow:
  - Standard
  - Stock or Consumption
  - Services
  - Subcontracting
  - Third-Party
  - Consignment



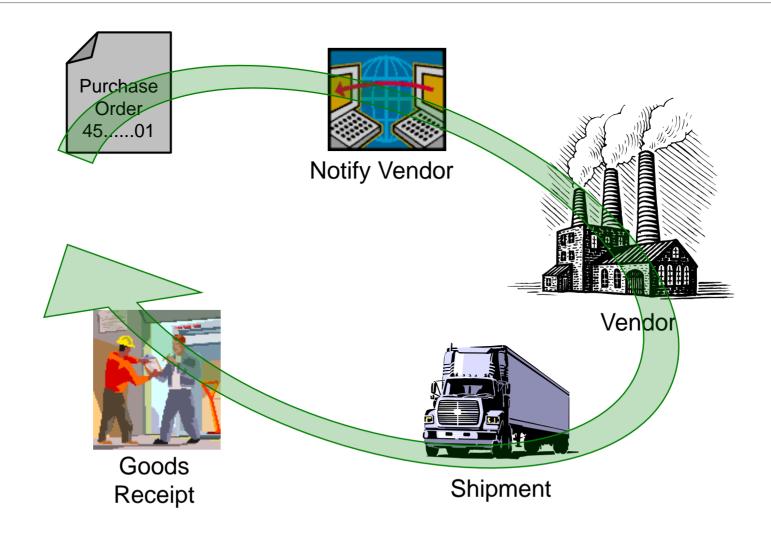
#### **Purchase Order Structure**



#### **Purchase Order Output**

- Once a Purchase Order has been created the vendor needs to be notified.
  - Printed
  - E-mail
  - EDI
  - Fax
  - XML
- There are a variety of forms that aid in the purchasing process and are generated from the Purchase Order
  - Purchase Order Output
  - Order Acknowledgement Forms
  - Reminders
  - Schedule Agreements

## **Goods Receipt**



## **Goods Receipt**

- Goods movement in which we accept goods into our system
- If materials are delivered against a Purchase Order we will reference that Order
  - Determine if we got what we ordered
  - System can purpose data for us from the PO
    - Material, quantity
  - Purchase Order History is update with the receipt
  - Updates Physical Inventory
  - Updates Inventory G/L Account

#### **Material Movements**

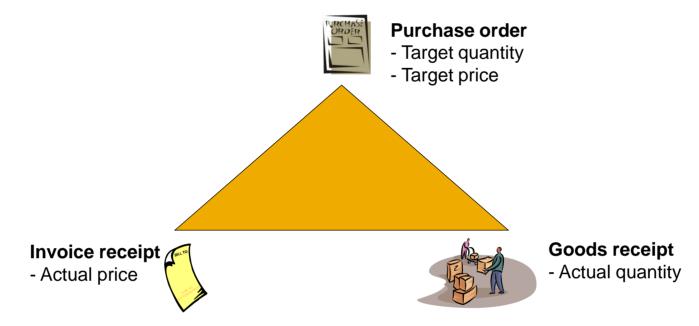
- When a goods movement takes place it is represented by a Movement Type
  - Movement types are three-digit keys used to represent a movement of goods
    - 101 goods receipt into warehouse
    - 103 goods receipt into GR blocked stock
    - 122 return delivery to vendor
    - 231 consumption for a sales order
    - 561 initial entry of stock
- Destinations for Receipt of Goods
  - Warehouse Unrestricted, Quality, Blocked
  - Quality
  - Goods Receipt Blocked Stock

#### **Effects of a Goods Receipt**

- When a Goods Movement for the receipt of goods takes place a series of events occur
  - Material Document is Created
  - Accounting Document is Created
  - Stock Quantities are Updated
  - Stock Values are Updated
  - Purchase Order is Updated
  - Output can be generated (GR slip / pallet label)

## **Invoice Processing**

- Incoming Invoices are reference against a Purchase Order to verify their content, prices, and arithmetic.
- If discrepancies arise between the purchase order or goods receipt and the invoice the system with generate a warning or an error
  - Depending on system configuration the difference could cause the system to Block the Invoice



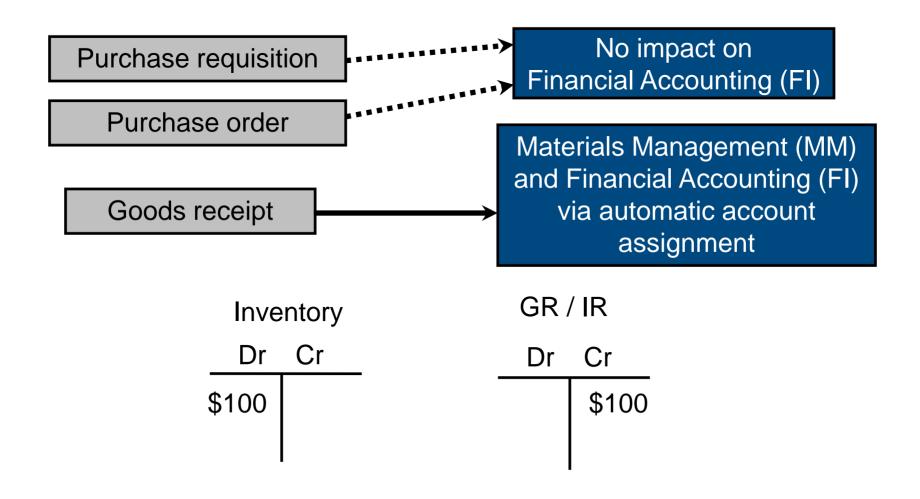
## **Invoice Processing**

- When an invoice is saved it applies the liability from the Goods Receipt of our Purchase Order to a Vendor
- Upon verification the:
  - Purchase Order is updated
  - Material Master is Updated (MAP)
  - Accounting Document is created
- Once the Invoice has been posted the verification process is completed and the payment process is initiated within Financial Accounting

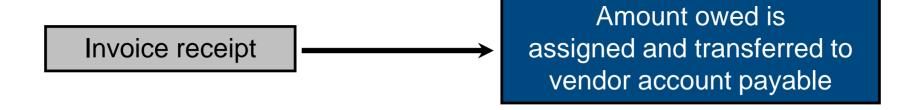
#### **Payment to Vendor**

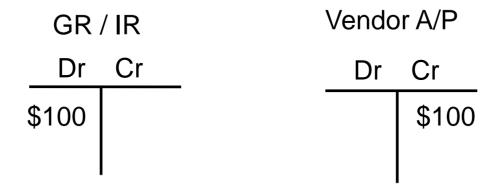
- Can be done automatically or manually
  - Post Outgoing Payment vs. Payment Program
- Elements of the Payment Transaction:
  - Payment Method
  - Bank from which they get paid
  - Items to be Paid
  - Calculate Payment Amount
  - Print Payment Medium
- Process will create a financial accounting document to record the transaction

## **Goods Receipt / Invoice Receipt**Reconciliation Account

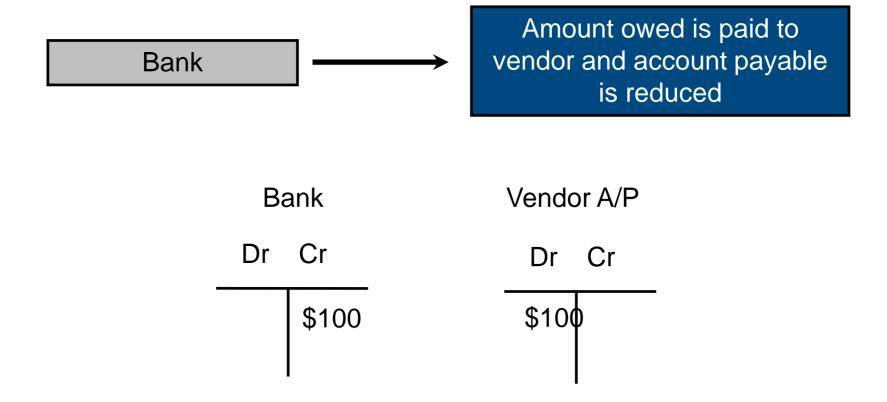


## Goods Receipt / <u>Invoice Receipt</u> Reconciliation Account

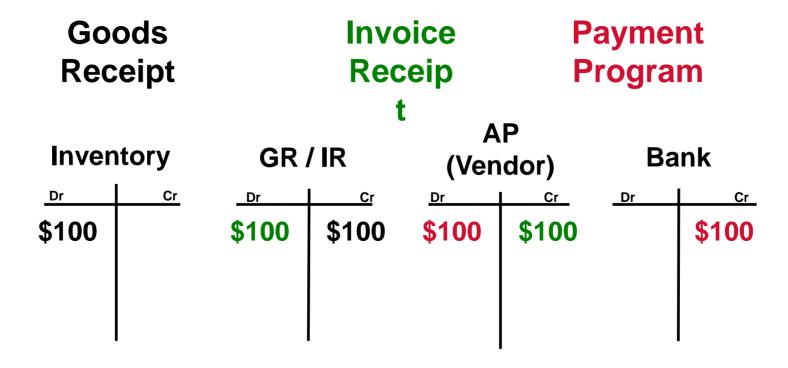




## **Vendor Payment**



## **FI – MM Integration Point**





# Thank you!