In addition to the standard Materials Management slides, this presentation includes links to the GBI enterprise model provided by a team at Hochschule Harz in Germany led by Prof. Dr. Hans-Jürgen Scheruhn. The model is based on an architecture of four IT integration layers which were created for the GBI curriculum using ARIS Business Designer for SAP and are made available to the SAP UA community using ARIS WebPublisher. All necessary licenses for this project were provided by Software AG.

Each link in the presentation is indicated by the symbol 🚴. A list of all links can be found on the second last slide.

**Product**
SAP ERP 6.0 EhP7
Global Bike Inc.

**Level**
Beginner

**Focus**
Cross-functional integration
Materials Management

**Version**
2.30

**Last Update**
August 2014
Course Overview

- Introduction to SAP
- Navigation
- Introduction to GBI
- Sales & Distribution
- Materials Management
  - Production Planning
  - Financial Accounting
  - Controlling
  - Human Capital Management
  - Warehouse Management
  - Project System
SAP ERP Functionality

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

- MM Organizational Structure
- MM Master Data
- MM Processes
  - Procure-to-Pay Process
• **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
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
GBI Enterprise Structure in SAP ERP (Logistics)

Client GBI

Central Purchasing Organization (global) GL00

Purchasing Org. US00
Purchasing Group North America N00

Purchasing Group North America N00

Dallas DL00
Miami MI00
S. Diego SD00

PO DE00
PGr Europe E00

Heidelb. HD00
Hamburg HH00

Perth PE00

Plant

Company Code

Client GBI

Purchasing Group North America N00

Dallas DL00
Miami MI00
S. Diego SD00

PO DE00
PGr Europe E00

Heidelb. HD00
Hamburg HH00

Perth PE00

Plant

Company Code
### SAP ERP MM Master Data

#### SAP ERP MM Master Data

- **Vendor Master Data**
- **Material Master Data**
- **Purchasing Info Record**
- **Condition Master Data**
- **Output Master Data**

### SAP University Alliances

Page 5-9
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:
- Client XXX
- Name
- Address
- Communication

**Company Code specific information:**
- Company Code US00
  - Acc. Mgmt
  - Payment
  - Bank
- Company Code DE00

**Purch. Organization specific information:**
- Purch. Org. US00
  - Incoterms
  - Currency
- Purch. Org. DE00
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

- Basic Data
- Purchasing Data
- Mat. Plan. Data
- Forecasting Data
- Storage Data
- Controlling Data
- Accounting Data
- Sales Data
- Quality Data
**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:**

- **Stock Qty**
- **Storage Loc. FG00**
- **Storage Loc. TG00**

Delivering Plant
Loading Grp
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
Procure-To-Pay Process

- Purchase Requisition
- Vendor Selection
- Purchase Order
- Notify Vendor
- Vendor Shipment
- Invoice Receipt
- Goods Receipt
- Payment to Vendor
- **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
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
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)
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.
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
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
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 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
    - 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.
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
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

Header
- Vendor
- Date
- Doc. Number
- Currency
- Terms of Payment
- PO Price

Item Overview
- Materials
- Price/UofM
- Quantities
- Delivery Date

Line Item
- PO History
- Tolerances
- Line Price
- Delivery Schedule
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

Purchase Order
45......01

Notify Vendor

Vendor

Goods Receipt

Shipment
- 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
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)
- 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.
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.
- 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
SAP ERP

Goods Receipt / Invoice Receipt
Reconciliation Account

- Purchase requisition
- Purchase order
- Goods receipt

No impact on Financial Accounting (FI)

Materials Management (MM) and Financial Accounting (FI) via automatic account assignment

<table>
<thead>
<tr>
<th>Account</th>
<th>Dr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>$100</td>
<td></td>
</tr>
<tr>
<td>GR / IR</td>
<td></td>
<td>$100</td>
</tr>
</tbody>
</table>

Posting Diagram MM
Goods Receipt / Invoice Receipt
Reconciliation Account

Amount owed is assigned and transferred to vendor account payable

<table>
<thead>
<tr>
<th>GR / IR</th>
<th>Vendor A/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr $100</td>
<td>Cr $100</td>
</tr>
</tbody>
</table>
Vendor Payment

Bank

Amount owed is paid to vendor and account payable is reduced

Bank

Vendor A/P

Dr  Cr

Dr  Cr

$100

$100
Goods Receipt

Invoice Receipt

Payment Program

Inventory

GR / IR

AP (Vendor)

Bank

Dr | Cr
---|---
$100 | 

Dr | Cr
---|---
$100 | $100

Dr | Cr
---|---
$100 | $100

Dr | Cr
---|---
$100 | 

Posting Diagram MM
Overview of ARIS models (MM)

[slide number] [slide title] [model name assigned] [level of abstraction (1-4)]

5-7 **Global Bike Structure for Materials Management**: “GBI Structure Materials Management” (1-3)
5-7 **Global Bike Inc.** and **Global Bike Germany GmbH**: „GBI Org Chart US/DE“ (1-3)
5-8 **GBI Enterprise Structure in SAP ERP (Logistics)**: “GBI System Organization Units” (1-3)
5-10 **Screen Diagram Vendor**: Mask Diagram (MD) “Create Vendor: Address / XK01” (4)
5-11 **Screen Diagram Vendor**: Mask Diagram (MD) “Create Vendor: Address / XK01” (4)
5-13 **Screen Diagram Material**: MD “Create Trading Goods: Basic Data 1 / MMH1” (4)
5-14 **Material Master Views**: eEPC “Create Material Master for Trading Goods” (3)
5-17 **Data Model MM**: “Data Model Purchase Info Record” (3)
5-18 **Data Model MM**: “Data Model Purchase Info Record” (3)
5-19 **Procure-To-Pay Process**: Value added Chain Diagram “GBI_MM” (2)
5-19 **seven eEP ePCI s o f G B I _ M M l i k e P u r c h a s e R e q u i s i t i o n (3) a n d D a t a M o d e l I n t e g r a t i o n M M F I (3)
5-20 **Purchase Requisition**: eEPC “Create Purchase Requisition” (3)
5-25 **Request for Quotation**: eEPC “Evaluate Quotations on Price” (3) and **Document Flow**
5-26 **Quotation from Vendor**: eEPC “Maintain Quotation from Vendor” (3) and **Document Flow**
5-28 **Purchase Order**: eEPC “Create Purchase Order referencing an RFQ” (3) and **Data Model MM**
5-30 **Screen Diagram Purchase Order**: Attribute Allocation Diagram “Purchase Order” (4)
5-32 **Notify Vendor**: eEPC “Create Purchase Order Referencing an RFQ” (3)
5-32 **Purchase Order**: Information Carrier Diagram “GBI Document Flow” (3)
5-32 **Goods Receipt**: eEPC “Create Goods Receipt for Purchase Order” (3)
5-33 **Goods Receipt**: eEPC “Create Goods Receipt for Purchase Order” (3)
5-36 **Invoice Processing**: eEPC “Create Invoice Receipt from Vendor” (3) and 3 more eEP CIs
5-38 **Payment to Vendor**: eEPC “Post Payments to Vendor” (3)
5-39: **Posting Diagram MM**: Information Carrier Diagram “FI-MM Integration Point” (3)
5-40: **Posting Diagram MM**: Information Carrier Diagram “FI-MM Integration Point” (3)
5-42: **Posting Diagram MM**: Information Carrier Diagram “FI-MM Integration Point” (3)

Levels of abstraction (1-4)
(1) Core level
(2) Overview level
(3) Detailed level
(4) Document level

All assigned models and its objects are linked to each other. This enables the model user to horizontally navigate (via Object Occurrences) within one level of abstraction and to vertically navigate (via Object Hierarchy) between the 4 levels of abstraction.
Execution in SAP ERP

- Take GBI User Rolls and interact with GBI Processes via SAP GUI:
- Execute GBI Processes:
  - Order of entire case study
  - Single case study processes
- Execute GBI Transaction:
  - All content of case studies at a glance
- GBI Data In- / Output:
  - Entire SAP ERP document flow
  - Description SAP ERP mask structure
  - All SAP ERP master & transaction data
  - All SAP ERP organizational units

Model Presentation in ARIS

- Organizational View:
  - (Org. units / Positions / Rolls/ User):
    - Level of Abstraction (LA) 1 to 3
- Process View:
  - Value added Chain (VAC) : LA 1 and 2
  - Event driven process chain : LA 3
- Function View:
  - Function Tree : Level of Abstr .1 to 3
- Data View:
  - Information carrier diagram : LA 3
  - Mask diagram : Level of Abstraction 4
  - Entity Relationship Diagram : LA 3
  - Org. Chart : Level of Abstraction 1- 3