

Problem 10

Smart planning

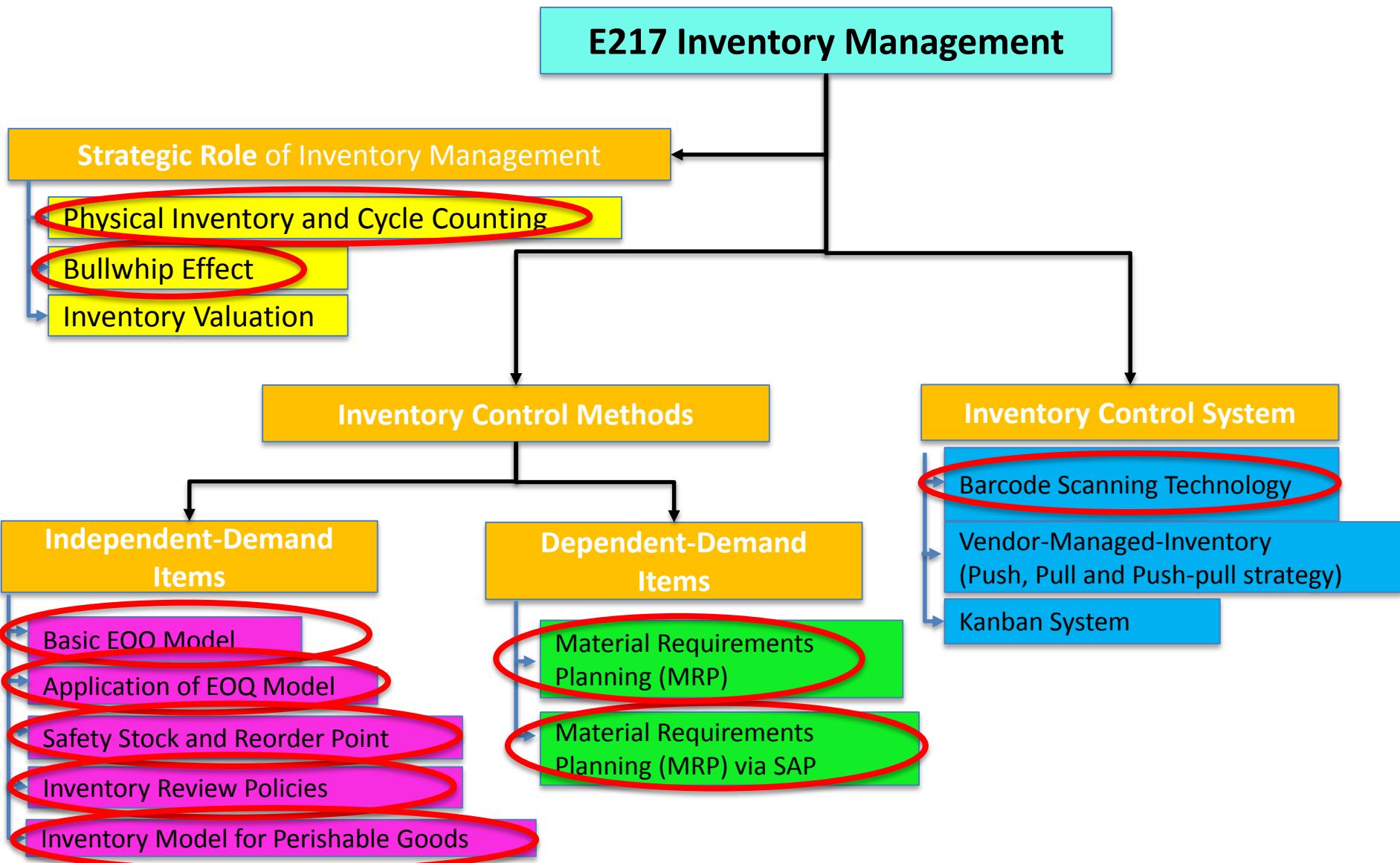
(1st Half)

E217 – Inventory Management

SCHOOL OF
ENGINEERING



E217 Inventory Management Topic Tree



Why ERP (Enterprise Resource Planning)?



| Key Functional Areas | Business Process |
|-----------------------------------|--|
| Sales & Distribution | <ul style="list-style-type: none">Liaise with customers on sales ordersManage sales orders and distribute goods out |
| Purchasing & Inventory Management | <ul style="list-style-type: none">Purchase required materialsManage inventory internal transfer and customer deliveries |
| Production | <ul style="list-style-type: none">Plan for productionManufacture the required goods |
| Finance | <ul style="list-style-type: none">Pay the suppliersReceive payment from customers |

- Complexity of business planning leads to the necessity of IT systems
- Sharing data effectively among functional areas leads to more efficient business processes

ERP is an integrated information system that:

- Manages company-wide business processes
- Coordinates information in different business areas of an organisation by using a common database

SAP Enterprise Resource Planning (SAP ERP)



Who is SAP?

- Systems, Applications, and Products in Data Processing (SAP)
- Founded in Walldorf, Germany in 1972
- World's Largest Business Software Company
- World's Third-largest Independent Software Provider

How SAP helps?

- Enables a company to optimize its business processes
- Ties together disparate business functions (integrated business solution) such as
 - Finance (Financial Accounting, Managerial Accounting, etc.)
 - Logistics (Sales, Procurement, Production, Quality, etc.)
 - Human Resources etc.
- Helps the organization run smoothly
- Real-time environment



Do it with me: Log in to SAP 1



Logging in RP Citrix

- Go cvm.rp.edu.sg
- Click on “install” and complete the installation
- Refresh the page and log in Citrix by using your **RP student account and password**



Do it with me: Log in to SAP 2



- Click on “SAP logon” icon



- Search for System ID “ID4”

The screenshot shows the SAP Logon 750 interface. On the left, there is a sidebar with 'Favorites', 'Shortcuts', and 'Connections' (which is selected). The main area has a title bar 'SAP Logon 750' and a toolbar with 'Variable Logon', 'New Item', 'Change Item', and 'Delete Item'. A dropdown menu 'Explorer View' is open. Below the toolbar is a 'Connections' section with a table:

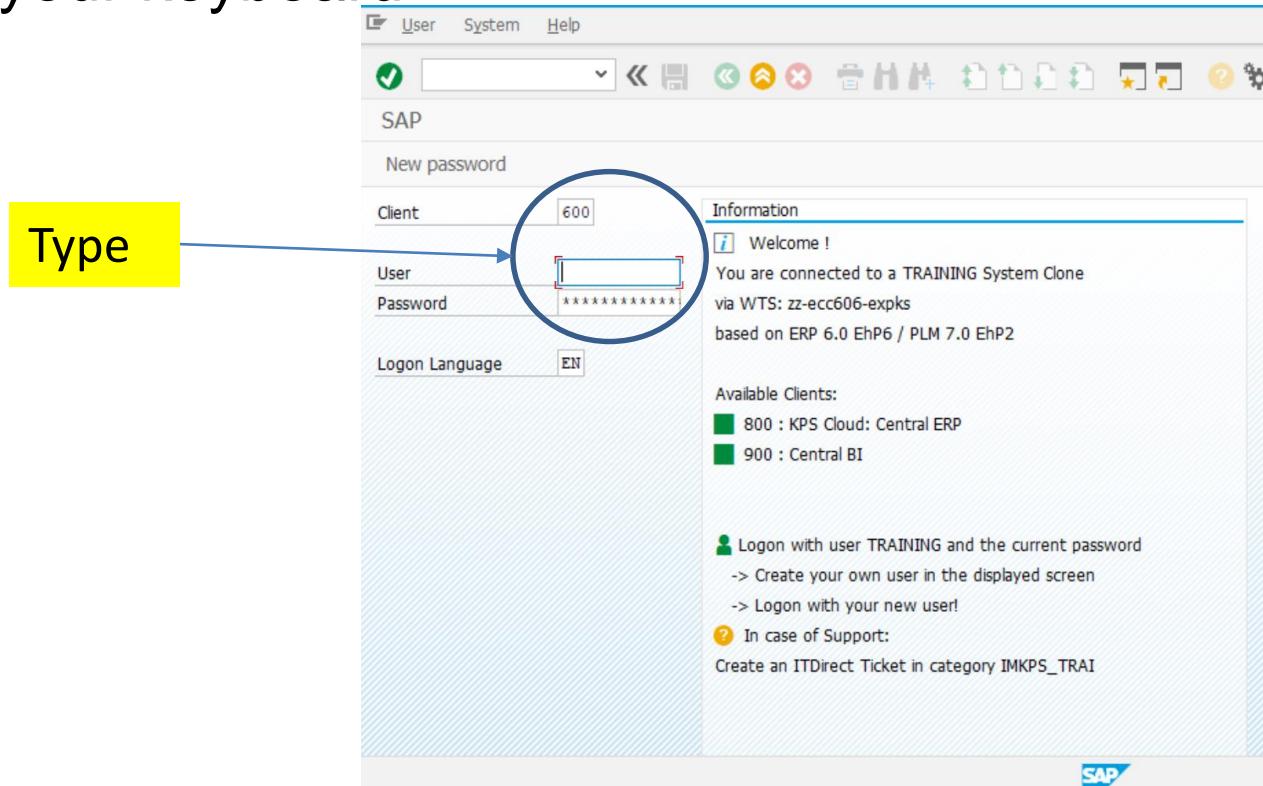
| Name | System Description | SID |
|-----------|--------------------|-----|
| ECC606-03 | ID4 | ID4 |
| ECC606-04 | ID4 | ID4 |
| ECC606-05 | ID5 | ID5 |
| ECC606-06 | ID5 | ID5 |
| ECC606-07 | ID6 | ID6 |
| ECC606-08 | ID6 | ID6 |

- Double click on either ECC606-03 or ECC606-04

Do it with me: Log in to SAP 3



- Enter the **Client, User and password** info given by your class lecturer.
- Leave the Language entry as it is. Then click on the “enter” icon as highlighted, or you can “enter” from your keyboard.



Do it with me: Log in to SAP 4



- For first time logon, SAP system will prompt you to change a new password.

Change Password for User RPID-ADM2

Password Change

| | |
|-----------------|-------|
| Old Password | ***** |
| New Password | ***** |
| Repeat Password | ***** |

i Entry is Case-Sensitive

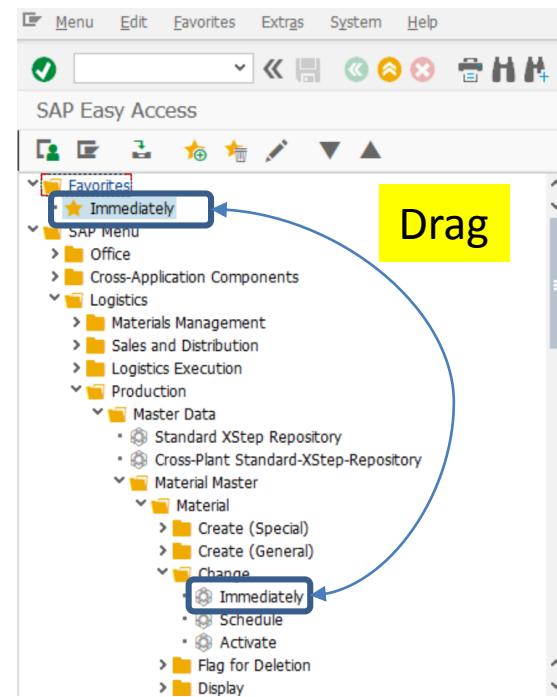
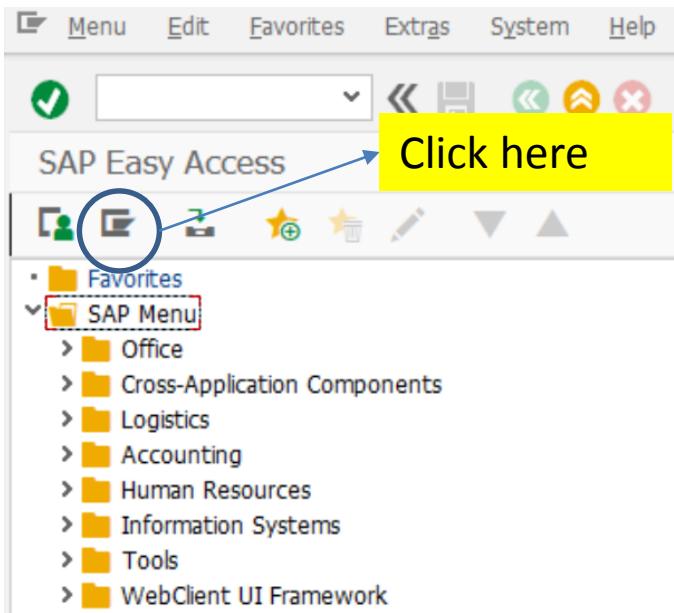
A screenshot of a SAP user interface titled "Change Password for User RPID-ADM2". It shows a "Password Change" section with three input fields: "Old Password" (containing five asterisks), "New Password" (containing six asterisks), and "Repeat Password" (containing six asterisks). Below the fields is a note: "Entry is Case-Sensitive" with an information icon. A red box highlights the "Old Password" field.

- Set your own new password and remember it!

Do it with me: Log in to SAP 5



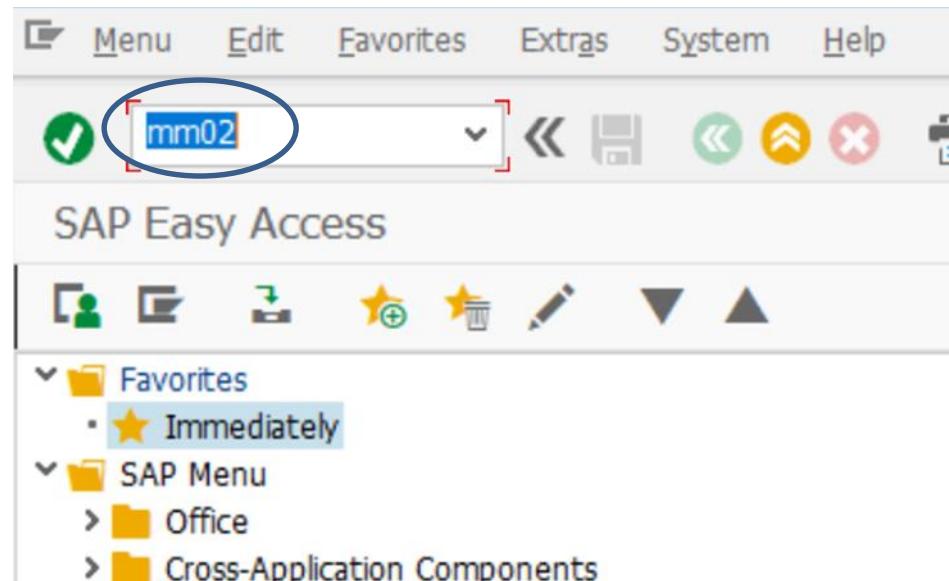
- Menu path: One way to navigate in the system is through the menu system at the left edge of the screen.
- You can save the transaction in the favorite folder.



Do it with me: Log in to SAP 6



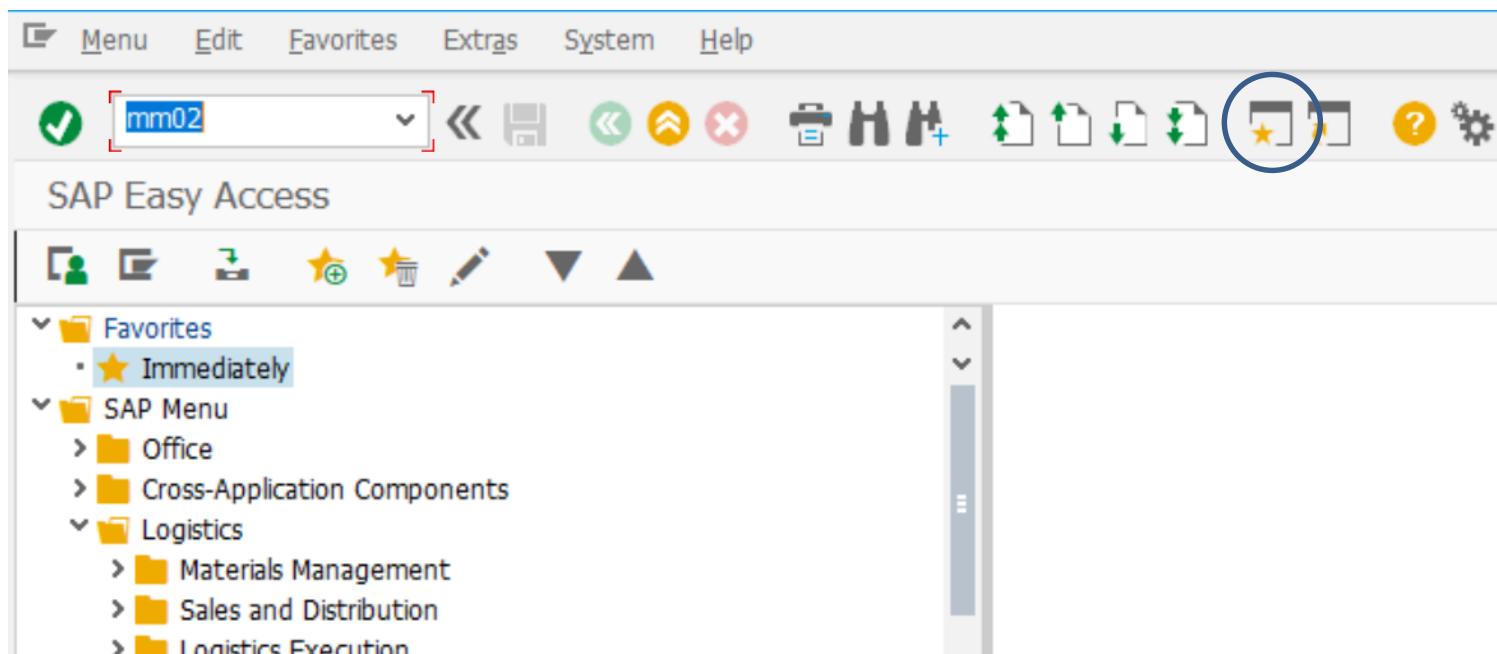
- Another way to navigate in SAP system is through **Transaction Codes**.
- Every transaction in the system is given a code number, and SAP system allows for users to enter these code numbers as another means of going directly to a transaction.
- Enter your transaction code in the command field as highlighted:



Do it with me: Log in to SAP 7



- Sometimes it is useful to be looking at two (or more) different screens in SAP simultaneously.
- SAP system allows you to start up to six interactive sessions under one User ID.



Do it with me: Log in to SAP 8



- If you don't understand a field or term in SAP:

Click on the field and press F1 to view the description or details

The screenshot shows the SAP Fiori interface for the 'Explode BOM' function. On the left, the main screen displays fields for Material (FG-888), Plant (3000), Alternative BOM, and BOM Application. Below these are sections for Selection (Valid From: 31.05.2018, Change Number, Revision Level) and Required qty. A blue arrow points from the 'Material' field to a floating F1 help dialog titled 'Performance Assistant'. The help dialog contains the following information:

- Material Number**: Alphanumeric key uniquely identifying the [material](#).
- Procedure**: Enter the number of the material whose [bill_of_material](#) (finished product or assembly) you want to explode.
- Dependencies**: If the System determines a valid revision level for the material for the date specified (either the *valid from* date or the *change number* date), it will be displayed in the list alongside the material number.

Navigating in SAP: Important Icons

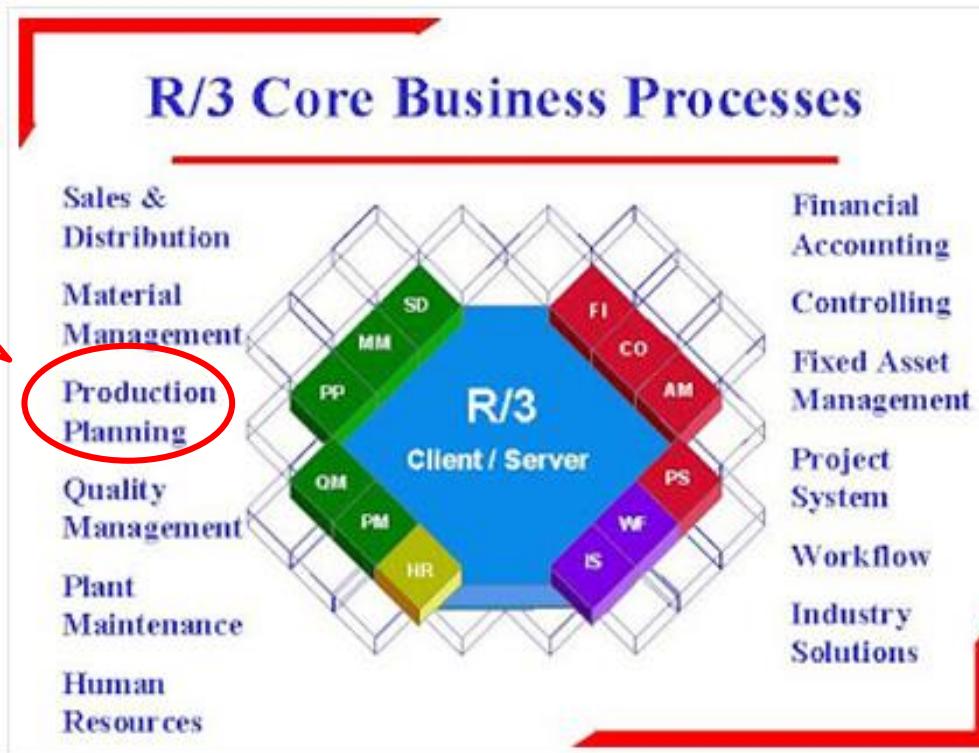


| Button | Function | | |
|--------|---|--|--|
| | Enter and confirms your entries | | Exit a transaction and typically moves the user closer to the main screen than the back or cancel icon. |
| | Command field where we key in the technical codes | | Cancels the transaction, very similarly to the back and exit icons. |
| | Corresponds to Esc key and returns you to the previous screen, the back icon allows the user to exit a transaction without saving data. | | Create new session |
| | | | Help |
| | | | The execute icon is used to initiate a process that is typically time consuming, like creating a report or calculating a new material requirements plan. |
| | | | Save a completed transaction. It is important to remember that nothing is saved until this icon is clicked. |

SAP Production Planning (PP)



You are here today!



PP module supports the planning and control of the manufacturing activities.

Sales plan

Demand planning

Production orders & purchase requisition

Production plan

MPS & MRP

Manufacturing execution

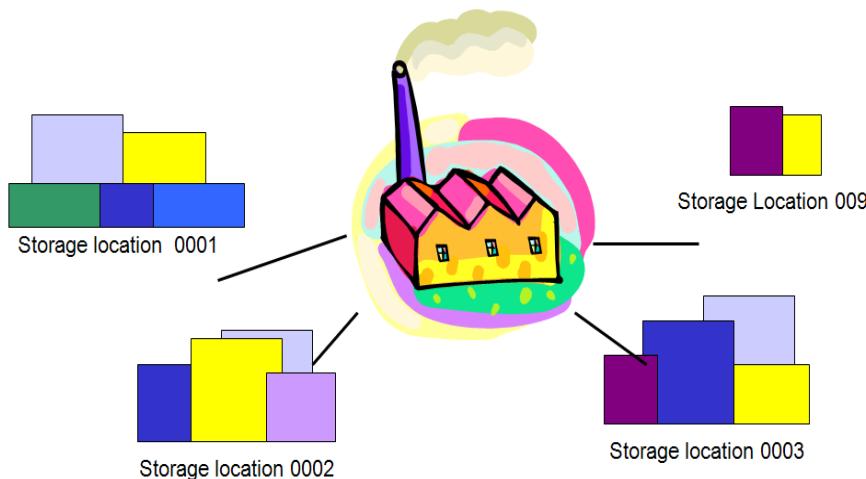
SAP Production Planning (Make)



- The PP application module is integrated with:
 - Materials Management (MM)
 - Financial Accounting (FI)
 - Managerial Accounting and Controlling (CO)
 - Sales and Distribution (SD)
- Organizational Levels:
 - Client
 - Company Code
 - Plant
 - Storage Location
- Master Data in Production Planning:
 - Material Master
 - Bill of Materials (BOM)
 - Work Center
 - Product Routing



PP Organizational Levels



Client :

It represents a single company or a group of companies. The **highest level** in SAP.

Company Code:

Independent accounting unit; Balance sheet and Income statement are created at the company code level.

Plant :

A manufacturing facility or a warehouse /distribution center

Storage Location :

Further differentiation of material stocks within a plant (raw materials, WIP or Finished Goods, Spare parts, etc.)



Master Data

- Data that is relatively stable and not changing frequently
- Examples: Materials Master, Customer Master, Vendor Master

Transaction Data

- Data that is relatively temporary and unique to a particular transaction
- Stored at various stages of a business process
- Examples:
 - Customer orders, purchase orders, production orders, etc.
 - Quantity being ordered, manufactured, or sold
 - Dates – order date, delivery date, billing date, etc.
 - Amounts – total dollar amount for the transaction



Material Master: Views

- SAP maintains and displays material master using **views**
- Each user department has its own unique view of a Material Master
- Basic data is applicable to the entire company, while other views such as MRP and Accounting are specific to each plant
- For example:
 - Data that relates to the accounting department is stored in the accounting views
 - Data that relates to material planning is stored in the MRP views
- Material Master contains all data required to define and manage all types of materials, data held in the material master:
 - Material number
 - Descriptions
 - Units of measure
 - Material type
 - Weight etc.
 - Standard price
 - Lot size rule
 - Safety stock
 - Etc.



Material Master: Material Types



The material type is the most important value assigned to a material. It identifies the business processes and functions allowed for a product.

Raw materials:

Materials purchased from external suppliers



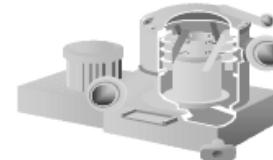
Semi-finished goods (Sub-assemblies):

Components that have been assembled from raw materials



Finished goods:

The final product that is sold to the customer



Do it with me: Create Material Master 1



- Create new material

The screenshot shows the SAP ERP interface. On the left, the SAP Easy Access bar includes a search field with 'mm01' (circled in blue), various icons, and a menu tree under 'SAP Menu' with 'Logistics' expanded. A yellow callout box points to the search field with the text 'Type and enter'. On the right, the 'Create Material (Initial Screen)' dialog is open. It has tabs for 'Select View(s)' and 'Org. Levels'. The 'Material' field contains 'EG-888', 'Industry sector' is 'Mechanical Enginee ...' (with a dropdown arrow), and 'Material Type' is 'Finished product'. A red box highlights these three fields. A red arrow points from the 'mm01' circled in the SAP bar to the highlighted material type field. A large yellow callout box on the left contains the text: '888 is the last 3 number of your user name. Material type differs based on information given'. At the bottom of the SAP bar, there's a 'Change' menu item.

Type and enter

SAP Easy Access

SAP Menu

Office

Cross-Application Components

Logistics

888 is the last 3 number of
your user name. Material
type differs based on
information given

Change

Material EG-888

Industry sector Mechanical Enginee ...

Material Type Finished product

Change Number

Copy from...

Material

Do it with me: Create Material Master 2



Select View(s)

| View |
|----------------------------|
| Basic Data 1 |
| Basic Data 2 |
| Classification |
| Sales: Sales Org. Data 1 |
| Sales: Sales Org. Data 2 |
| Sales: General/Plant Data |
| Foreign Trade: Export Data |
| Sales Text |
| Purchasing |
| Foreign Trade: Import Data |
| Purchase Order Text |
| MRP 1 |
| MRP 2 |
| MRP 3 |
| MRP 4 |

Select and enter

Organizational Levels

| Organizational levels | |
|-----------------------|------|
| Plant | 3000 |
| Stor. Location | 0001 |

Type and enter

Profiles

MRP profile

Org. levels/profiles only on request

Do it with me: Create Material Master 3



Additional Data Org. Levels Check Screen Data

Basic data 1 Basic data 2 Purchasing Foreign trade import Purchase or...

Material FG-888 Entry-level Skateboard

This is the name for the material

| General Data | |
|--|-------|
| Base Unit of Measure | PC |
| Old material number | |
| Division | |
| Product allocation | |
| X-plant matl status | |
| <input type="checkbox"/> Assign effect. vals | |
| Material Group | R1132 |
| Ext. Matl Group | |
| Lab/Office | |
| Prod.hierarchy | |
| Valid from | |
| ItemCatGroup | NORM |
| Standard item | |

Type and enter

Do it with me: Create Material Master 4



Screenshot of the SAP Material Master creation screen:

Header:

- Additional Data
- Org. Levels
- Check Screen Data
- Lock

Navigation:

- Purchase order text
- MRP 1 (highlighted)
- MRP 2
- MRP 3
- MRP 4
- Plant stock

Material Details:

- Material: FG-888
- Description: Bicycle 888
- Plant: 3000 New York

General Data:

- Base Unit of Measure: PC (circled)
- piece(s)
- MRP group: 0031 (circled)
- Purchasing Group
- ABC Indicator
- Plant-sp.matl status
- Valid from

MRP procedure:

- MRP Type: M1 (circled)
- Reorder Point
- Planning cycle
- MPS, fixing type -1- (text)
- 1 APO (circled)

Lot size data:

- Lot size: EX (circled)
- Lot-for-lot order
- Minimum Lot Size
- Fixed lot size
- Ordering costs
- Assembly scrap (%)
- Rounding Profile
- Unit of Measure Grp
- Maximum stock level
- Storage costs ind.
- Takt time
- Rounding value

Annotations:

- A yellow box contains the text "Type and enter".
- A red arrow points from the "Lot size" field to the "Type and enter" box.
- A yellow box at the bottom right contains the text "These will differ based on information given."

Do it with me: Create Material Master 5



Create Material FG-888 (Finished product)

Additional Data Org. Levels Check Screen Data

MRP 1 MRP 2 MRP 3 MRP 4 Forecasting Work scheduling

Procurement

| | | |
|--|---|----------------------|
| Procurement type | E | Batch entry |
| Special procurement | | Prod. stor. location |
| Quota arr. usage | | Default supply area |
| Backflush | | Storage loc. for EP |
| JIT delivery sched. | | Stock det. grp |
| <input type="checkbox"/> Co-product | | |
| <input type="checkbox"/> Bulk Material | | |

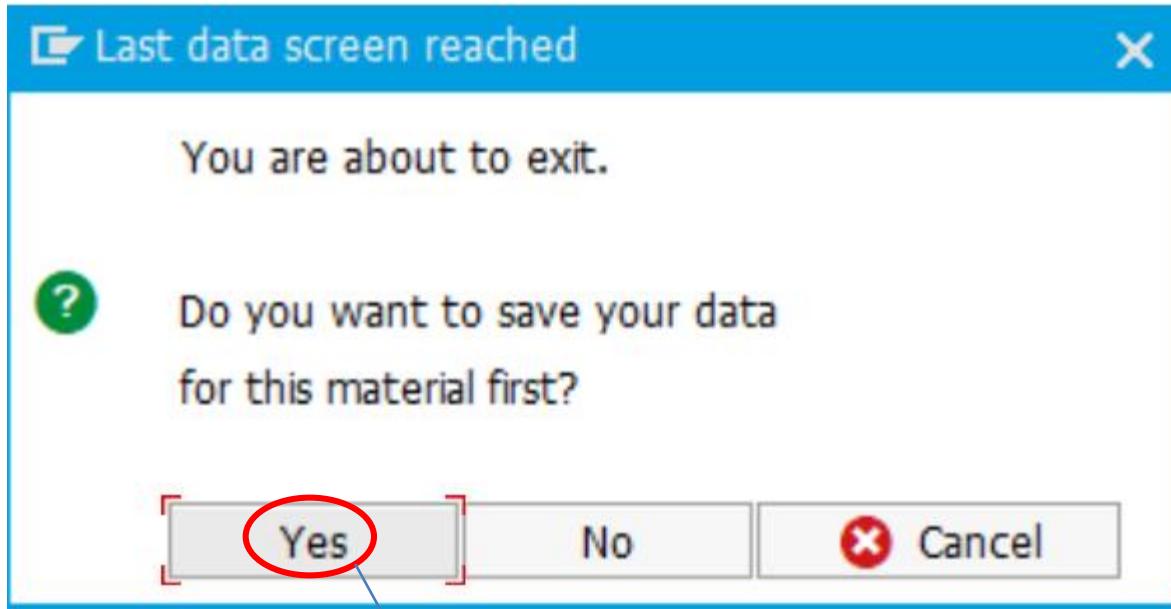
Type and enter

These will differ based on information given.

Scheduling

| | | |
|---------------------|--------|---------------------|
| In-house production | 2 days | Planned Deliv. Time |
| GR Processing Time | | Planning calendar |
| SchedMargin key | APO | |

Do it with me: Create Material Master 6



Click Yes.
We have created our first Material Master

Exercise 1



Create the MM for the below items:

| Material | Material Type | Material name | MRP type | Lot-sizing Rule | Procurement Type | Safety Stock | Lead Time (production/procurement) |
|----------|-----------------------|------------------|----------|-----------------|--|--------------|------------------------------------|
| SF1-xxx | Semi-finished Product | Fiberglass Board | PD | EX | E (I-house production = 4) | 30 | - |
| SF2-xxx | Semi-finished Product | Wheel Assemblies | PD | EX | E (I-house production = 5) | 40 | - |
| RM1-xxx | Raw Material | Wheel | PD | FX(FOQ = 500) | F (GR processing Time =2) SchedMargin key = 1 | 0 | Planned delivery time = 5 |
| RM2-xxx | Raw Material | Spindle | PD | FX(FOQ = 300) | F (GR processing Time =2) SchedMargin key = 1 | 0 | Planned delivery time = 5 |
| RM3-xxx | Raw Material | Locknut | PD | FX(FOQ = 400) | F (GR processing Time =2) SchedMargin key = 1 | 0 | Planned delivery time = 5 |

BOM Created in SAP



Display Multilevel BOM

Material FG-888
Plant/Usage/Alt. 3000 / 1 / 01
Description Entry-level skateboard
Base Qty (PC) 1.000

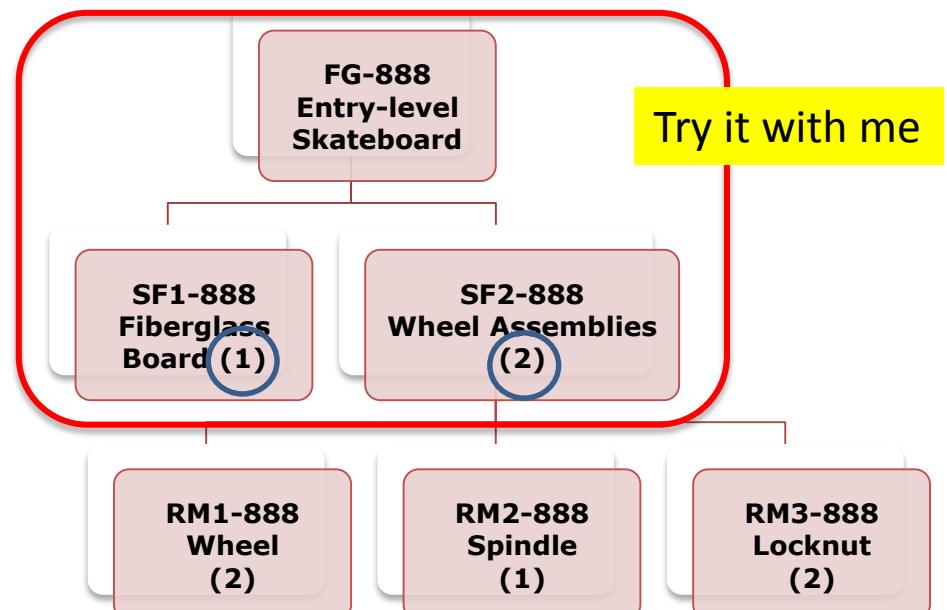
| Expllosion level | Item | Obj. | Component number | Object description | Comp. Qty (CUn) | Un | Ict |
|------------------|------|------|------------------|--------------------|-----------------|----|-----|
| .1 | 0010 | 1 | SF1-888 | Fiberglass Board | 1 | PC | L |
| .1 | 0020 | 1 | SF2-888 | Wheel Assemblies | 2 | PC | L |
| .2 | 0010 | 1 | RM1-888 | Wheel | 4 | PC | L |
| .2 | 0020 | 1 | RM2-888 | Spindle | 2 | PC | L |
| .2 | 0030 | 1 | RM3-888 | Locknut | 4 | PC | L |

```
graph TD; A[Entry-level Skateboard] --> B[Fiberglass Board (1)]; A --> C[Wheel Assemblies (2)]; C --> D[Wheel (2)]; C --> E[Spindle (1)]; C --> F[Locknut (2)];
```

Bill of Materials (BOM)



- The Bill of Material is a structured list of the components which make up a product or assembly.
- The list contains the material code of each component as well as the quantity per and unit of measure.
- The Bill Of Material (BOM) plays an important function in many departments within a company: production, engineering, plant maintenance, costing, sales and distribution, etc.



Do it with me: Create BOM 1



Type and enter

SAP Easy Access

Create material BOM: Initial Screen

Favorites

- Immediately

SAP Menu

- Office
- Cross-Application Components
- Logistics
- Accounting
- Human Resources
- Information Systems
- Tools
- WebClient UI Framework

Material FG-888

Plant 3000

BOM Usage 1 Production

Alternative BOM

Validity

Change Number

Valid From 31.05.2018

Revision Level

Do it with me: Create BOM 2



Create material BOM: General Item Overview

Material FG-888 Bicycle 888

Plant 3000 New York

Alternative BOM 2

New Entries Header Validity

Click save after enter

| Item | ICt | Component | Component description | Quantity | Un | A... | SI | Valid From | Valid |
|------|-----|-----------|-----------------------|----------|----|------|----|------------|-------|
| 0010 | L | SF1-888 | | 1 | | | | | |
| 0020 | I | SF2-888 | | 2 | | | | | |

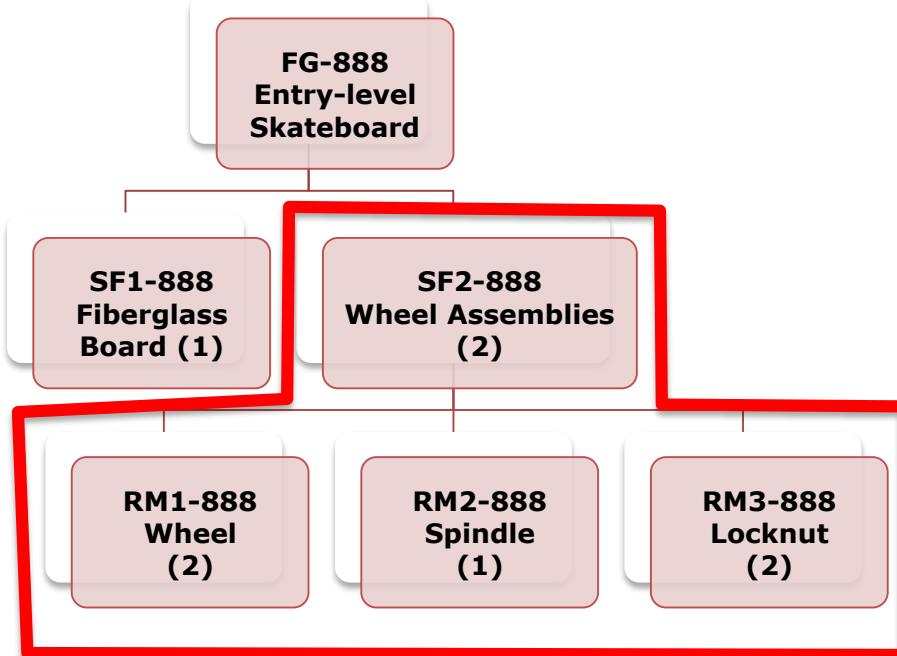
Key in

| Item | ICt | Component | Component description | Quantity | Un | A... | SI | Valid From | Valid |
|------|-----|-----------|-----------------------|----------|----|------|----|------------|-------|
| 0010 | L | SF1-888 | | 1 | | | | | |
| 0020 | I | SF2-888 | | 2 | | | | | |

Exercise 2



Create BOM for SF2-888



Master Production Scheduling (MPS) in SAP



For materials, which greatly influence company profits or which take up critical resources:

- Schedule the production by using the independent requirements → *you enter the independent requirements into SAP manually today*
- In manufacturing, MPS contains the volume and timing of end items or critical products to be made
- It forms the inputs to Materials Requirements Planning (MRP)
- In SAP, MPS is executed using the same principles as MRP



Do it with me: MPS 1



SAP Easy Access

Type and enter

Create Planned Independent Requirements: Initial Screen

User Parameters

Planned independent requirements for

Material FG-888

Product group

Reqmts Plan

MRP Area

Plant 3000

Define version

Version 00 Requirements plan

Planning horizon

From 01.08.2018 To 31.10.2019 Planning period d Month

Type and enter

55

Do it with me: MPS 2



Plnd Ind. Reqmts Create: Planning Table

Planning start 01.08.2018 Planning End 31.10.2019

Table Items Sched. Lines

| | Material | MRP ... | V | A | BU | 01.08.20... | 02.08.20... | 03.08.20... | 06.08.20... | 07.08.20... | 08.08.20... | 09.08.20... | 10.08.20... | 13.08.20... |
|--|----------|---------|----|---|--|-------------|-------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | FG-888 | 3000 | 00 | | <input checked="" type="checkbox"/> PC | | | | | | | | | |
| | | | | | | 00 | <input checked="" type="checkbox"/> | | | | | | | |

Enter the following requirements data:

| Requirements date (day) | Planned quantity |
|-------------------------|------------------|
| 14/09/2018 | 250 |
| 21/09/2018 | 200 |
| 28/09/2018 | 150 |
| 05/10/2018 | 150 |



Hint: Click here to go next page

MPS Results of FG-888



Stock/Requirements List as of 02:08 hrs

Show Overview Tree



| Material | FG-888 | Entry-level skateboard | Planned production order quantity is determined by Lot-for-lot and independent requirement that you entered |
|---|-----------------|------------------------|---|
| MRP area | 3000 | New York | |
| Plant | 3000 | MRP type | |
| Order is planned for SS at the beginning of next planning | | element data | Finished Goods |
| 30.05.2018 Stock | 96 | Reschedulin... | Receipt/Reqmt Available Qty |
| 30.05.2018 SafeSt | 50- | E... | 0 |
| 31.05.2018 -----> | 50- | 96 | 50- |
| 01.06.2018 PIOrd. | 0000037593/Stck | 96 | 0 |
| 14.09.2018 PIOrd. | 0000037594/Stck | 96 | 250 |
| 14.09.2018 IndReq | LSF | 96 | 0 |
| 21.09.2018 PIOrd. | 0000037595/Stck | 96 | 200 |
| 21.09.2018 IndReq | LSF | 96 | 0 |
| 28.09.2018 PIOrd. | 0000037596/Stck | 96 | 150 |
| 28.09.2018 IndReq | LSF | 96 | 0 |
| 05.10.2018 PIOrd. | 0000037597/Stck | 96 | 150 |
| 05.10.2018 IndReq | LSF | 96 | 0 |

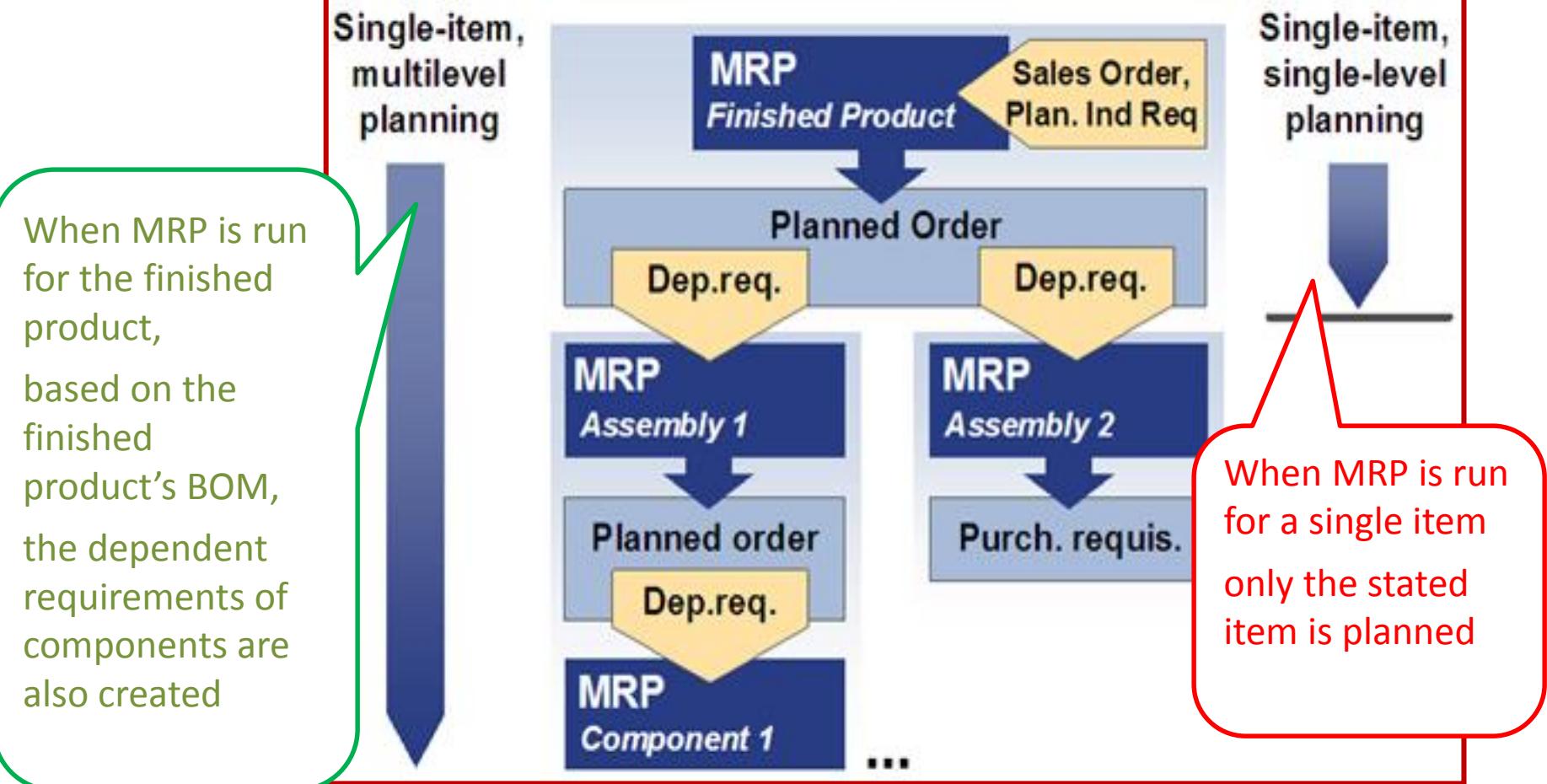
Material Requirements Planning (MRP) in SAP



- Main function is to guarantee material availability
- To procure or produce the requirement quantities on time both for internal purposes and for sales and distribution.
- MRP involves:
 - Monitoring of stocks
 - Explosion using the BOM for the material and planning takes place right down to component level
 - Automatic creation of Planned Orders which could be converted into: (MRP initially “proposes” but human must “convert” proposal to concrete action!)
 - Production proposals
 - Procurement proposals



Multi-level Materials Requirements Planning



Source: help.sap.com

Do it with me: MRP 1



Type and enter

SAP Easy Access

Single-Item, Single-Level

Material FG-888

MRP Area

Plant 3000

MRP Control Parameters

| | |
|--------------------------|--|
| Processing Key NETCH | Net change for total horizon |
| Create Purchase Req. 2 | Purchase requisitions in opening period |
| SA Deliv. Sched. Lines 3 | Schedule lines |
| Create MRP List 1 | MRP list |
| Planning mode 1 | Adapt planning data (normal mode) |
| Scheduling 1 | Basic dates will be determined for plann |

Planning date 31.05.2018

Hit Enter twice

Process Control Parameters

Display results before they are saved

Only FG-888 is planned

Do it with me: MRP 2



SAP Easy Access

Type and enter

md04

- ▼ Favorites
 - ★ Immediately
- ▼ SAP Menu
 - > Office
 - > Cross-Application Components
 - > Logistics
 - > Accounting
 - > Human Resources
 - > Information Systems
 - > Tools
 - > WebClient UI Framework

Stock/Requirements List: Initial Screen

Individual access Collective access

Material: FG-888

MRP Area:

Plant: 3000

New York

With filter

Type and enter

Do it with me: MRP 3



Type and enter

SAP Easy Access

Favorites

- Immediately

SAP Menu

- Office
- Cross-Application Composer
- Logistics
- Accounting
- Human Resources
- Information Systems
- Tools
- WebClient UI Framework

Single-Item, Multi-Level

| | |
|----------|---------|
| Material | SF1-888 |
| MRP Area | 3000 |
| Plant | 3000 |

Type and enter twice

New York
New York

Scope of Planning

Product group

MRP Control Parameters

| | | |
|------------------------|-------|---|
| Processing Key | NETCH | Net change for total horizon |
| Create Purchase Req. | 2 | Purchase requisitions in opening period |
| SA Deliv. Sched. Lines | 3 | Schedule lines |
| Create MRP List | 1 | MRP list |
| Planning mode | 1 | Adapt planning data (normal mode) |

Scheduling

Basic dates will be determined for plann

MRP Results of FG-888



Stock/Requirements List as of 02:08 hrs

Show Overview Tree



| Material | FG-888 | Entry-level skateboard | Planned production order quantity is determined by Lot-for-lot and independent requirement that you entered | | |
|---|--------------|------------------------|---|----------------|---------------|
| MRP area | 3000 | New York | MRP type | M1 | Material Type |
| Plant | 3000 | | FERT | Unit | PC |
| Order is planned for SS at the beginning of next planning | | | element data | Finished Goods | |
| 30.05.2018 | Stock | | | | 0 |
| 30.05.2018 | Safety Stock | Safety Stock | | | 50- |
| 31.05.2018 | ----> | End of Planning Time | | | |
| 01.06.2018 | PIOrd. | 0000037593/Stck | | | 50 |
| 14.09.2018 | PIOrd. | 0000037594/Stck | | | 250 |
| 14.09.2018 | IndReq | LSF | | | 0 |
| 21.09.2018 | PIOrd. | 0000037595/Stck | | | 200 |
| 21.09.2018 | IndReq | LSF | | | 0 |
| 28.09.2018 | PIOrd. | 0000037596/Stck | | | 150 |
| 28.09.2018 | IndReq | LSF | | | 0 |
| 05.10.2018 | PIOrd. | 0000037597/Stck | | | 150 |
| 05.10.2018 | IndReq | LSF | | | 0 |

Exercise 4



**Repeat the same process for SF2-XXX,
RM1-XXX, RM2-XXX and RM3-XXX**

View MRP Outputs using Stock/Requirement List



- Stock/requirements list is a **dynamic** report giving **up-to-date information** about new requirements of a material
- Whenever there is a receipt or issue of the material, the same is updated in stock/requirements list on a **real-time** basis
- Key terms in the Stock/requirements list:

| MRP Element | Description | Where does this come from? |
|-------------|----------------------------------|---|
| PIOrd | Planned Order | Created during MRP run |
| IndReq | Planned Independent Requirements | Directly entered via MD62 today |
| PrdOrd | Production Order | Converted from planned order or created manually |
| PchOrd | Purchase Order | When PR is converted to PO Or when a PO is created manually for this item |
| PurRqs | Purchase Requisition | When planned order is converted to PR Or when a PR is created manually or via MRP for this item |
| Stock | Stock | Current available stock quantity |
| DepReq | Dependent requirements | For lower level items in BOM, could be either produced in house or procured externally, the dependent requirements of the components are determined during MPS/MRP run based on QPP |

Stock/Requirement List of SF1-888 after MPS & before MRP



Stock/Requirements List as of 21:27 hrs

Show Overview Tree

WIP
Fiberglass Board

Dependent requirement from safety stock (50) of FG-888, QPP = 1

| Material | SF1-888 | MRP area | 3000 | New York | Plant | 3000 | MRP type | PD | Material Type | HALB | Unit | PC |
|----------|-------------------|--------------|------|----------|-------|------|----------|----------|---------------|---------------|---------------|----|
| | 29.05.2018 Stock | | | | | | | Resch... | E... | Receipt/Reqmt | Available Qty | |
| | 29.05.2018 SafeSt | Safety Stock | | | | | | | 96 | | 0 | |
| | 29.05.2018 DepReq | FG-888 | | | | | | | 30- | | 30- | |
| | 12.09.2018 DepReq | FG-888 | | | | | | | 250- | | 330- | |
| | 19.09.2018 DepReq | FG-888 | | | | | | | 200- | | 530- | |
| | 26.09.2018 DepReq | FG-888 | | | | | | | 150- | | 680- | |
| | 03.10.2018 DepReq | FG-888 | | | | | | | 150- | | 830- | |

Its own SS = 30

Dependent requirement which depends on the end product or parent item based on the BOM

Stock/Requirement List of SF1-888 after MRP run



Show Overview Tree

Material Fiberglass Board
MRP area New York
Plant MRP type PD Material Type HALB Unit PC

| A.. | Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
|-----|------------|-----------|------------------|----------------|------|---------------|---------------|
| | 29.05.2018 | Stock | | | 96 | | 0 |
| | 29.05.2018 | SafeSt | Safety Stock | | | 30- | 30- |
| | 29.05.2018 | DepReq | FG-888 | | | 50- | 80- |
| | 04.06.2018 | PIOrd. | 0000037534/Stck | 29.05.2018 | 30 | 80 | 0 |
| | 12.09.2018 | PIOrd. | 0000037535/Stck | | 52 | 250 | 250 |
| | 12.09.2018 | DepReq | FG-888 | | | 250- | 0 |
| | 19.09.2018 | PIOrd. | 0000037536/Stck | | 52 | 200 | 200 |
| | 19.09.2018 | DepReq | FG-888 | | | 200- | 0 |
| | 26.09.2018 | PIOrd. | 0000037537/Stck | | 52 | 150 | 150 |
| | 26.09.2018 | DepReq | FG-888 | | | 150- | 0 |
| | 03.10.2018 | PIOrd. | 0000037538/Stck | | 52 | 150 | 150 |
| | 03.10.2018 | DepReq | FG-888 | | | 150- | 0 |

Stock/Requirement List of SF1-888 after MRP run



Show Overview Tree

Material SF1-888 Fiberglass Board
MRP area 3000 New York
Plant 3000 **MRP type** PD **Material Type** HALB **Unit** Unit **PC**

In-house production lead time for FG-888 is 2 working days; This is to meet the demand on 14 Sep for FG-888

Lot-for-Lot, so order quantity = requirement

| | | | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
|------------|--------|-----------------|----------------|------|---------------|---------------|
| 29.05.2018 | Stock | | | 96 | | 0 |
| 29.05.2018 | SafeSt | Safety Stock | | | 30- | 30- |
| 29.05.2018 | DepReq | FG-888 | | | 50- | 80- |
| 04.06.2018 | PIOrd. | 0000037534/Stck | 29.05.2018 | 30 | 80 | 0 |
| 12.09.2018 | PIOrd. | 0000037535/Stck | | 52 | 250 | 250 |
| 12.09.2018 | DepReq | FG-888 | | | 250- | 0 |
| 19.09.2018 | PIOrd. | 0000037536/Stck | | 52 | 200 | 200 |
| 19.09.2018 | DepReq | FG-888 | | | 200- | 0 |
| 26.09.2018 | PIOrd. | 00000375 | | 52 | 150 | 150 |
| 26.09.2018 | DepReq | FG-888 | | | 150- | 0 |
| 03.10.2018 | PIOrd. | 0000037538/Stck | | 52 | 150 | 150 |
| 03.10.2018 | DepReq | FG-888 | | | 150- | 0 |

1*independent requirement of FG-888, QPP = 1

Stock/Requirement List of SF2-888 after MPS & before MRP



Stock/Requirements List as of 21:39 hrs

Show Overview Tree

WIP

Dependent requirement from safety stock (50) of FG-888, QPP = 2

| Material | SF2-888 | Wheel Assemblies | | | | | |
|---------------|------------|------------------|------------------|----------------|-----|---------------|---------------|
| MRP area | 3000 | New York | | | | | |
| Plant | 3000 | MRP type | | | | | |
| Material Type | | | | | | | |
| | HALB | Unit | | | | | |
| Σ | A.. Date | MRP el... | MRP element data | Reschedulin... | E.. | Receipt/Reqmt | Available Qty |
| | 29.05.2018 | Stock | | | 96 | | 0 |
| | 29.05.2018 | SafeSt | Safety Stock | | | 40- | 40- |
| | 29.05.2018 | DepReq | FG-888 | | | 100- | 140- |
| | 12.09.2018 | DepReq | FG-888 | | | 500- | 640- |
| | 19.09.2018 | DepReq | FG-888 | | | 400- | 1,040- |
| | 26.09.2018 | DepReq | FG-888 | | | 300- | 1,340- |
| | 03.10.2018 | DepReq | FG-888 | | | 300- | 1,640- |

Its own SS = 40

Dependent requirement on the end product FG-888

Stock/Requirement List of RM1-888 after MRP run



Stock/Requirements List as of 01:55 hrs

Show Overview Tree



| Material | RM1-888 | Wheel | | | | | | |
|----------|---------|------------|-----------|----------------------|----------------|-----------|---------------|---------------|
| MRP area | 3000 | New York | | | | | | |
| Plant | 3000 | MRP type | M1 | Material Type | ROH | Unit | Pc | |
| Σ | A.. | Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
| | | 30.05.2018 | Stock | | | | | 0 |
| | | 30.05.2018 | DepReq | SF2-888 | | 280- | 280- | |
| | | 31.05.2018 | -----> | End of Planning Time | | | | |
| | | 07.06.2018 | PurRqs | 0010016013/00010 | 30.05.2018 | <u>30</u> | 500 | 220 |
| | | 05.09.2018 | PIOrd. | 0000037600/ExtP | | | 500 | 720 |
| | | 05.09.2018 | PIOrd. | 0000037601/ExtP | | | 500 | 1,220 |
| | | 05.09.2018 | DepReq | SF2-888 | | 1,000- | 220 | |
| | | 12.09.2018 | PIOrd. | 0000037544/ExtP | | 500 | 720 | |
| | | 12.09.2018 | PIOrd. | 0000037610/ExtP | | 500 | 1,220 | |
| | | 12.09.2018 | DepReq | SF2-888 | | 800- | 420 | |
| | | 19.09.2018 | PIOrd. | 0000037546/ExtP | | 500 | 920 | |
| | | 19.09.2018 | DepReq | SF2-888 | | 600- | 320 | |
| | | 26.09.2018 | PIOrd. | 0000037548/ExtP | | 500 | 820 | |
| | | 26.09.2018 | DepReq | SF2-888 | | 600- | 220 | |

Stock/Requirement List of SF2-888 after MRP run



Stock/Requirements List as of 21:41 hrs

Show Overview Tree

Material SF2-888 Wheel Assemblies

In-house production lead time for FG-888 is 2 working days, semi-finished items should be ready 2 days before the requirement date which is 12 Sep.

| S | A.. | Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
|---|-----|------------|-----------|------------------|----------------|------|---------------|---------------|
| | | 29.05.2018 | Stock | | | 96 | | 0 |
| | | 29.05.2018 | SafeSt | Safety Stock | | | 40- | 40- |
| | | 29.05.2018 | DepReq | FG-888 | | | 100- | 140- |
| | | 05.06.2018 | PIOrd. | 0000037539/Stck | 29.05.2018 | 30 | 140 | 0 |
| | | 12.09.2018 | PIOrd. | 0000037540/Stck | | | 500 | 500 |
| | | 12.09.2018 | DepReq | FG-888 | | | 500- | 0 |
| | | 19.09.2018 | PIOrd. | 0000037541/Stck | | | 400 | 400 |
| | | 19.09.2018 | DepReq | FG-888 | | | 400- | 0 |
| | | 26.09.2018 | PIOrd. | 0000037542/Stck | | | 300 | 300 |
| | | 26.09.2018 | DepReq | FG-888 | | | 300- | 0 |
| | | 03.10.2018 | PIOrd. | 0000037543/Stck | | | 300 | 300 |
| | | 03.10.2018 | DepReq | FG-888 | | | 300- | 0 |

2*independent
requirement of
FG-888, QPP = 2

Stock/Requirement List of RM1-888 after MRP run



Stock/Requirements List as of 01:55 hrs

Show Overview Tree



| Material | RM1-888 | Wheel | | | | | | |
|----------|---------|------------|-----------|----------------------|----------------|-----------|---------------|---------------|
| MRP area | 3000 | New York | | | | | | |
| Plant | 3000 | MRP type | M1 | Material Type | ROH | Unit | Pc | |
| Σ | A.. | Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
| | | 30.05.2018 | Stock | | | | | 0 |
| | | 30.05.2018 | DepReq | SF2-888 | | 280- | 280- | |
| | | 31.05.2018 | -----> | End of Planning Time | | | | |
| | | 07.06.2018 | PurRqs | 0010016013/00010 | 30.05.2018 | <u>30</u> | 500 | 220 |
| | | 05.09.2018 | PlOrd. | 0000037600/ExtP | | | 500 | 720 |
| | | 05.09.2018 | PlOrd. | 0000037601/ExtP | | | 500 | 1,220 |
| | | 05.09.2018 | DepReq | SF2-888 | | 1,000- | 220 | |
| | | 12.09.2018 | PlOrd. | 0000037544/ExtP | | 500 | 720 | |
| | | 12.09.2018 | PlOrd. | 0000037610/ExtP | | 500 | 1,220 | |
| | | 12.09.2018 | DepReq | SF2-888 | | 800- | 420 | |
| | | 19.09.2018 | PlOrd. | 0000037546/ExtP | | 500 | 920 | |
| | | 19.09.2018 | DepReq | SF2-888 | | 600- | 320 | |
| | | 26.09.2018 | PlOrd. | 0000037548/ExtP | | 500 | 820 | |
| | | 26.09.2018 | DepReq | SF2-888 | | 600- | 220 | |

Stock/Requirement List of RM1-888 after MRP run



Stock/Requirements List as of 01:55 hrs

Show Overview Tree

Material: RM1-888 (highlighted)

MRP area: 3000 (New York)

Plant: 3000

MRP type: M1

Raw Materials (highlighted)

ROH (circled in red)

Dependent requirement: 2*safety stock (40) of SF2-888 and safety stock (50) of FG-888

FX = 500 Set in Material Master, MRP1 view

2 FX are planned

2*dependent requirement of SF2-888

| | A.. | Date | MRP el... | MRP element data | E... | Receipt/Reqmt | Available Qty |
|--|-----|------------|-----------|------------------|--------|---------------|---------------|
| | | 30.05.2018 | Stock | | | 0 | |
| | | 30.05.2018 | DepReq | SF2-888 | 280- | 280- | |
| | | 31.05.2018 | -----> | End of Planning | | | |
| | | 07.06.2018 | PurRqs | 0010016013/0 | 8 30 | 500 | 220 |
| | | 05.09.2018 | PlOrd. | 0000037600/ExtP | | 500 | 720 |
| | | 05.09.2018 | PlOrd. | 0000037601/ExtP | | 500 | 1,220 |
| | | 05.09.2018 | DepReq | SF2-888 | 1,000- | 220 | |
| | | 12.09.2018 | PlOrd. | 0000037544/ExtP | 500 | 720 | |
| | | 12.09.2018 | PlOrd. | 0000037610/ExtP | 500 | 1,220 | |
| | | 12.09.2018 | DepReq | SF2-888 | 800- | 420 | |
| | | 19.09.2018 | PlOrd. | 0000037546/ExtP | 500 | 920 | |
| | | 19.09.2018 | DepReq | SF2-888 | 600- | 320 | |
| | | 26.09.2018 | PlOrd. | 0000037548/ExtP | 500 | 820 | |
| | | 26.09.2018 | DepReq | SF2-888 | 600- | 220 | |

Stock/Requirement List of RM2-888 after MRP run



Stock/Requirements List as of 00:30 hrs

Show Overview Tree



| | | | |
|----------|-------------|----------------|---------|
| | Material | <u>RM2-888</u> | Spindle |
| MRP area | <u>3000</u> | New York | |
| Plant | 3000 | MRP type | M1 |

| | | | |
|---------------|------------|------|----|
| Material Type | <u>ROH</u> | Unit | PC |
|---------------|------------|------|----|

| S | A.. | Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
|---|-----|------------|-----------|----------------------|----------------|-----------|---------------|---------------|
| | | 30.05.2018 | Stock | | | | | 0 |
| | | 29.05.2018 | DepReq | SF2-888 | | | 140- | 140- |
| | | 31.05.2018 | -----> | End of Planning Time | | | | |
| | | 06.06.2018 | PurRqs | 0010016014/00010 | 29.05.2018 | <u>30</u> | 300 | 160 |
| | | 05.09.2018 | PlOrd. | 0000037550/ExtP | | | 300 | 460 |
| | | 05.09.2018 | PlOrd. | 0000037551/ExtP | | | 300 | 760 |
| | | 05.09.2018 | DepReq | SF2-888 | | | 500- | 260 |
| | | 12.09.2018 | PlOrd. | 0000037552/ExtP | | | 300 | 560 |
| | | 12.09.2018 | DepReq | SF2-888 | | | 400- | 160 |
| | | 19.09.2018 | PlOrd. | 0000037553/ExtP | | | 300 | 460 |
| | | 19.09.2018 | DepReq | SF2-888 | | | 300- | 160 |
| | | 26.09.2018 | PlOrd. | 0000037554/ExtP | | | 300 | 460 |
| | | 26.09.2018 | DepReq | SF2-888 | | | 300- | 160 |

Stock/Requirement List of RM3-888 after MRP run



Stock/Requirements List as of 00:35 hrs

Show Overview Tree



| Material | RM3-888 | Locknut | | | | | |
|----------|------------|-----------|----------------------|----------------|------|---------------|---------------|
| MRP area | 3000 | New York | | | | | |
| Plant | 3000 | MRP type | M1 | Material Type | ROH | Unit | PC |
| | A.. Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
| | 30.05.2018 | Stock | | | | | 0 |
| | 29.05.2018 | DepReq | SF2-888 | | | 280- | 280- |
| | 31.05.2018 | -----> | End of Planning Time | | | | |
| | 06.06.2018 | PurRqs | 0010016015/00010 | 29.05.2018 | 30 | 400 | 120 |
| | 05.09.2018 | PlOrd. | 0000037555/ExtP | | | 400 | 520 |
| | 05.09.2018 | PlOrd. | 0000037556/ExtP | | | 400 | 920 |
| | 05.09.2018 | PlOrd. | 0000037557/ExtP | | | 400 | 1,320 |
| | 05.09.2018 | DepReq | SF2-888 | | | 1,000- | 320 |
| | 12.09.2018 | PlOrd. | 0000037558/ExtP | | | 400 | 720 |
| | 12.09.2018 | PlOrd. | 0000037559/ExtP | | | 400 | 1,120 |
| | 12.09.2018 | DepReq | SF2-888 | | | 800- | 320 |
| | 19.09.2018 | PlOrd. | 0000037560/ExtP | | | 400 | 720 |
| | 19.09.2018 | DepReq | SF2-888 | | | 600- | 120 |
| | 26.09.2018 | PlOrd. | 0000037561/ExtP | | | 400 | 520 |
| | 26.09.2018 | PlOrd. | 0000037562/ExtP | | | 400 | 920 |
| | 26.09.2018 | DepReq | SF2-888 | | | 600- | 320 |



Problem 10

Smart planning

(2nd Half)

E217 – Inventory Management



SCHOOL OF
ENGINEERING

Scenario 1 : Safety stock of Entry-level Skateboard increased to 100



Change Material FG-888 (Finished product)

Additional Data Org. Levels Check Screen Data

MRP 1 MRP 2 MRP 3 MRP 4 Plant stock Stor. loc. stck

| | | | |
|--|--------------------------|--------------------|--|
| JIT delivery sched. | <input type="checkbox"/> | Stock det. grp | |
| <input type="checkbox"/> Co-product | | Joint produ | |
| <input type="checkbox"/> Bulk Material | | | |
| Scheduling | | | |
| In-house production | 2 days | Planned Deliv. Tim | |
| GR Processing Time | days | Planning calendar | |
| SchedMargin key | APO | | |
| Net requirements calculation | | | |
| Safety Stock | 50 | Service level (%) | |

100



Use MM02 to change from 50→100,
Run MRP

SS increased from 50→100. All
other components also increased
accordingly.

Stock/Requirements List as of 20:55 hrs

Show Overview Tree

| Material | FG-888 | Entry-level skateboard |
|------------|-----------|------------------------|
| MRP area | 3000 | New York |
| Plant | 3000 | MRP type |
| A.. Date | MRP el... | MRP element data |
| 29.05.2018 | Stock | |
| 29.05.2018 | SafeSt | Safety Stock |
| 30.05.2018 | -----> | End of Planning Time |
| 31.05.2018 | PIOrd. | 0000037519/Stck |
| 14.09.2018 | PIOrd. | 0000037520/Stck |
| 14.09.2018 | IndReq | LSF |
| 21.09.2018 | PIOrd. | 0000037521/Stck |
| 21.09.2018 | IndReq | LSF |
| 28.09.2018 | PIOrd. | 0000037522/Stck |
| 28.09.2018 | IndReq | LSF |
| 05.10.2018 | PIOrd. | 0000037523/Stck |



Stock/Requirements List as of 00:54 hrs

Show Overview Tree

| Material | FG-888 | Entry-level skateboard |
|------------|-----------|------------------------|
| MRP area | 3000 | New York |
| Plant | 3000 | MRP type |
| A.. Date | MRP el... | MRP element data |
| 29.05.2018 | Stock | |
| 30.05.2018 | SafeSt | Safety Stock |
| 31.05.2018 | -----> | End of Planning Time |
| 01.06.2018 | PIOrd. | 0000037529/Stck |
| 14.09.2018 | PIOrd. | 0000037530/Stck |
| 14.09.2018 | IndReq | LSF |
| 21.09.2018 | PIOrd. | 0000037531/Stck |
| 21.09.2018 | IndReq | LSF |
| 28.09.2018 | PIOrd. | 0000037532/Stck |
| 28.09.2018 | IndReq | LSF |
| 05.10.2018 | PIOrd. | 0000037533/Stck |
| 05.10.2018 | IndReq | LSF |



Scenario 2 : In-house production lead time is reduced by 1 day



Change Material FG-888 (Finished product)

Additional Data Org. Levels Check Screen Data

MRP 1 MRP 2 MRP 3 MRP 4 Plant stock Stor. loc. stck

Procurement

| | |
|--|---|
| Procurement type | E |
| Special procurement | |
| Quota arr. usage | |
| Backflush | |
| JIT delivery sched. | |
| <input type="checkbox"/> Co-product | |
| <input type="checkbox"/> Bulk Material | |

Scheduling

| | | |
|---------------------|---|------|
| In-house production | 2 | days |
| GR Processing Time | | days |

Planned Deliv. Time Planning calendar

Material

| | |
|----------|--------|
| Material | FG-888 |
| MRP area | 3000 |
| Plant | 3000 |

MRP type PD Material Type HALB Unit PC

1

2

Stock/Requirements List as of 01:28 hrs

Show Overview Tree

| Material | FG1-888 | Fiberglass Board |
|----------|---------|---|
| MRP area | 3000 | New York |
| Plant | 3000 | MRP type PD Material Type HALB Unit PC |

Use MM02 to change from 2 → 1, and run MRP
Requirement date for 2nd layer is 1 day later.

| A. Date | PIOrd. | 0000037583/Stck | 30.05.2018 | 30 | 80 | 0 |
|------------|--------|-----------------|------------|----|------|-----|
| 30.05.2018 | PIOrd. | 0000037584/Stck | 30.05.2018 | 52 | 250 | 250 |
| 12.09.2018 | PIOrd. | 0000037584/Stck | | 52 | 250- | 0 |
| 12.09.2018 | DepReq | FG-888 | | | 250- | 0 |
| 19.09.2018 | PIOrd. | 0000037585/Stck | 19.09.2018 | 52 | 200 | 200 |
| 19.09.2018 | DepReq | FG-888 | | | 200- | 0 |
| 26.09.2018 | PIOrd. | 0000037586/Stck | 26.09.2018 | 52 | 150 | 150 |
| 26.09.2018 | DepReq | FG-888 | | | 150- | 0 |
| 03.10.2018 | PIOrd. | 0000037587/Stck | 03.10.2018 | 52 | 150 | 150 |
| 03.10.2018 | DepReq | FG-888 | | | 150- | 0 |

| A. Date | PIOrd. | 0000037583/Stck | 30.05.2018 | 30 | 80 | 0 |
|------------|--------|-----------------|------------|----|------|-----|
| 05.06.2018 | PIOrd. | 0000037583/Stck | 30.05.2018 | 30 | 80 | 0 |
| 13.09.2018 | PIOrd. | 0000037584/Stck | 13.09.2018 | 52 | 250 | 250 |
| 13.09.2018 | DepReq | FG-888 | | | 250- | 0 |
| 20.09.2018 | PIOrd. | 0000037585/Stck | 20.09.2018 | 52 | 200 | 200 |
| 20.09.2018 | DepReq | FG-888 | | | 200- | 0 |
| 27.09.2018 | PIOrd. | 0000037586/Stck | 27.09.2018 | 52 | 150 | 150 |
| 27.09.2018 | DepReq | FG-888 | | | 150- | 0 |
| 04.10.2018 | PIOrd. | 0000037587/Stck | 04.10.2018 | 52 | 150 | 150 |
| 04.10.2018 | DepReq | FG-888 | | | 150- | 0 |

Scenario 3 : Engineering design change, 3 locknuts are now needed for safety reasons.



Change material BOM: General Item Overview

Subitems New Entries Header Validity

Material SF2-888 Wheel Assemblies
Plant 3000 New York
Alternative BOM 1

Material Document General

| Item | ICt | Component | Component description | Quantity | Un | Asm | SI | Valid From | Valid to |
|--------|-----|-----------|-----------------------|----------|----|--------------------------|--------------------------|------------|------------|
| 0010 L | | RM1-888 | Wheel | 2 | PC | <input type="checkbox"/> | <input type="checkbox"/> | 29.05.2018 | 31.12.9999 |
| 0020 L | | RM2-888 | Spindle | 1 | PC | <input type="checkbox"/> | <input type="checkbox"/> | 29.05.2018 | 31.12.9999 |
| 0030 L | | RM3-888 | Locknut | 2 | PC | <input type="checkbox"/> | <input type="checkbox"/> | 29.05.2018 | 31.12.9999 |

3

Show Overview Tree

Material SF2-888 Locknut
MRP area 3000 New York
Plant 3000 MRP type ROH Unit PC

| A.. Date | MRP el... | MRP element data | Reschedule... | E... Receipt/Reqmt | Available Qty |
|-------------------|----------------------|------------------|---------------|--------------------|---------------|
| 30.05.2018 Stock | | | | | 0 |
| 29.05.2018 DepReq | SF2-888 | | | 280- | 280- |
| 31.05.2018 -----> | End of Planning Time | | | | |
| 06.06.2018 PurRqs | 0010016015/00010 | 29.05.2018 30 | | 400 | 120 |
| 05.09.2018 PIOrd. | 0000037555/ExtP | | | 400 | 520 |
| 05.09.2018 PIOrd. | 0000037556/ExtP | | | 400 | 920 |
| 05.09.2018 PIOrd. | 0000037557/ExtP | | | 400 | 1,320 |
| 05.09.2018 DepReq | SF2-888 | | | 1,000- | 320 |
| 12.09.2018 PIOrd. | 0000037558/ExtP | | | 400 | 720 |
| 12.09.2018 PIOrd. | 0000037559/ExtP | | | 400 | 1,120 |
| 12.09.2018 DepReq | SF2-888 | | | 800- | 320 |
| 19.09.2018 PIOrd. | 0000037560/ExtP | | | 400 | 720 |
| 19.09.2018 DepReq | SF2-888 | | | 600- | 120 |
| 26.09.2018 PIOrd. | 0000037561/ExtP | | | 400 | 520 |
| 26.09.2018 PIOrd. | 0000037562/ExtP | | | 400 | 920 |
| 26.09.2018 DepReq | SF2-888 | | | 600- | 320 |

Locknut
New York

Plant 3000 MRP type M1 Material Type ROH Unit PC

| A.. Date | MRP el... | MRP element data | Reschedule... | E... Receipt/Reqmt | Available Qty | |
|-------------------|----------------------|------------------|---------------|--------------------|---------------|------|
| 30.05.2018 Stock | | | | | 0 | |
| 30.05.2018 DepReq | SF2-888 | | | | 420- | 420- |
| 31.05.2018 -----> | End of Planning Time | | | | | |
| 07.06.2018 PurRqs | 0010016015/00010 | 30.05.2018 30 | | 400 | 20- | |
| 07.06.2018 PurRqs | 0010016016/00010 | 30.05.2018 30 | | 400 | 380 | |
| 05.09.2018 PIOrd. | 0000037604/ExtP | | | 400 | 780 | |
| 05.09.2018 PIOrd. | 0000037605/ExtP | | | 400 | 1,180 | |
| 05.09.2018 PIOrd. | 0000037606/ExtP | | | 400 | 1,580 | |
| 05.09.2018 DepReq | SF2-888 | | | 1,500- | 80 | |
| 12.09.2018 PIOrd. | 0000037555/ExtP | | | 400 | 480 | |
| 12.09.2018 PIOrd. | 0000037556/ExtP | | | 400 | 880 | |
| 12.09.2018 PIOrd. | 0000037607/ExtP | | | 400 | 1,280 | |
| 12.09.2018 DepReq | SF2-888 | | | 1,200- | 80 | |
| 19.09.2018 PIOrd. | 0000037558/ExtP | | | 400 | 480 | |
| 19.09.2018 PIOrd. | 0000037608/ExtP | | | 400 | 880 | |
| 19.09.2018 PIOrd. | 0000037609/ExtP | | | 400 | 1,280 | |
| 19.09.2018 DepReq | SF2-888 | | | 900- | 380 | |
| 26.09.2018 PIOrd. | 0000037559/ExtP | | | 400 | 780 | |
| 26.09.2018 PIOrd. | 0000037560/ExtP | | | 400 | 1,180 | |
| 26.09.2018 DepReq | SF2-888 | | | 900- | 280 | |

Use CS02 to change from 2 → 3
DepReq is 50% increased, results in more PIOrd also.

Scenario 4 : Purchasing has negotiated a new deal with Wheel supplier. Lot size is now 600.



Change Material RM1-888 (Raw material)

Additional Data Org. Levels Check Screen Data

Basic data 2 MRP 1 MRP 2 MRP 3 MRP 4 Plant stock

| | | | |
|----------------------|---------|----------------------|------|
| Purchasing Group | APO | ABC Indicator | |
| Plant-sp.matl status | | Valid from | |
| MRP procedure | | | |
| MRP Type | M1 | MPS, fixing type -1- | |
| Reorder Point | | Planning time fence | |
| Planning cycle | | MRP Controller | |
| Lot size data | | | |
| Lot size | FX | Fixed order quantity | |
| Minimum Lot Size | | Maximum Lot Size | |
| Fixed lot size | 500 | Maximum stock level | |
| Material | RM1-888 | Supplier | |
| MRP area | 3000 | New York | |
| Plant | 3000 | MRP type | |
| Material Type | M1 | ROH | Unit |
| PC | | | |

Lot size data: Fixed order quantity is set to 600 (highlighted in yellow).

Stock Requirements List as of 01:51 hrs:

| A.. Date | MRP el... | MRP element data | Reschedule... | E... | Receipt/Reqmt | Available Qty |
|-------------------|----------------------|------------------|---------------|--------|---------------|---------------|
| 30.05.2018 Stock | | | | | | 0 |
| 30.05.2018 DepReq | SF2-888 | | | 280- | 280- | |
| 31.05.2018 -----> | End of Planning Time | | | | | |
| 07.06.2018 PurRqs | 0010016013/00010 | 30.05.2018 30 | | 500 | 220 | |
| 05.09.2018 PIOrd. | 0000037600/ExtP | | | 500 | 720 | |
| 05.09.2018 PIOrd. | 0000037601/ExtP | | | 500 | 1,220 | |
| 05.09.2018 DepReq | SF2-888 | | | 1,000- | 220 | |
| 12.09.2018 PIOrd. | 0000037544/ExtP | | | 500 | 720 | |
| 12.09.2018 PIOrd. | 0000037610/ExtP | | | 500 | 1,220 | |
| 12.09.2018 DepReq | SF2-888 | | | 800- | 420 | |
| 19.09.2018 PIOrd. | 0000037546/ExtP | | | 500 | 920 | |
| 19.09.2018 DepReq | SF2-888 | | | 600- | 320 | |
| 26.09.2018 PIOrd. | 0000037548/ExtP | | | 500 | 820 | |
| 26.09.2018 DepReq | SF2-888 | | | 600- | 220 | |

Use MM02 to change from
500 → 600
PIOrd are changed from
500 → 600. Number of Orders are
also reduced.

Stock/Requirements List as of 01:51 hrs

Show Overview Tree

| A.. Date | MRP el... | MRP element data | Reschedule... | E... | Receipt/Reqmt | Available Qty |
|-------------------|----------------------|------------------|---------------|--------|---------------|---------------|
| 30.05.2018 Stock | | | | | | 0 |
| 30.05.2018 DepReq | SF2-888 | | | 280- | 280- | |
| 31.05.2018 -----> | End of Planning Time | | | | | |
| 07.06.2018 PurRqs | 0010016013/00010 | 30.05.2018 30 | | 600 | 320 | |
| 05.09.2018 PIOrd. | 0000037600/ExtP | | | 600 | 920 | |
| 05.09.2018 PIOrd. | 0000037601/ExtP | | | 600 | 1,520 | |
| 05.09.2018 DepReq | SF2-888 | | | 1,000- | 520 | |
| 12.09.2018 PIOrd. | 0000037544/ExtP | | | 600 | 1,120 | |
| 12.09.2018 DepReq | SF2-888 | | | 800- | 320 | |
| 19.09.2018 PIOrd. | 0000037546/ExtP | | | 600 | 920 | |
| 19.09.2018 DepReq | SF2-888 | | | 600- | 320 | |
| 26.09.2018 PIOrd. | 0000037548/ExtP | | | 600 | 920 | |
| 26.09.2018 DepReq | SF2-888 | | | 600- | 320 | |

Scenario 5 : There is an additional order of 300 pcs from customers on 21st August 2018



Plnd Ind. Reqmts Create: Planning Table



Planning start 01.08.2018 Planning End 21.08.2019

Table Items Sched. Lines

| | Material | MRP A... | V | A | BU | 16.08.2018 | 17.08.2018 | 20.08.2018 | 21.08.2018 |
|--|----------|----------|----|-------------------------------------|----|------------|------------|------------|------------|
| | FG-888 | 3000 | 00 | <input checked="" type="checkbox"/> | PC | | | | 300 |

Key in 300



Use Md61 to add in 300 at 21st Aug
Additional PIOrd of 300 at 21st Aug. All other components also increase accordingly.

Stock/Requirements List as of 02:08 hrs

Show Overview Tree

Material FG-888

Entry-level skateboard

MRP area 3000 New York

Plant 3000 MRP type M1 Material Type FERT Unit PC

| S | A.. Date | MRP el... | MRP element data | Reschedule... | E... | Receipt/Reqmt | Available Qty |
|---|------------|-----------|----------------------|---------------|------|---------------|---------------|
| | 30.05.2018 | Stock | | | 96 | | 0 |
| | 30.05.2018 | SafeSt | Safety Stock | | 50- | 50- | |
| | 31.05.2018 | -----> | End of Planning Time | | | | |
| | 01.06.2018 | PIOrd. | 0000037593/Stck | | 50 | 0 | |
| | 14.09.2018 | PIOrd. | 0000037594/Stck | | 250 | 250 | |
| | 14.09.2018 | IndReq | LSF | | 250- | 0 | |
| | 21.09.2018 | PIOrd. | 0000037595/Stck | | 200 | 200 | |
| | 21.09.2018 | IndReq | LSF | | 200- | 0 | |
| | 28.09.2018 | PIOrd. | 0000037596/Stck | | 150 | 150 | |
| | 28.09.2018 | IndReq | LSF | | 150- | 0 | |
| | 05.10.2018 | PIOrd. | 0000037597/Stck | | 150 | 150 | |
| | 05.10.2018 | IndReq | LSF | | 150- | 0 | |

Stock/Requirements List as of 02:04 hrs

Show Overview Tree

Material FG-888

Entry-level skateboard

MRP area 3000 New York

Plant 3000 MRP type M1 Material Type FERT Unit PC

| S | A.. Date | MRP el... | MRP element data | Reschedule... | E... | Receipt/Reqmt | Available Qty |
|---|------------|-----------|----------------------|---------------|------|---------------|---------------|
| | 30.05.2018 | Stock | | | 96 | | 0 |
| | 30.05.2018 | SafeSt | Safety Stock | | 50- | 50- | |
| | 31.05.2018 | -----> | End of Planning Time | | | | |
| | 01.06.2018 | PIOrd. | 0000037593/Stck | | 50 | 0 | |
| | 21.08.2018 | PIOrd. | 0000037611/Stck | | 300 | 300 | |
| | 21.08.2018 | IndReq | LSF | | 300- | 0 | |
| | 14.09.2018 | PIOrd. | 0000037594/Stck | | 250 | 250 | |
| | 14.09.2018 | IndReq | LSF | | 250- | 0 | |
| | 21.09.2018 | PIOrd. | 0000037595/Stck | | 200 | 200 | |
| | 21.09.2018 | IndReq | LSF | | 200- | 0 | |
| | 28.09.2018 | PIOrd. | 0000037596/Stck | | 150 | 150 | |
| | 28.09.2018 | IndReq | LSF | | 150- | 0 | |
| | 05.10.2018 | PIOrd. | 0000037597/Stck | | 150 | 150 | |
| | 05.10.2018 | IndReq | LSF | | 150- | 0 | |

Converting Planned Order into Production Order



Stock/Requirements List as of 00:40 h

Show Overview Tree

| Material | FG-888 | MRP area | 3000 | New York | Plant | 3000 | MRP type | M1 | Material Type | FERT | Unit | PC | |
|------------------|-----------------------|-------------------------------|---------------|----------|-------|------|----------|----|-----------------|------------|---------------|---------------|--|
| 30.05.2018 Stock | | | | | | | | | Reschedulin... | E... | Receipt/Reqmt | Available Qty | |
| | | | | | | | | | 96 | | | 0 | |
| | 30.05.2018 SafeSt | SAFETY STOCK | | | | | | | | 50- | | 50- | |
| | 31.05.2018 -----> | END OF PLANNING TIME. | | | | | | | | | | | |
| | 31.05.2018 PlOrd. | 0000037529/STCK | | | | | | | 06 | 50 | | 0 | |
| | 14.09.2018 PlOrd. | 0000037529/STCK | | | | | | | | 250 | | 250 | |
| | 14.09.2018 PlOrd. | 0000037529/STCK | | | | | | | | | | | |
| | 21.09.2018 Plnd order | 0000037529 | Make-to-stock | | | | | | Order finish | 31.05.2018 | GR ProcTme | 0 | |
| | 21.09.2018 Order qty | 50 | | PC | | | | | Order start | 29.05.2018 | Proc. type | E | |
| | 28.09.2018 Scrap | 0 | | | | | | | Planned opening | 29.05.2018 | Order type | LA | |
| | 28.09.2018 Exception | 06 = Start date in the past | | | | | | | | | | | |
| | 05.10.2018 Exception | 05 = Opening date in the past | | | | | | | | | | | |

Additional Data for MRP Element

| | | | | | | |
|------------|-------------------------------|---------------|-----------------|------------|------------|----|
| Plnd order | 0000037529 | Make-to-stock | Order finish | 31.05.2018 | GR ProcTme | 0 |
| Order qty | 50 | PC | Order start | 29.05.2018 | Proc. type | E |
| Scrap | 0 | | Planned opening | 29.05.2018 | Order type | LA |
| Exception | 06 = Start date in the past | | | | | |
| | 05 = Opening date in the past | | | | | |

-> Prod.Ord. **-> PartConvProdOrder** **-> Proc.Ord.** **-> SubProcOrd** **->**

Planned orders are converted into production orders to specify:

- What is to be produced
- When production is to take place
- Which capacity is to process the order
- How much production cost will be

Converting Planned Order into Purchase Requisition



Stock/Requirements List as of 00:35 hrs

Show Overview Tree

| Material | RM3-888 | Locknut | | | | | |
|----------|------------|---------------|----------------------|----------------|------|---------------|---------------|
| MRP area | 3000 | New York | | | | | |
| Plant | 3000 | MRP type | M1 | | | | |
| | | Material Type | ROH | | | | |
| | | Unit | PC | | | | |
| | | PC | | | | | |
| | A.. Date | MRP el... | MRP element data | Reschedulin... | E... | Receipt/Reqmt | Available Qty |
| | 30.05.2018 | Stock | | | | | 0 |
| | 29.05.2018 | DepReq | SF2-888 | | | 280- | 280- |
| | 31.05.2018 | -----> | END OF PLANNING TIME | | | | |
| | 06.06.2018 | PurRqs | 0010016015/00010 | 29.05.2018 | 30 | 400 | 120 |
| | 05.09.2018 | PlOrd. | 0000037555/EXTP | | | 400 | 520 |
| | 05.09.2018 | PlOrd. | 0000037556/EXTP | | | 400 | 920 |
| | 05.09.2018 | PlOrd. | 0000037557/EXTP | | | 100 | 1000 |

Additional Data for MRP Element

| | | | | | | |
|------------|------------|----------------|-----------------|------------|------------|----|
| Plnd order | 0000037555 | External proc. | Order finish | 31.08.2018 | GR ProcTme | 2 |
| Order qty | 400 | PC | Order start | 23.08.2018 | Proc. type | F |
| Scrap | 0 | | Planned opening | 26.07.2018 | Order type | NB |

-> Pur.Req.

Learning Objectives



- Understand the key building blocks of SAP ERP
- Overview of Production Planning module
- Describe the organizational levels of PP module
- Describe the different Master Data used by PP
- Create the Material Master & BOM
- Perform MPS & MRP run in SAP
- Interpret MRP outputs by using stock/requirement list
- Convert MRP outputs into either Purchasing Requisition or Production Order



E217 Inventory Management Topic Flow

