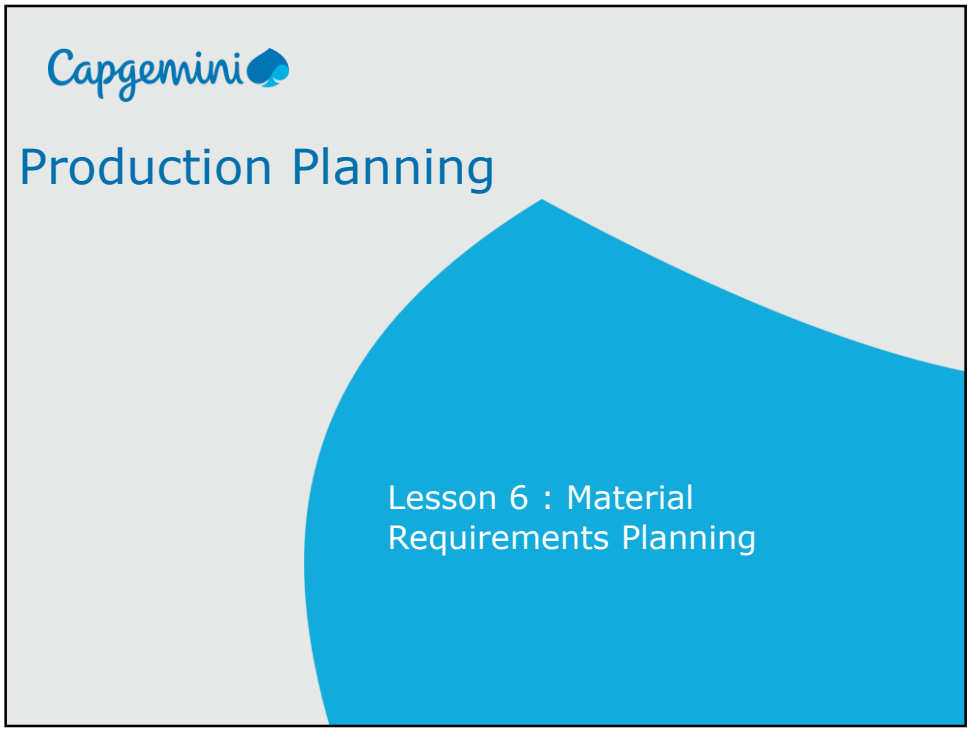

Capgemini
Production Planning
Lesson 6 : Material Requirements Planning

Lesson Objectives

Objectives -On successful completion of this training module, you should have:

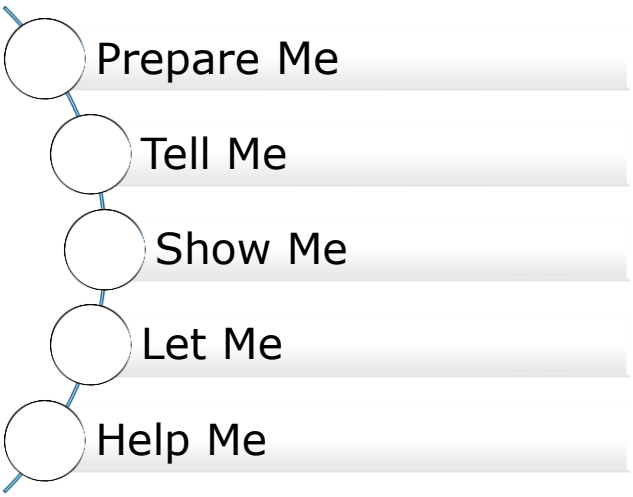
- Understood the basics of Demand Management
- Become familiar with Consumption Base planning
- Become familiar with Master Production Schedule
- Become familiar with Lot Sizing Procedure
- Become familiar with PP-MRP Planning Run

Training Agenda

- PP MRP Procedure
- PP Consumption Base planning
- PP Master Production Schedule(MPS)
- PP Firming Type
- PP Material Requirement Planning(MRP)
- PP Net Requirement Calculation
- PP Lot Sizing Procedure
- PP Scheduling
- PP BOM Explosion
- PP-MRP Planning Run

Add instructor notes here.

Material Requirements Planning



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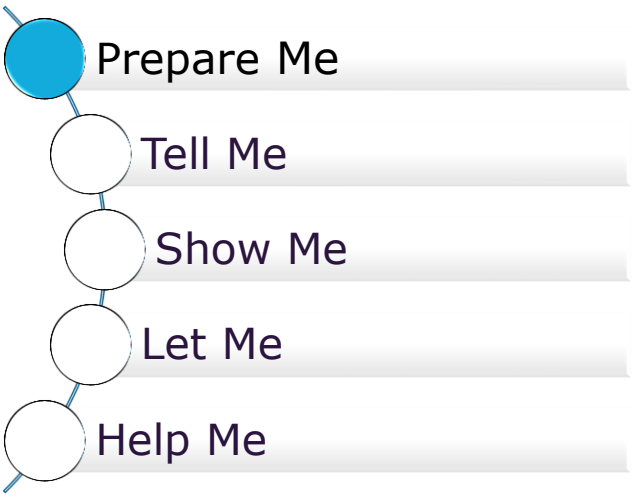
Material Requirements Planning



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Prepare Me

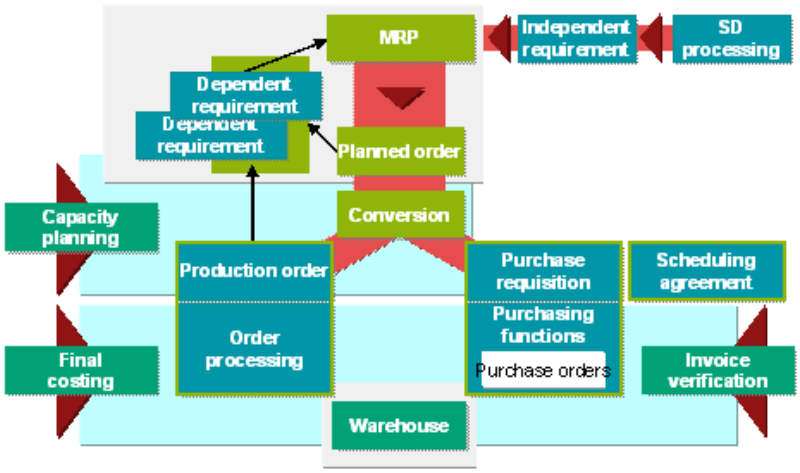
The main function of material requirements planning is to guarantee material availability, that is, it is used to procure or produce the requirement quantities on time both for customer dependent and independent requirements

MRP tries to strike the best balance possible between

Optimizing the service level and

Minimizing costs and capital lockup.

MRP in the Logistics Chain



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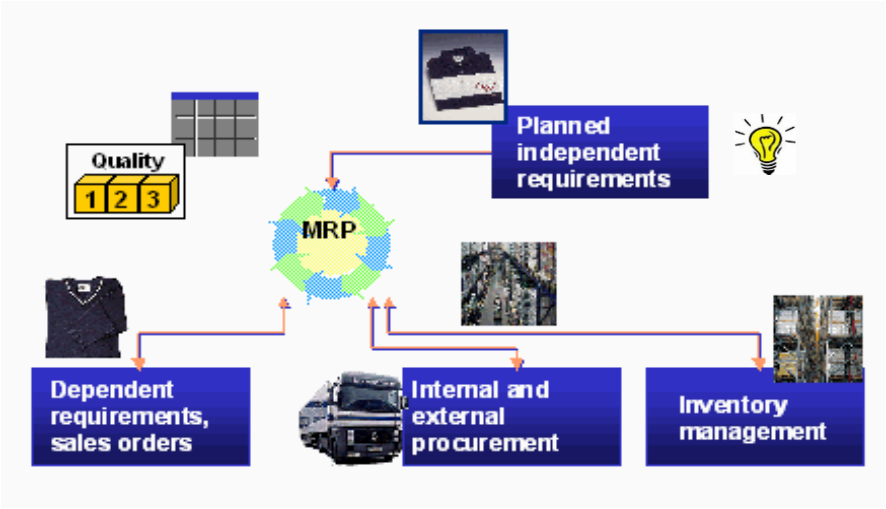
Material Requirement Planning



Add the notes here.

Add instructor notes here.

Purpose

The aim of material requirements planning is to tailor available capacities and receipts on time to suit requirements quantities

MRP tries to strike the best balance possible between

- Optimizing the service level and
- Minimizing costs and capital lockup

Add the notes here.

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Use

It is used to procure or produce the requirement quantities on time both for internal purposes and for sales and distribution. This process involves the monitoring of **stocks** and, in particular, the automatic creation of **procurement proposals** for **purchasing and production**.

SAP MRP creates planned orders based on a material's net requirement quantity and its needed availability.

Add the notes here.

Add instructor notes here.

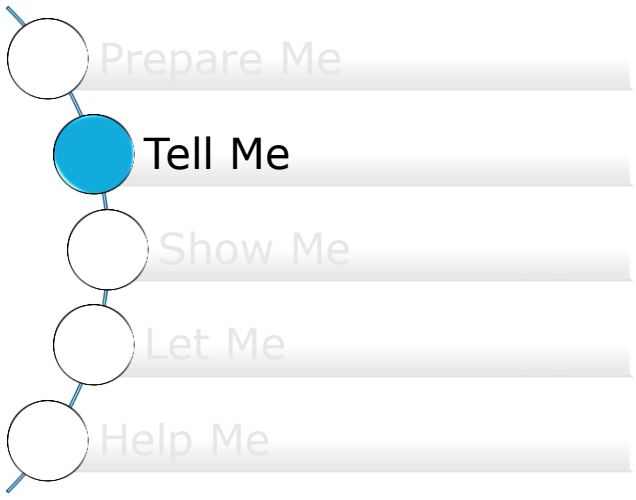
Challenges

- Accuracy of Master Data
- Material master
- Bills of material
- Work center – For in-house production
- Routing - For in-house production
- And also the following components
  - Demand Management
  - Sales and Distribution

Add the notes here.

Add instructor notes here.

PP1003 - Material Requirements Planning



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Tell Me

Process Flow

Process Description

Add the notes here.

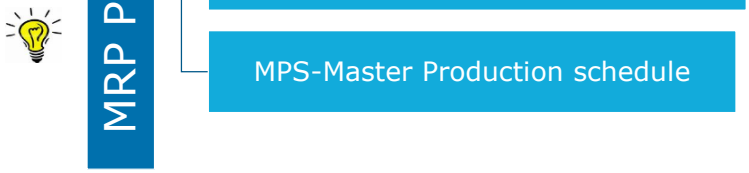
Add instructor notes here.

Process Flow

Add the notes here.

Add instructor notes here.

Process Description



Add the notes here.

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Demand and Stock elements for MRP

Various Requirement Elements

- Demand plan (Forecast) from
  Demand Planning system
- Sales Order requirements
- Dependent Requirements
- Requirements from other Plants (stock transfer requirements)
- Safety Stock requirements

Various Stock Elements

- Available stock in warehouse
  (various stock types)
- Planned Orders
- Production Orders
- Purchase Requisitions
- Purchase Orders
- Stock Transfer Requisitions
- Stock Order Orders

Add the notes here.

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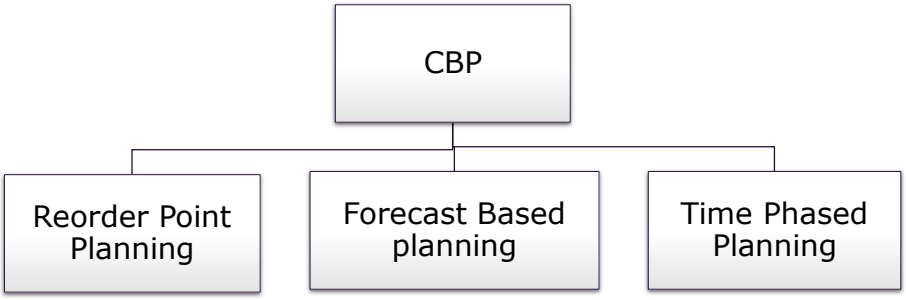
Consumption Base Planning



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Tell Me

Net Requirements Calculation: Reorder Point Planning

Available warehouse stock is calculated as follows:

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

If available warehouse stock falls below Reorder Point then
in MRP Run Systems generate procurement proposal

Add the notes here.

Add instructor notes here.

Tell Me

Net Requirements Calculation: Reorder Point Planning

Available stock is calculated as follows:

	Plant stock
–	Safety stock
+	Receipts (purchase orders, firmed purchase orders)
–	Requirements quantity (forecast requirements)
=	Available stock

If the available stock becomes negative then in MRP run system generates new procurement proposal.

Add the notes here.

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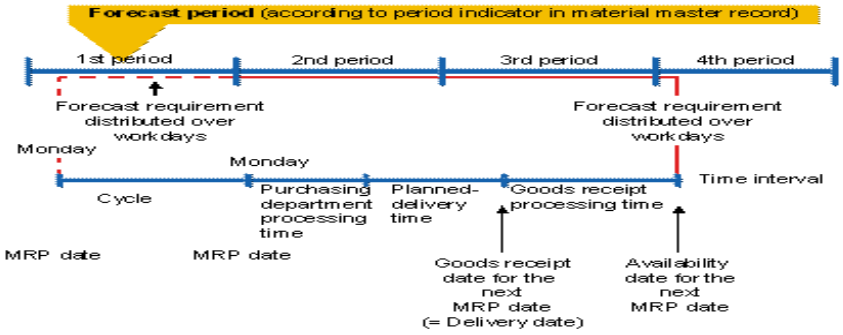
Tell Me

Net Requirements Calculation: Time Phased Planning

If a vendor always delivers a material on a particular day of the week, it

makes sense to plan. This material according to the same cycle, in which it

Is delivered



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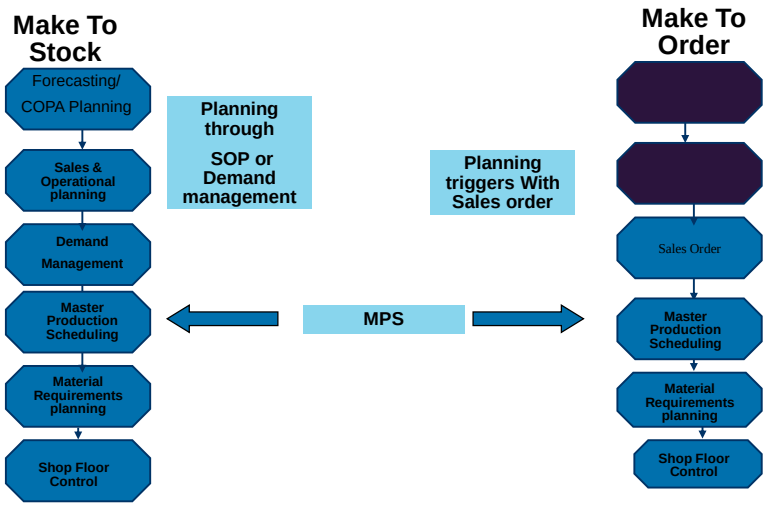
MPS: Master Production Scheduling

- MPS enables you to plan materials that greatly influence a company’s profits and critical.
- The master production scheduling run only plans the master schedule items. Master production scheduling is executed with the same logic as MRP.
- MPS run will plan and pass on the dependent requirement but it will not create any procurement proposal for the material which are planned with MRP run. i.e. in the material master MRP type PD.
- The firming type defines how the order proposals are firmed and how the dates are set within the firming period.
- Goods having high inventory cost and less in demand can be planned through MPS planning.

Add the notes here.

Add instructor notes here.

Position of MPS in the PP process flow



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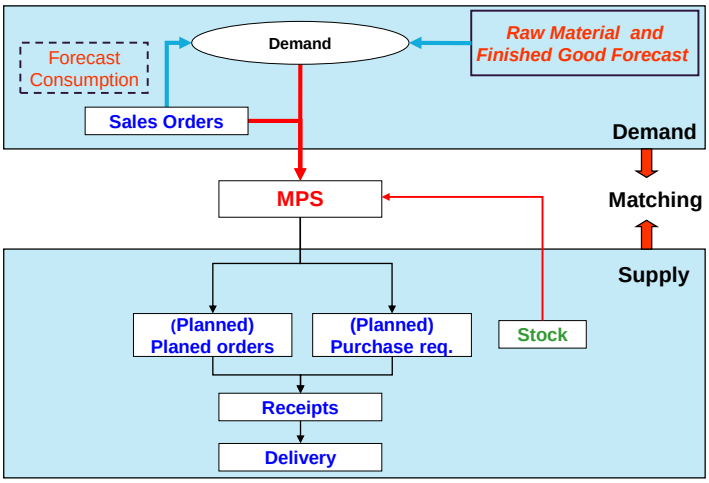
Add instructor notes here.

Process Flow: MPS



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MPS Planning

- **Planning Time Fence** : You can protect the master plan from any automatic changes to master schedule items in the near future by using a planning time fence.
- You can define the planning time fence either material-specific or per MRP group
- **Firming Type** : The firming type determines how procurement proposals are to be firmed and scheduled within the planning time fence during the planning run

Add the notes here.

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Firming Type

- The following firming types are available

Firming Types	*Existing order proposals are*	*New order proposals are*
M0	Not automatically firmed	Created with appropriate dates
M1	Automatically firmed	Created, moved to end of firming period
M2	Automatically firmed	Not created, shortages remain uncovered
M3	Not automatically firmed	Created, moved to end of firming period
M4	Not automatically firmed	Not created, shortages remain uncovered

Add the notes here.

Add instructor notes here.

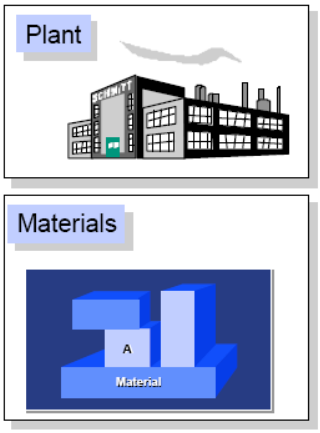
MRP :Material Requirement Planning

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

Add the notes here.

Add instructor notes here.

Prerequisites for running MRP



- Activate MRP
- Set up planning file
- Maintain MRP data:
  valid MRP type
  valid material status

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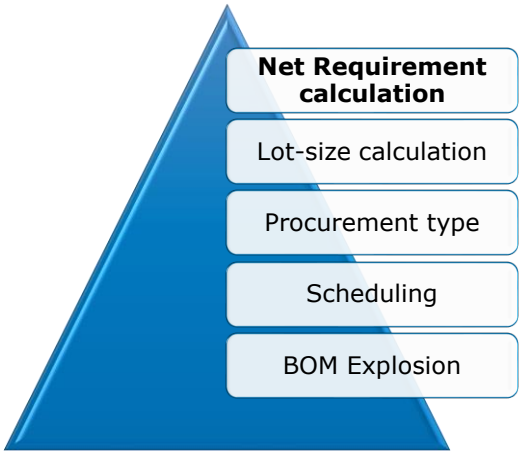
MRP Flow



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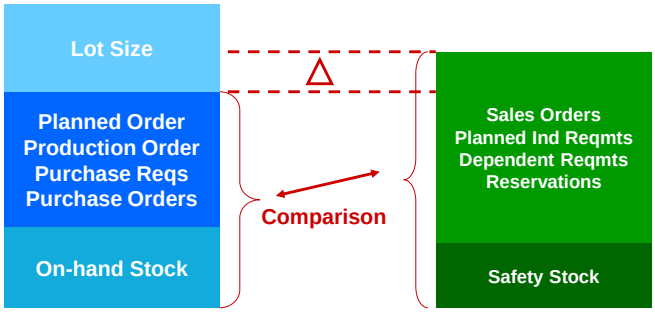
Net Requirements Calculation

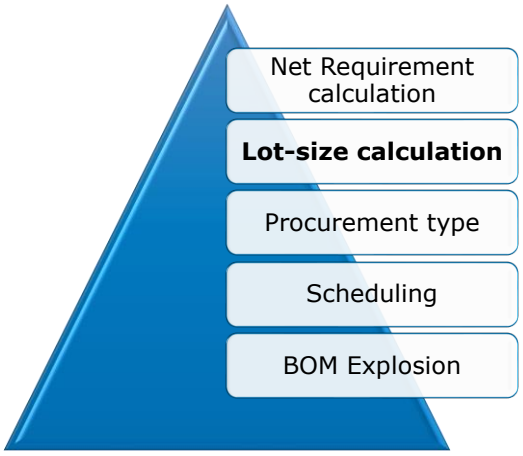


- MRP determines how much supply is needed to satisfy demand in the net requirements calculation.
- The difference between the demand and the supply of an item is the shortage. This shortage quantity must now be covered by one or more planned orders.
- The system calculates the quantity of the planned order according to the lot sizing procedure specified in the material master.

Add the notes here.

Add instructor notes here.

MRP Flow Contd.



Add the notes here.

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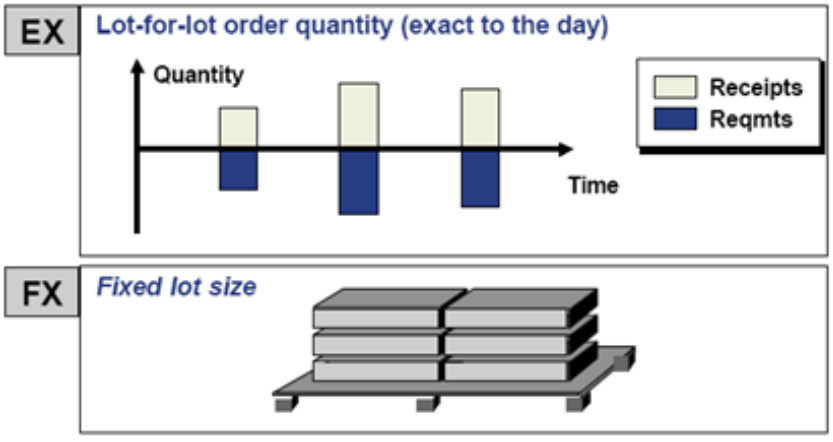
Lot Sizing Procedure

- During MRP, the system creates procurement proposals based on your lot-sizes if there is a stock shortage.
- By determining lot-sizes you can plan optimal quantities per procurement proposal and thus specifically cover your requirements.
- The planning of lot-sizes influences the planning of the available capacity, and the planning of the production or procurement costs.

Add the notes here.

Add instructor notes here.

Static Lot Size Procedures



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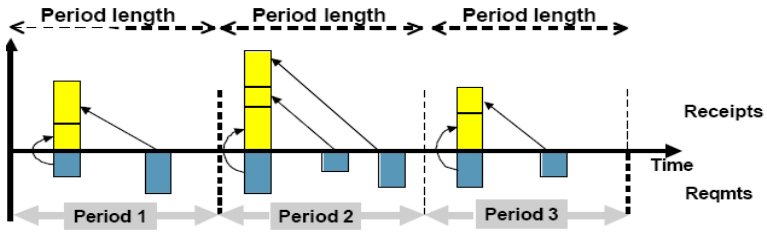
Period Lot Sizing Procedures

TB *Daily lot size*

WB *Weekly lot size*

MB *Monthly lot size*



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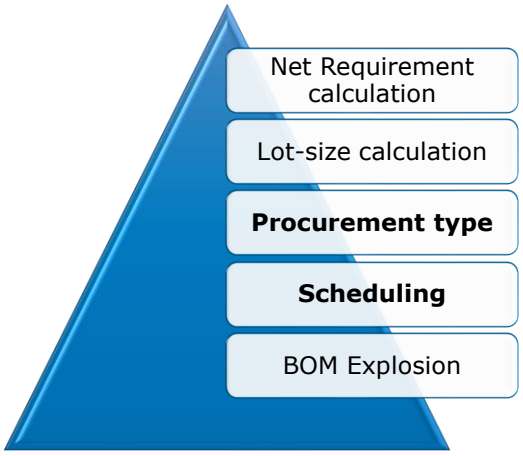
MRP Flow Contd.



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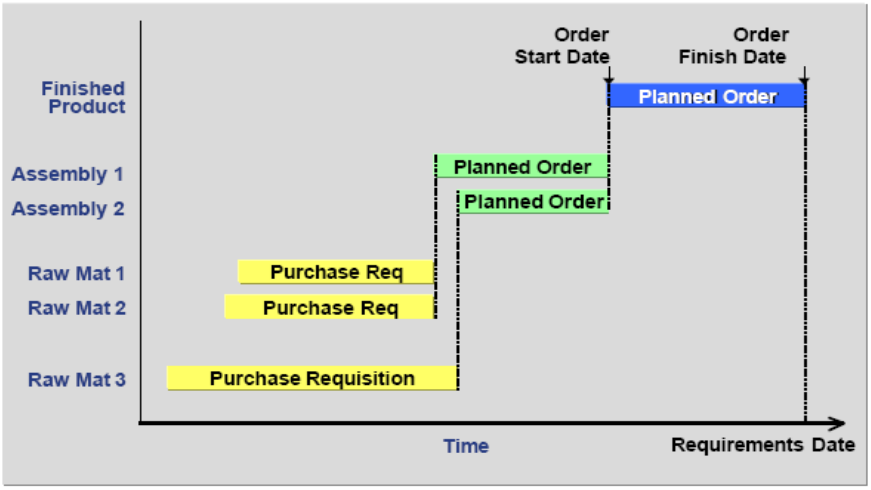
MRP : Order Scheduling



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Add instructor notes here.

MRP : Order Scheduling Contd.

- After MRP calculates the planned order lot size, it must calculate the planned order finish date and the planned order start date. These dates are known as the basic dates of the planned order.
- The order finish date of the finished product's planned order is based on the requirement date of the customer order or the planned independent requirement. To calculate the order start date, MRP backward schedules using lead-time information from either the material master or the routing.
- The order finish date of planned orders of the assemblies is based on the order start date of the finished product's planned order. MRP backward schedules to determine the order start date of each.
- This process continues for the purchase requisitions. This is done using the planned delivery time from the material master to determine the order start date.

Add the notes here.

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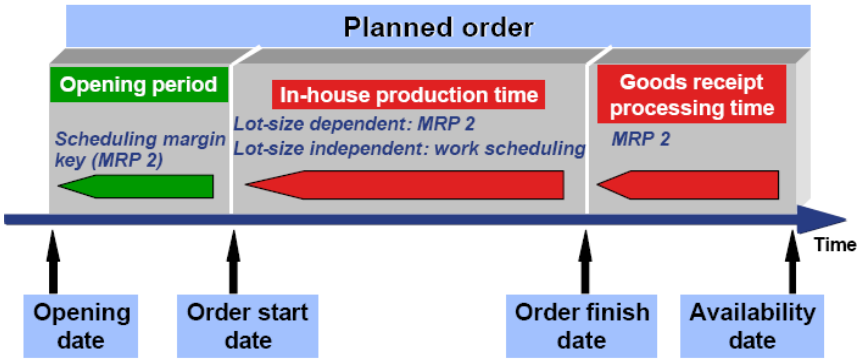
Backward Scheduling for In house Production



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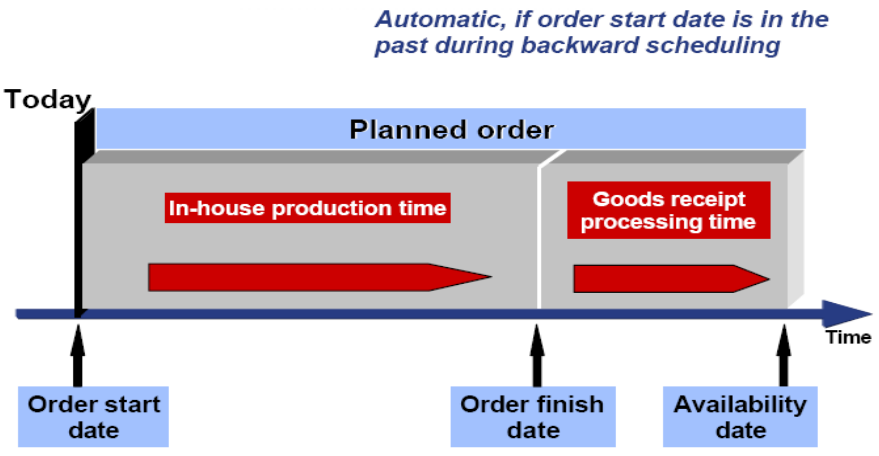
Forward Scheduling for In house Production



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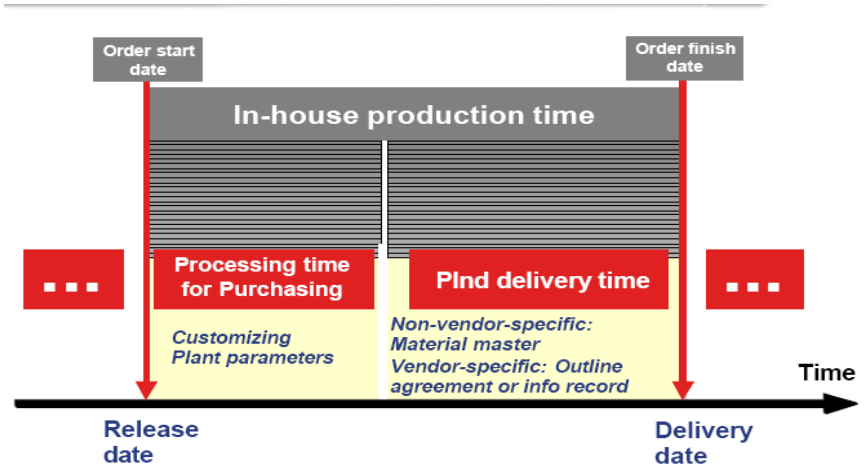
Scheduling for External Procurement



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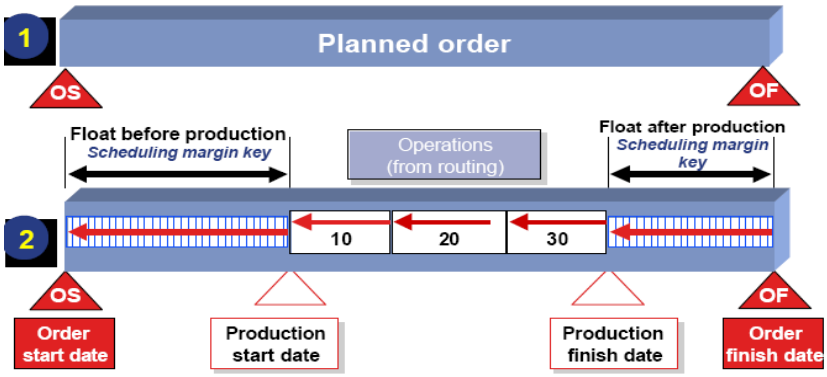
Lead Time Scheduling

Scheduling ind. = 2, capacity requirements are calculated



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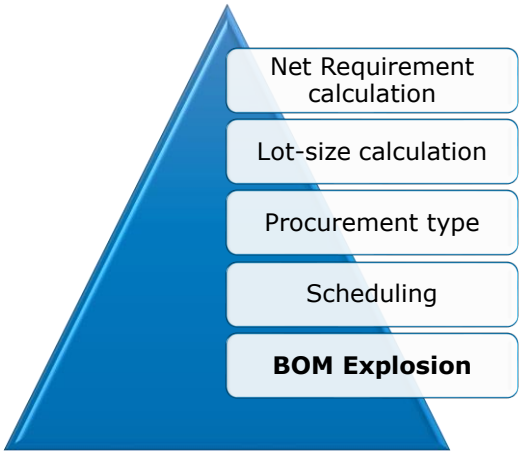
MRP Flow Contd.



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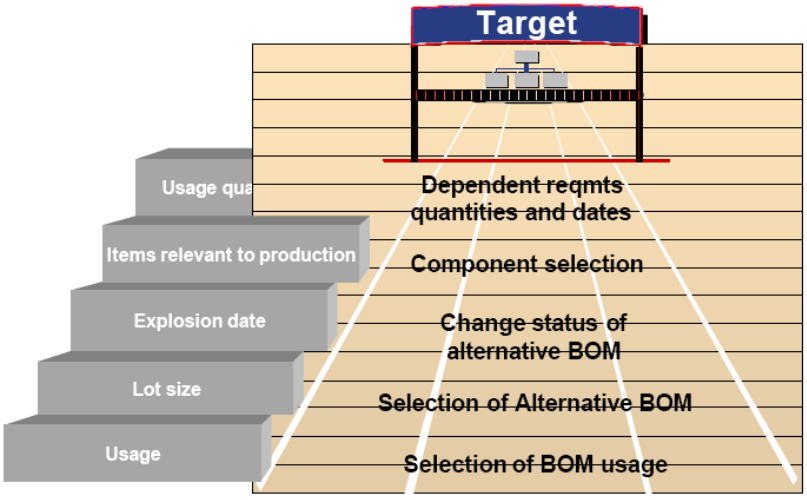
BOM Selection



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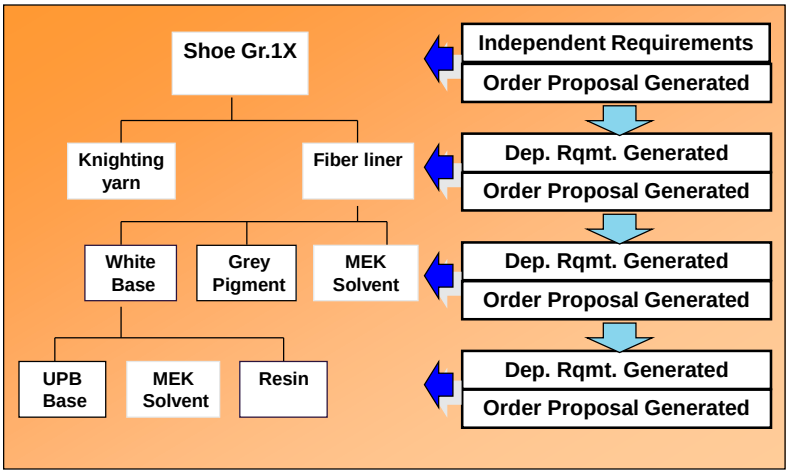
BOM Explosion and Dependent Requirement Calculation



Add the notes here.

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MRP Planning Run

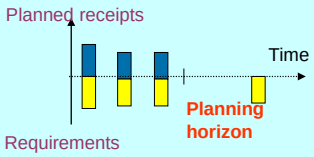
Carrying out the Planning Run - Total Planning

Planning Types

Plant

- **Regenerative planning**
- **Net change planning**
- **Net change planning within the planning horizon**

Planning horizon



Add the notes here.

Add instructor notes here.

MRP Planning Run: Control Parameters

- Planning run can be carried out at different levels:
  - Single-item Single-level planning for an individual material
  - Single-item Multi-level planning for an individual material
  - Total planning for all materials in a plant
- Planning Run Types

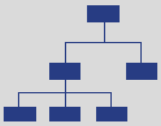
  The planning run type determines which materials are to be planned:
  - **Regenerative planning (NEUPL)** - The system plans all the materials that are contained in the planning file
  - **Net change planning (NETCH)** - The system only plans materials that have undergone a change relevant to MRP since the last planning run
  - **Net change planning in the planning horizon (NETPL)** - The system plans for any material that has undergone some changes since last MRP run, and those changes are in the planning horizon

Add the notes here.

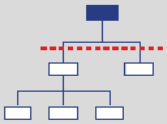
Add instructor notes here.

Executing Planning Run for Single Items

- **Single-Item, Multi-Level Planning**
  - Planning a BOM structure
  - Possibility of changing the master plan for each material in the BOM manually.



- **Single-Item, Single-Level Planning**
  - Planning one BOM level only
  - Dependent requirements are transmitted for the next BOM level
  - Manual changes can be made at any time



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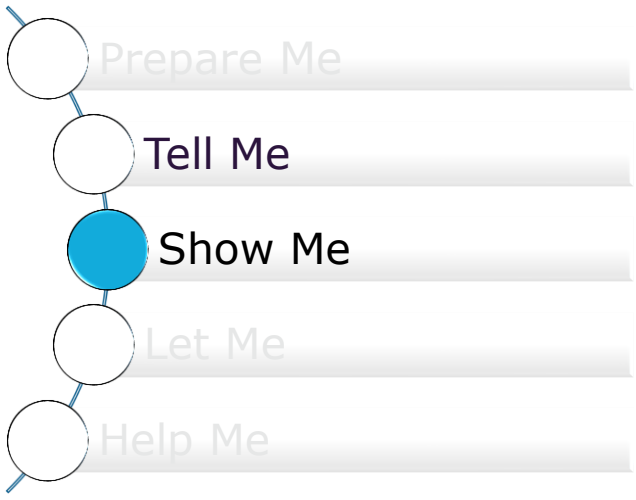
PP1003 - Material Requirements Planning



Add instructor notes here.

Show Me

Environment

The Environment in which MRP runs is SAP R3 under Production Planning Module

Add instructor notes here.

Show Me

Prerequisites

- Material Requirements Planning Procedure
  - You have set an *MRP type* for MRP in the material master (*MRP 1* view).
  - You define MRP types in Customizing for MRP in the IMG activity *Check MRP types*

Add instructor notes here.

Master Data

- The settings for master data such as routings, bills of material, work center, production resources/tools, trigger points are important when MRP is carried out.
- Except these, settings need to be done in different planning strategies.

Add instructor notes here.

Configuration

Configuration require various master data configuration & to maintain plant parameters for MRP for a particular plant.

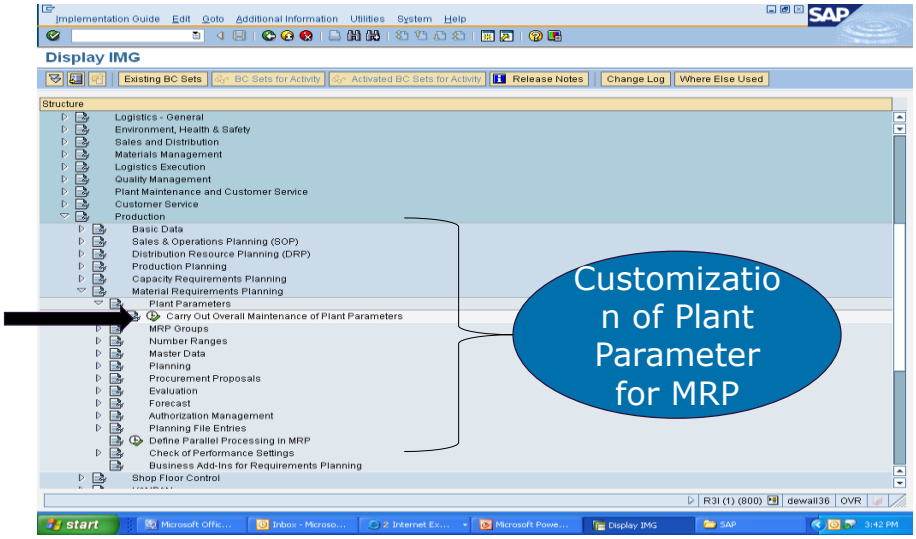
Add instructor notes here.

Plant Parameter for MRP

- This configuration setting enables to configure the plant parameter for Materials Requirement Planning (MRP).
- MRP will ensure
  - Availability of right material at right time.
  - Calculate the capacity requirements.
- Following MRP related parameters must be configured to perform MRP.
  - Frequency of planning,
  - How to explode the BOM,
  - Order type to be used when converting planned order
  - Planning horizon
  - Scheduling
- Apart from above there are more parameters to be configured, which we shall discuss.

Add instructor notes here.

Plant Parameter for MRP



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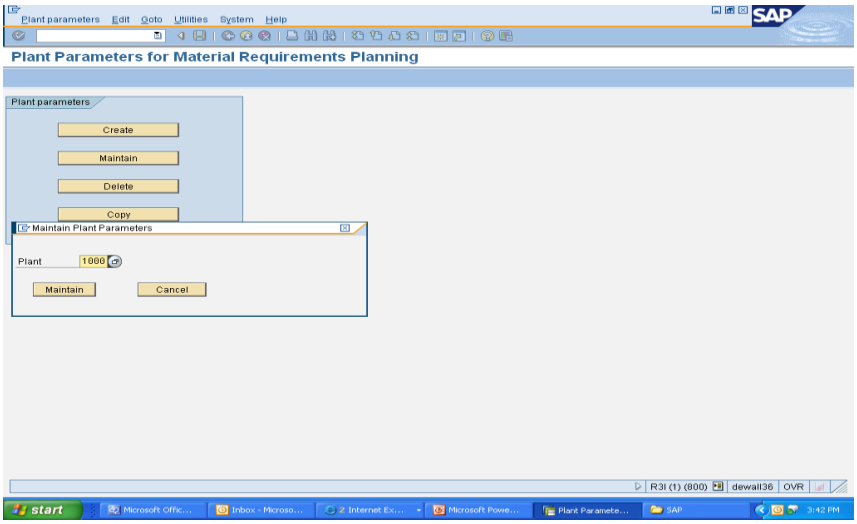
Plant Parameter for MRP



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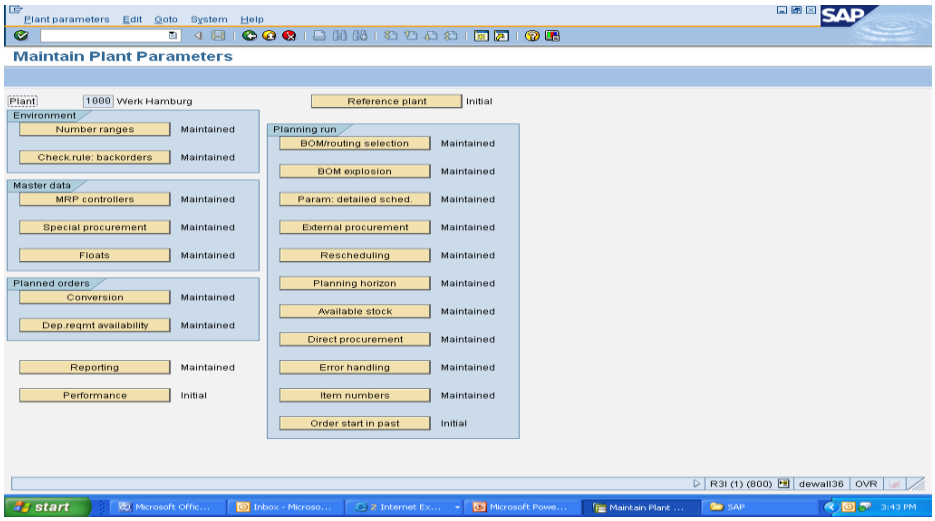
Plant Parameter for MRP



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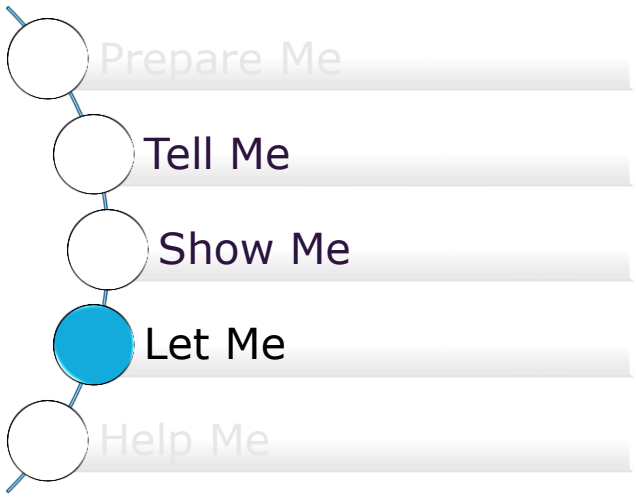
PP1003 - Material Requirements Planning



Add instructor notes here.

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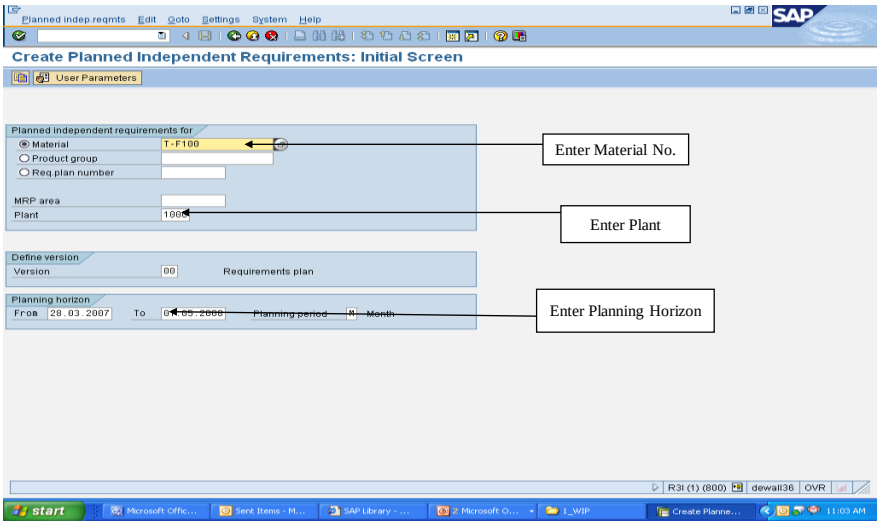

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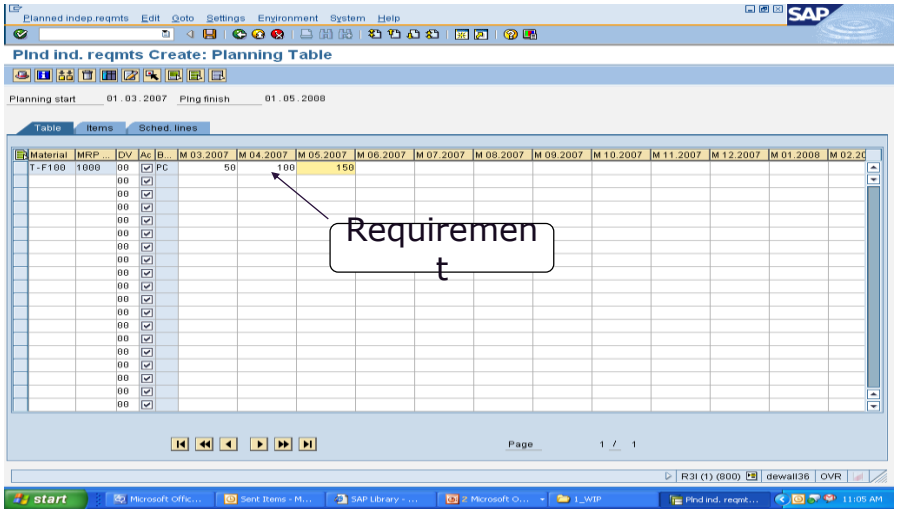

In Demand Management We can split the requirement quantities into further subperiods.

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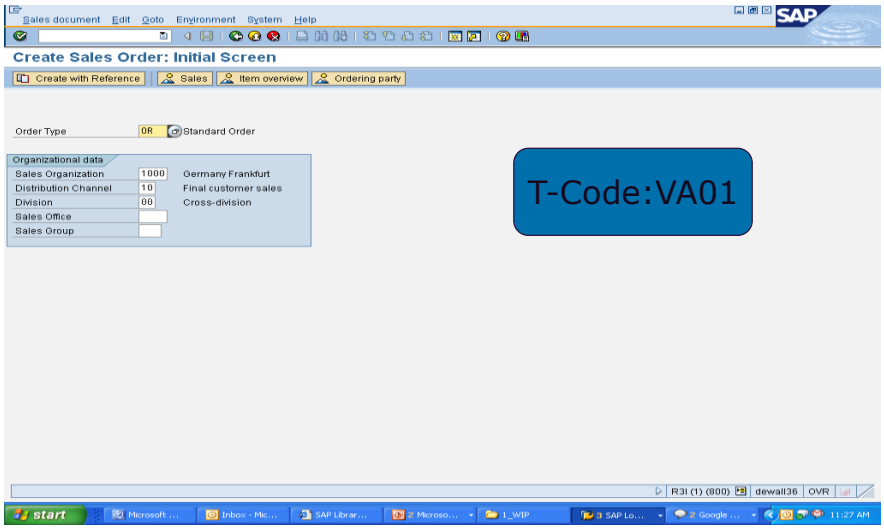

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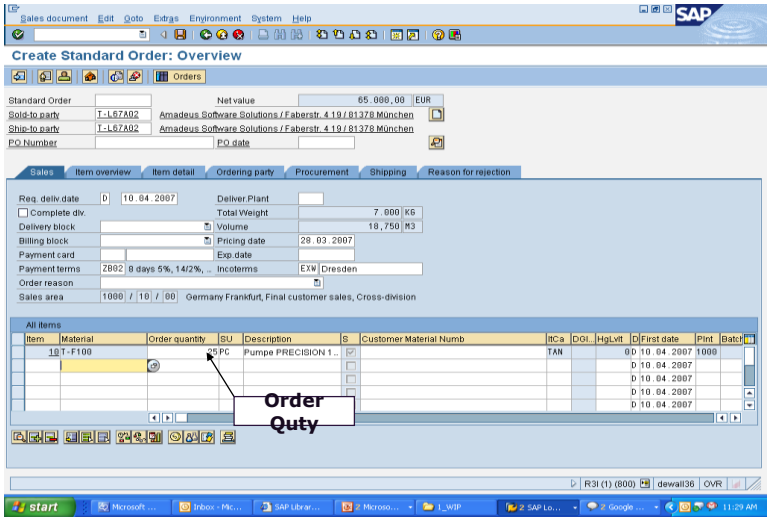

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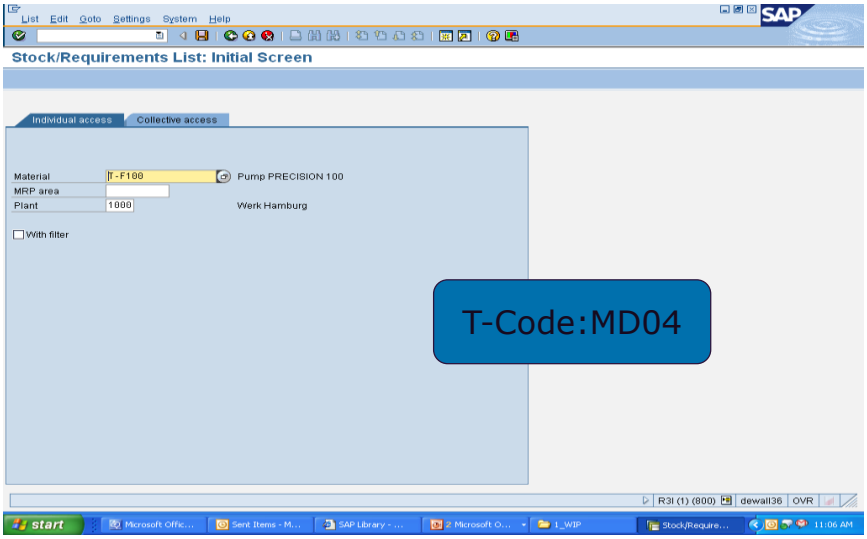

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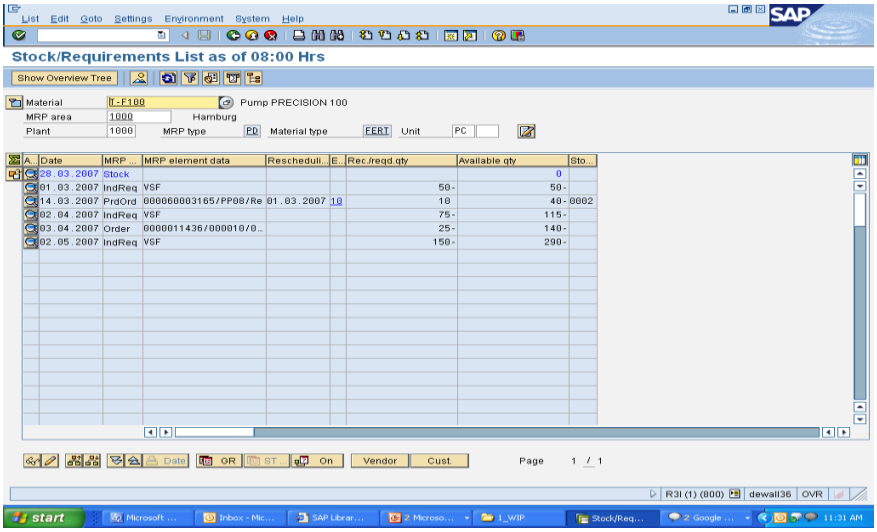

Stock\Requirement List is a dynamic list which shows the current Stock\Requirement situation. It always updates itself as soon as any changes occur relevant to requirement & planning.

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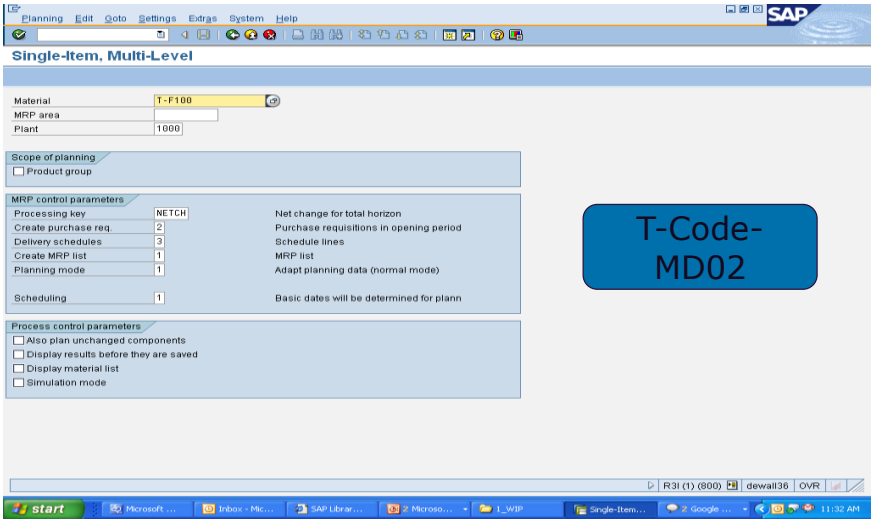

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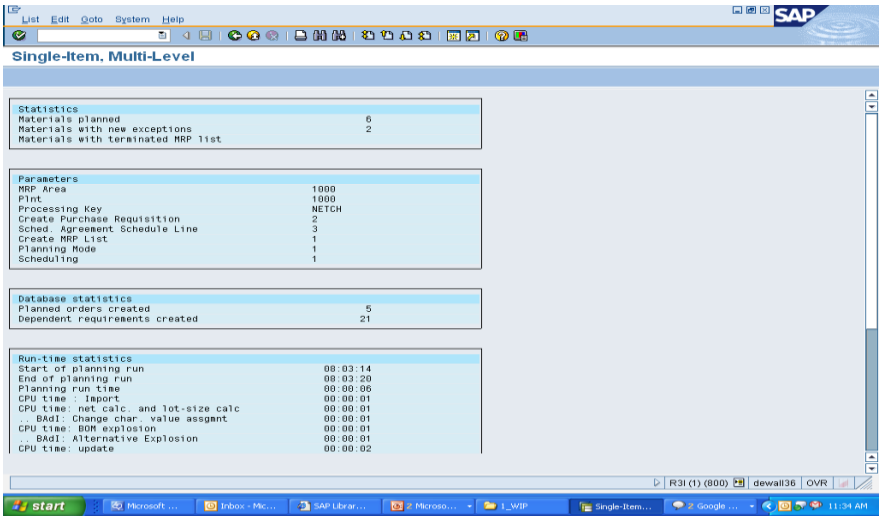

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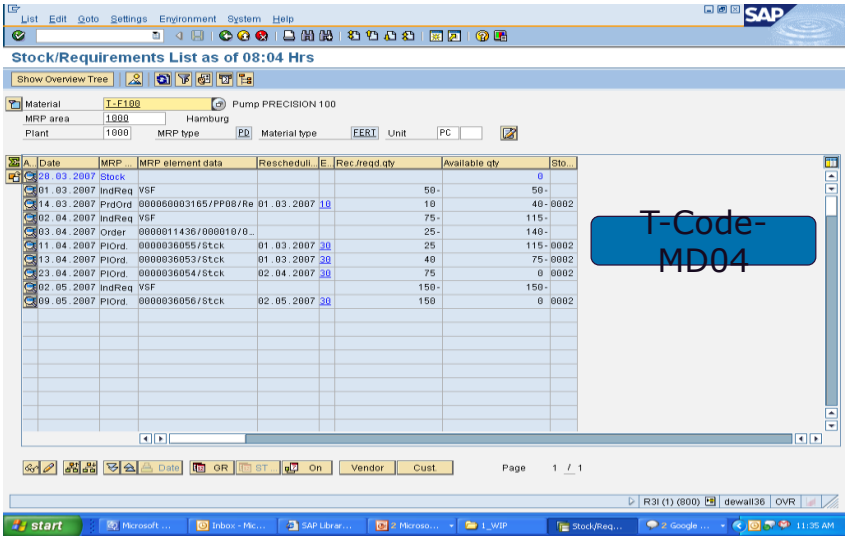

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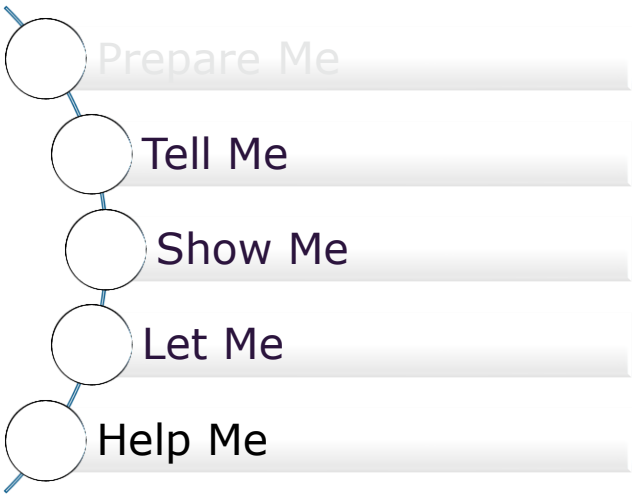
Add instructor notes here.

Material Requirements Planning



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Help Me

For further information please refer
http://help.sap.com/saphelp_46c/helpdata/en/f4/7d3f9344af11d182b40000e829fbfe/frameset.htm

Add instructor notes here.

Summary

The main function of material requirements planning is to guarantee material availability, that is, it is used to procure or produce the requirement quantities on time both for customer dependent and independent requirements

It is used to procure or produce the requirement quantities on time both for internal purposes and for sales and distribution.

MPS enables you to plan materials that greatly influence a company’s profits and critical.

The master production scheduling run only plans the master schedule items. Master production scheduling is executed with the same logic as MRP.

Deterministic MRP is carried out using current and future sales figures. The planned and the exact requirement quantities trigger the net requirements calculation.

Add the notes here.

Add instructor notes here.

Review Questions

1.The main function of material requirements planning is to guarantee material availability

Check whether the statement is true or false

a. True

b. False

2. Reorder Point Planning is related to Net Requirements Calculation

Check whether the statement is true or false

a. True

b. False

Add the notes here.