

MM0013 – Material Requirement Planning

Overview of MRP



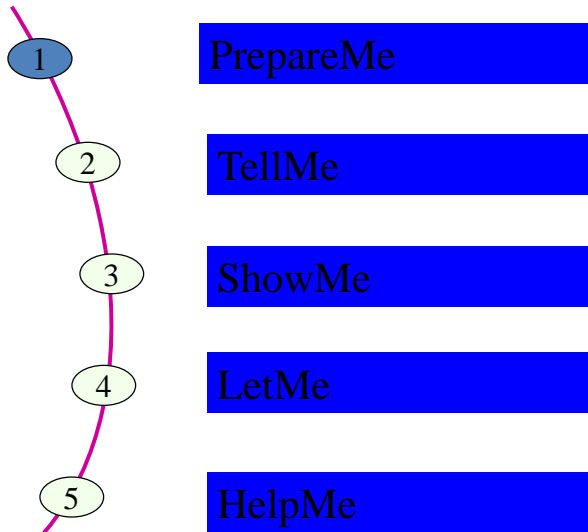


Workshop Ground Rules

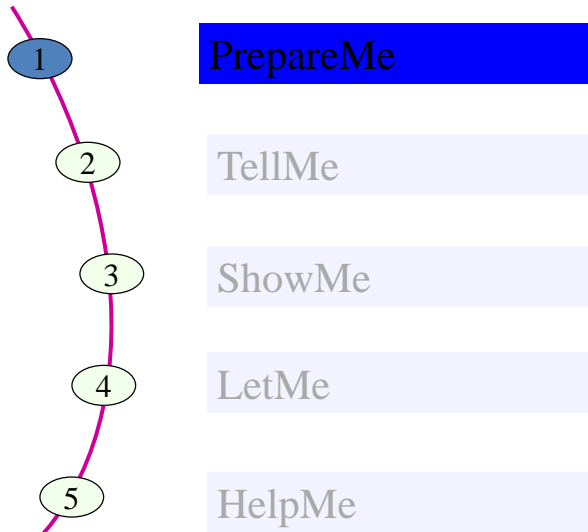
- Cell phones off
- Full attention throughout
- Scheduled Breaks only



Material Requirement Planning



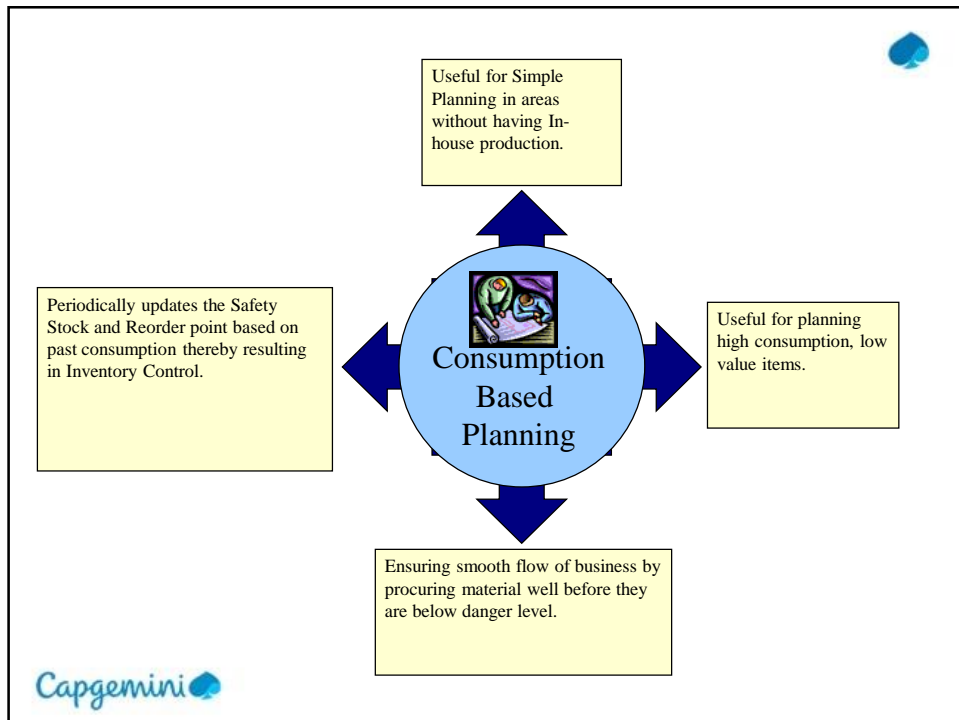
Consumption Based Planning



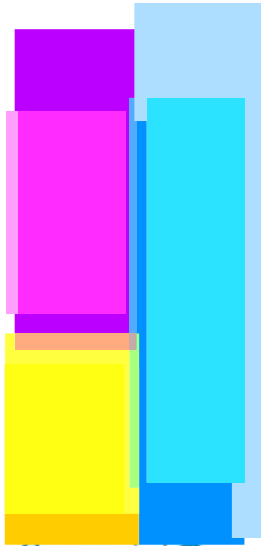
Consumption based Planning



- The Central role of Consumption based Planning is to monitor the stocks and automatically create the procurement proposals for purchasing and production
- CBP are simple planning procedures which can be used in areas where there is no In-house production and/or in production plants for planning of both B & C parts and operating supplies
- CBP triggers the requirement when stock falls below a predefined Reorder point or forecasting the requirements by using statistical procedures, taking into account the past consumption values

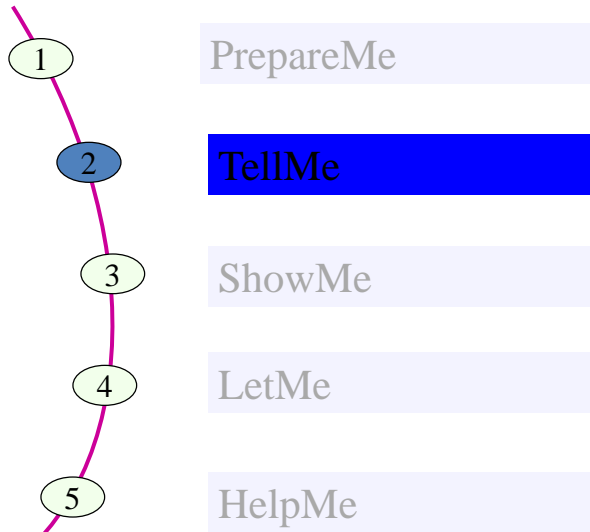


Challenge

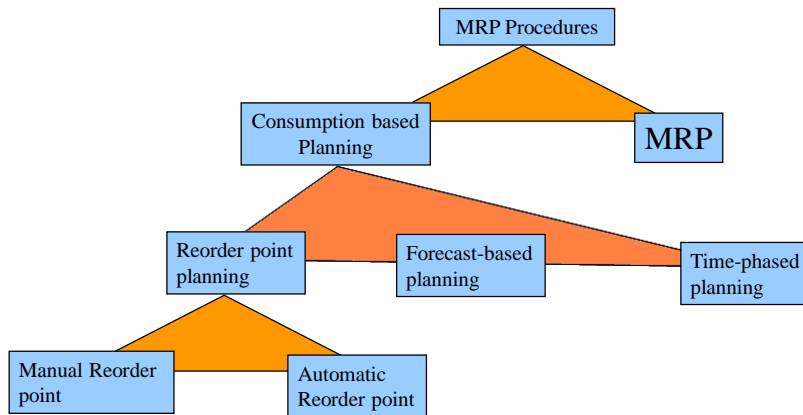


- To maintain Stock Accuracy so as to get more precise results from Consumption Based Planning
- To maintain high level of Past Consumption data which is very essential to forecast future requirements
- To monitor and update Master data relevant for Consumption based planning at regular intervals
- Identifying materials to maintain safety stock and Reorder level

Consumption Based Planning



MRP – Procedure Overview



MRP - Determination of Material Req



MRP procedure is to ensure material availability i.e. to procure the requirement quantities for in-house production and for sale on time.

MRP

SD receives customer requirement and demand management plans sales using Sales Forecast. The resulting independent requirements trigger MRP.

Consumption based Planning

Consumption based planning is basically triggered by:

1. Reorder Point Planning: Requirement triggers when the available stock level falls below the reorder point determined for the material. Two types:
 - a. Manual Reorder point
 - b. Automatic Reorder point
2. Forecast based Planning: Historical data is used in the material forecast to estimate future requirements.
3. Time phased planning: Historical data is used in the material forecast to estimate future requirements, but planning is only executed at predefined intervals.

MRP vs Consumption based Planning

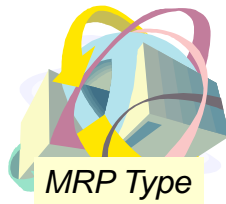


- MRP Planning are based on current and future sales
- In MRP, the requirement elements are Sales order, planned independent requirement, material reservation
- MRP is especially useful for planning of finished goods and important assemblies and components



- CBP is based on historical data and uses material forecasts or statistical procedures to determine future requirements
- CBP is triggered by the stock level falling below the Reorder Point or by Forecast requirement calculated from historical data
- CBP is preferably used in areas without In-house production or to Plan B or C materials and operating supplies

CBP – MRP Type



- MRP Type is the key that determines whether and how the Material is Planned
- It controls:
 - MRP Procedures (Type of Planning)
 - whether Forecast Values need to be considered in MRP
 - calculation of Safety Stock (manually/automatically)
 - Screen Sequence for the display of header details in the Planning run
- MRP Type is maintained in the Material Master MRP – 1 view

Special Procurement Type



Sp Procurement Type

Special Procurement Type helps to override the Procurement type defined in the Material Master or helps in defining the Procurement type more precisely

Special Procurement Type are maintained at Plant Level

It controls

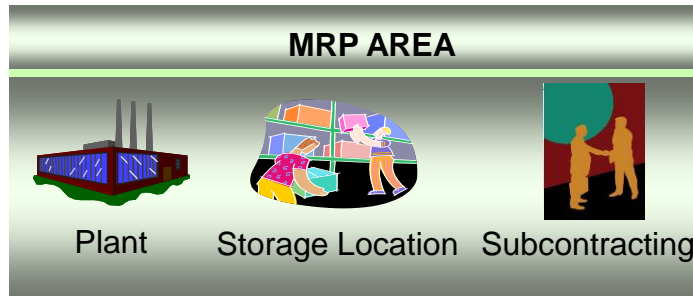
- Type of Procurement (Internal or External)
- Whether the Procurement is Consignment, Subcontracting....
- The behavior of BOM
- Whether the material can be directly consumed for Production or for other consumption

MRP Controller



- MRP Controller is a person or group of person responsible for Material Planning for a material
- MRP Controller is used to various reporting. Example: Planning results can be checked per MRP Controller
- Material relevant for planning must be assigned to an MRP Controller
- MRP Controller contains the details like the Telephone Number

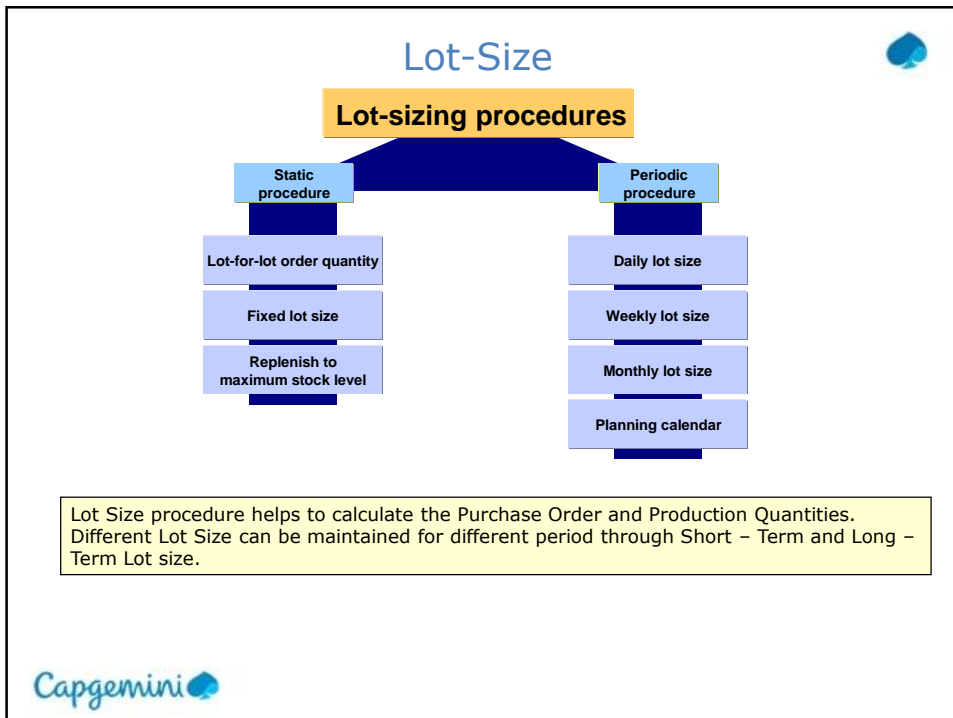
MRP Area



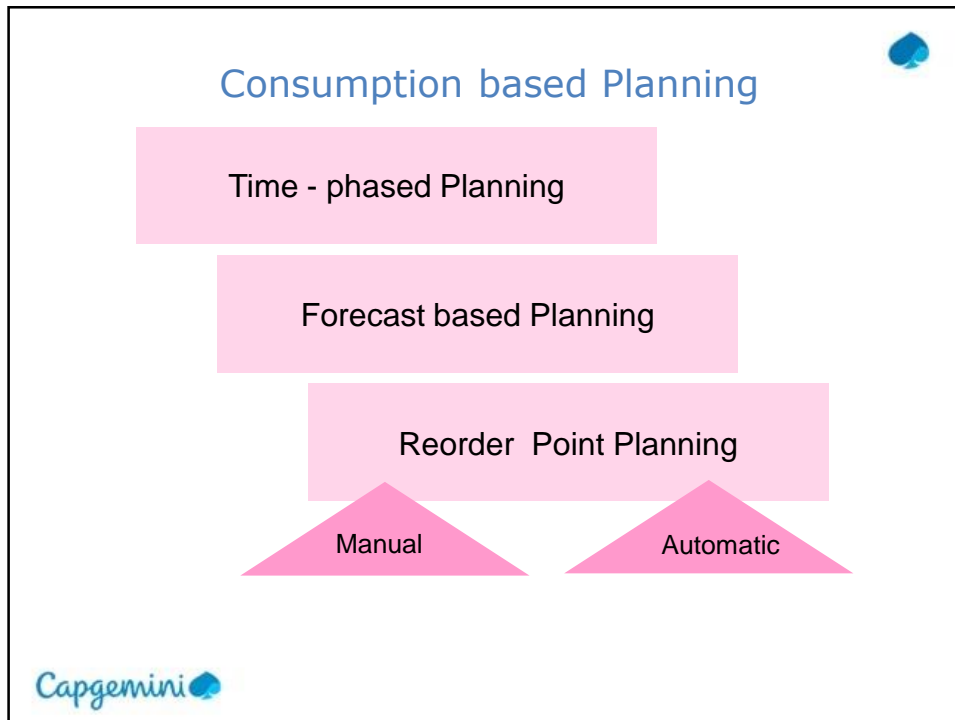
- MRP Area represents an organizational unit which carries out MRP independently. The results of planning run are displayed specifically for each MRP Area
- MRP Area enables a differentiation of MRP within a Plant
- MRP Area includes several Plant, Storage Locations of a Plant, or Stock within a subcontracting

There are three types of MRP areas:

1. Plant MRP areas (obligatory) that are automatically created by activating planning with MRP areas. Their numbers match the number of the plant. If no more MRP areas are defined, the plant MRP area covers the entire plant.
2. Storage location MRP areas that are defined by the storage locations assigned to them.
3. Subcontractor MRP areas that provide planning of the requirement of the material provided for a subcontractor, and are defined by the assignment of this subcontractor.



- In Static Lot – size, future shortages are taking into account. When a shortage occurs, an order proposal is created for the amount defined for the static lot size. The system does not check to see when a future shortage will occur.
- In periodic lot-sizing procedures, the system groups several requirement quantities within a time interval together to form a lot. The period lengths can be either days, weeks, months or a period of flexible length equal to posting periods as well as freely definable periods according to a planning calendar.
- By using Rounding Profile, Lot – Size procedure can be further controlled. By specifying Rounding Value in the Material Master, system will determine during Lot - Size calculation that the lot size quantity is a multiple of an order unit. Example: pallet size, if the material is only delivered in complete pallets.
- The minimum and maximum quantity for the purchase of a material can be fixed by stating the Lot size in the material records.



Reorder Point Planning

In the reorder point planning procedure, the system compares available warehouse stock at plant level with the reorder level. If stock falls below the reorder level, the system generates an order proposal. If, however, a purchase order or a production order covering the required quantity has already been planned by purchasing or production, then the system will not create another one.

The following characteristics are important for defining the Reorder Point Planning

- Safety Stock
- Average Consumption
- Replenishment lead time

•**Manual Reorder Point Planning:** The Reorder Planning and Safety Stocks are maintained manually in the Material Master

•**Automatic Reorder Point Planning:** The Reorder level and Safety stocks are calculated automatically based on the past consumption.

Forecast based Planning

Forecast based planning operates using historical values and forecast values and future requirements via the integrated forecasting program. These values forms the basis of the planning run, therefore have a direct effect in MRP.

The forecast, which calculates future requirements using historical data, is carried out at regular intervals. This offers the advantage that requirements, which are automatically determined, are continually adapted to suit current consumption needs.

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, but displaced by the delivery time.

Consumption based Planning



Time Phased Planning

- This type of planning is useful in case when the delivery of a material is fixed on a particular day of a week
- The planning date for the material is pre-set during creation of material record and it is re-set after every procurement
- This type of planning does not provide the flexibility of automatically varying the planned purchase date with variation in the requirement. Manual change is required to change the planned purchase element (purchase requirement etc.)

Forecast Based Planning

- This planning is based on the consumption pattern of a material. Past record of consumption of material forms the basis of this planning
- Proper and precise records of inventory and production, is a pre-requisite for this planning
- The value from Forecast based planning (value of purchase element created) keeps updating with the consumption of material in planned period

Reorder Point Planning



- In Reorder Point the proposal for procurement is made when the Plant stock of the raw material falls below a predefined limit
- The time required to receive the material after placing the order to the vendor is taken into consideration for this planning
- Purchase Orders, planned order, firmed purchase requisition those are due for execution in the replenishment period (time between reorder point and the safety stock) forms a crucial part of the reorder point planning

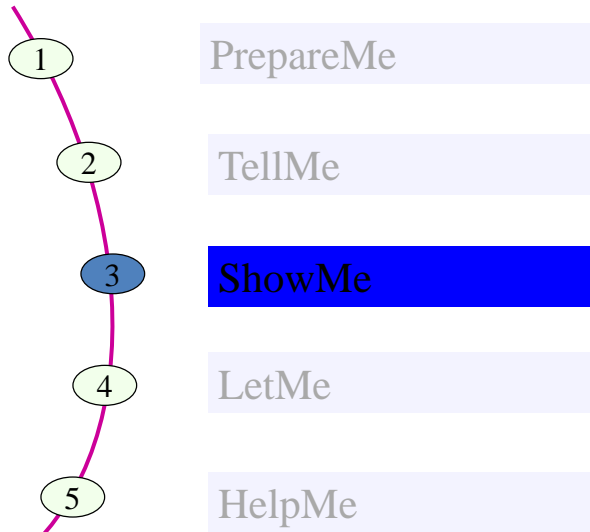
Manual Reorder Point:

- In Manual Reorder Point the Reorder Level & the Safety stock are maintained manually in the Material Master

Automatic Reorder Point

- In Automatic Reorder Point, the past consumption data is used to calculate the reorder level and the safety stock level
- The Service Level maintained in the MRP Controller and materials replenishment lead time is taken into account while calculating the Reorder Point

Consumption Based Planning



Agenda



Material Master

MRP Group

MRP Type

MRP Profile

Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



Material Master

MRP Group

MRP Type

MRP Profile

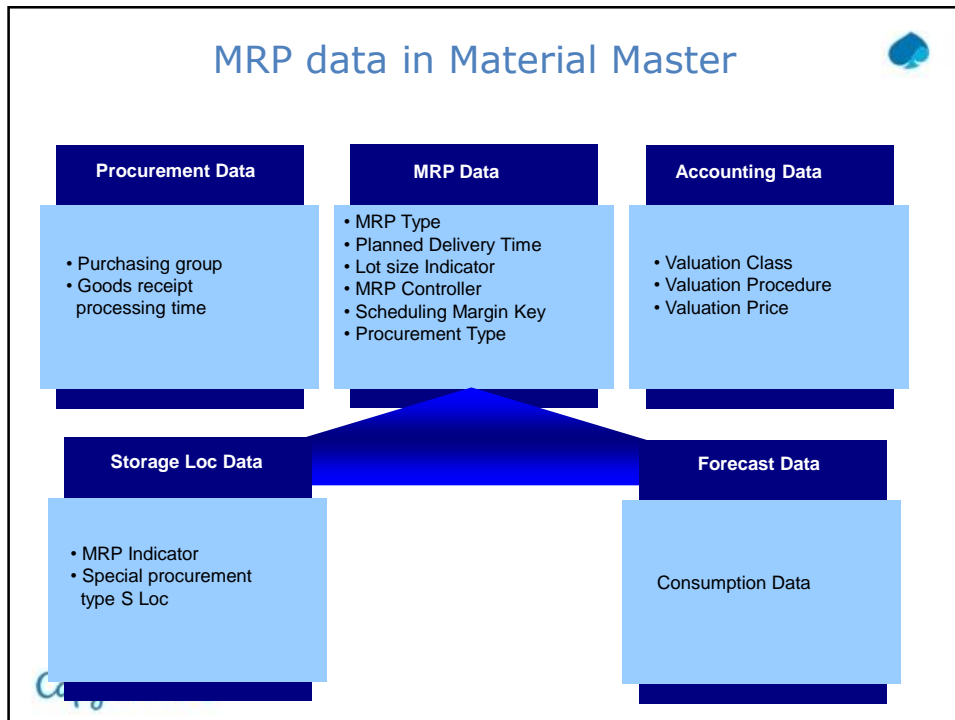
Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



•MRP Data in the material master has been subdivided in to following categories:

- General Data which contains the Material Code, Material description and Unit of measure
 - Data required for Scheduling
 - Data dependent on MRP procedure
 - Data required for Lot-size calculation
 - Procurement type
 - Procurement Type – whether material is procured In-house or Externally
- Procurement Data contains
- Purchasing Group which is required for External Procurement
 - Goods receipt processing time which is required for calculating the lead time during the MRP run.
- Accounting Data contains
- Valuation Class details
 - Valuation Procedure and Valuation Price details.

MRP data in Material Master



MRP – 1

Display Material 100-100 (Semi-finished product)

Additional data Organizational levels

Purchase order text MRP 1 MRP 2 MRP 3 MRP 4 MRP 5

Material: 100-100 Casing
Plant: 1000 Werk Hamburg

General data
Base Unit of Measure: PC Piece
Purchasing group: 000
Plant-sp.matl status:
MRP group:
ABC indicator:
Valid from:

MRP procedure
MRP Type: PD
Reorder Point: 0
Planning cycle:
Planning time fence: 0
MRP controller: 101

Lot size data
Lot size: EX Lot-for-lot order quantity
Minimum lot size: 1.000
Maximum lot size: 0
Maximum stock level: 0
Assembly scrap (%): 3.00
Takt time: 0
Rounding profile:
Rounding value: 0
Unit of measure grp:

MRP areas
☐ MRP area exists
MRP areas

MRP Grp are maintained at Plant level and controls the Strategy Group, the consumption mode and the Planning Horizon

MRP Type controls whether to have:

- Manual Reorder Point
- Automatic Reorder Point
- Forecast based Planning
- Master Production Scheduling

In the MRP – View you maintain

- **Plant Specific Material Status:** It controls the use of a material in a particular Plant. Example: Blocked for Procurement/Warehouse, Blocked for Purchasing, Obsolete Material...

You can also maintain a Validity period of the Plant Specific Material Status

- **ABC Indicator:** It categorizes the Material into A Class, B Class & C Class item. This classification process helps in ABC Analysis

- **Reorder Point:** It contains the Reorder quantity. If the stock falls below the Reorder quantity then the system flags the material for Requirement planning by creating a Planning file entry. Maintaining Value in this field only makes sense when the Reorder Point Planning is used. The Reorder quantity can be either entered manually or system calculates it automatically

- **Planning Cycle:** Planning Cycle is the key that determines the day on which the material is planned and ordered

- **Lot size:** It is the key that determines which lot-sizing procedure the system uses within materials planning to calculate the quantity to be procured or produced. You can also maintain Minimum & Maximum Lot size which will be considered at the time of Planning run

MRP data in Material Master



MRP – 2

Display Material 100-100 (Semi-finished product)

Additional data Organizational levels

MRP 1 MRP 2 MRP 3 MRP 4 Work scheduling Plant ...

Material: 100-100 Casing
Plant: 1000 Werk Hamburg

Procurement

Procurement type	F	Batch entry	
Special procurement		Prod. stor. location	0001
Quota arr. usage	4	Default supply area	
Backflush		Storage loc. for EP	
JIT delivery sched.		Stock det. grp	
<input type="checkbox"/> Co-product			
<input type="checkbox"/> Bulk Material			

Scheduling

In-house production	0 days	Plnd delivery time	10 days
GR processing time	0 days	Planning calendar	
SchedMargin key	001		

Net requirements calculation

Safety stock	10.000	Service level (%)	0,0
Min safety stock	0	Coverage profile	
Safety time ind.		Safety time/act.cov.	0 days
STime period profile			

In MRP – 2 View you maintain:

- Procurement Type
- Special Procurement Type
- Quota Arrangement Usage
- Prod Storage Location
- Procurement Storage Loc
- Scheduling details
- Net requirement calculations

MRP – 2 maintains:

- Procurement Type controls whether the Material is In-house Produced, Externally Produced or both. Depending on this settings, Production Order or Purchase Requisition is created during MRP run
- Special Procurement type controls the procurement process more precisely. It controls whether with the Procurement type, the material is a Consignment, Sub contracting, Stock Transfer, etc
- The Storage location maintained in the field “Production Storage Loc” get default copied in the Planned order and Production order. It makes sense to update this field when the Procurement is In-house Production
- The Storage location maintained in the field “Storage Loc for EP” get default copied in the Purchase Requisition. It makes sense to update this field when the Procurement is Externally Produced
- You can maintain the lead time (in days) required for In-house production, GR processing, Delivery time. These days are considered during the MRP run
- You can maintain Safety stock in order to satisfy unexpectedly high demand in the coverage period.

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

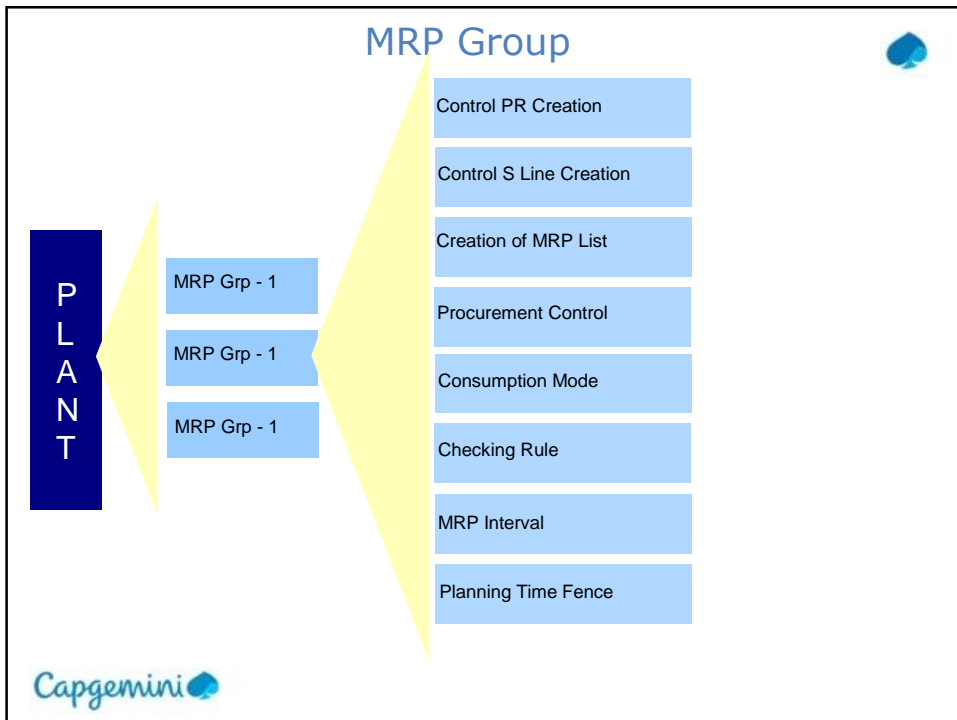
Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



- The MRP group contains all the materials from the point of view of MRP for assigning special control parameters for the total planning run. MRP Group are Plant Specific
- MRP Group controls whether the Purchase Requisition or Planned order needs to be created for the total Planning horizon.
- It also controls whether Schedule lines should be created in the Planning horizon or not.
- It controls whether a MRP list should be created or not.

MRP Group



SPRO → Materials Management → Consumption based Planning → MRP Groups

Display View "MRP Control Parameters - Material Level": Details

Plant: 1000
MRP group: 0001 In-hse prod. w/o indpt regmts (initial)

Planning run	Planning intervals
Create purchase requisition <input type="checkbox"/>	Rescheduling period <input type="text" value="0"/>
Scheduling agreements <input type="checkbox"/>	Tolerance value forward <input type="text" value="0"/>
Create MRP list <input type="checkbox"/>	Tolerance value for displace <input type="text" value="0"/>
Avail. safety stock <input type="text" value="10"/>	Planning horizon <input type="text" value="0"/>
Direct procurement/production <input type="text" value="3"/>	Planning time fence <input type="text" value="0"/>
Ord.type - prod.ord. <input type="text"/>	Roll forward period <input type="text" value="0"/>
Ord.type - proc.ord. <input type="text"/>	
Max. MRP interval <input type="text" value="0"/>	Consumption
<input type="checkbox"/> Scheduling info record/diagram	Consumption mode <input type="text"/>
<input type="checkbox"/> Firm transm. SLines	Bwd consumption per. <input type="text" value="0"/>
Issue stor.loc.sel. <input type="text"/>	Fwd consumption per. <input type="text" value="0"/>
	Adjust.per.for ind reqs <input type="text" value="0"/>
Demand management	
Planning strategy group <input type="text"/>	
Availability check	
Checking rule <input type="text"/>	

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

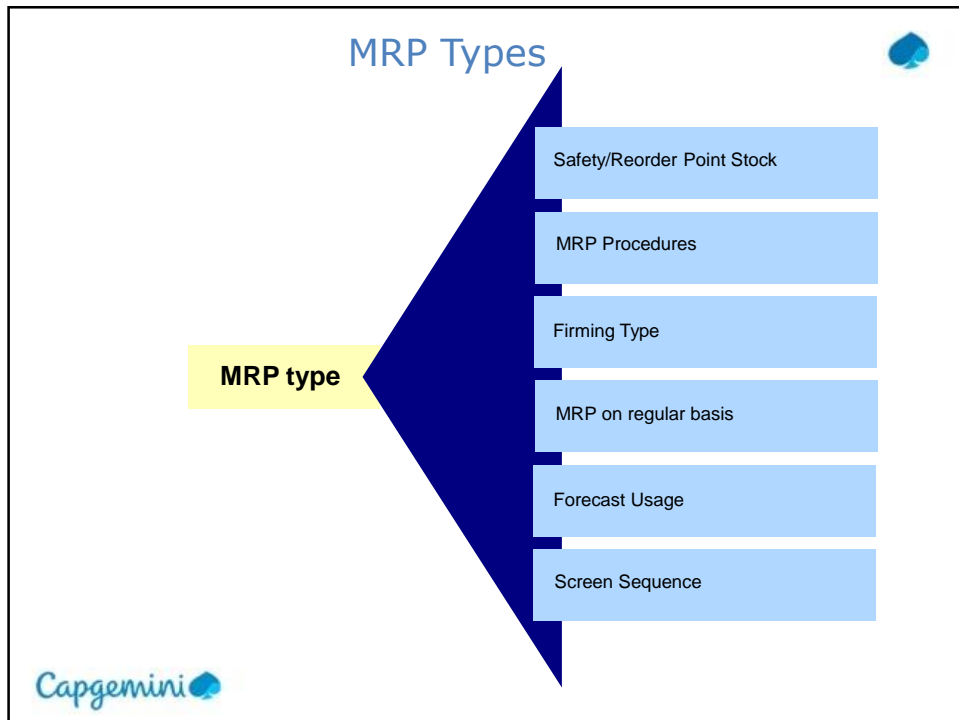
Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



- MRP Type is the key that controls the MRP procedure to be used for the planning of material
- MRP Type controls which planning parameters must or can be entered when maintaining the Material Master record
- MRP Procedure maintained in MRP Type controls the planning of Material. Example: Whether Material should be planned with Reorder based planning, MRP, Forecast based planning
- It also controls whether to consider Forecast results
- It also controls whether to calculate the Safety stock and Reorder point automatically
- It controls the screen sequence for the display of the header details in the evaluation of Planning run

MRP Type



SPRO → Materials Management → Consumption based Planning →
Master data → Check MRP Type

Display View "MRP Types": Details

MRP Type: PD MRP

MRP procedure: 0 Material requirements planning

Control parameters

Firming type: ☐

Roll forward: ☐ Do not delete firm planned orders
☐ Plan regularly

Use forecast for material requirements planning

Forecast ind.: ☒ Optional forecast

Consump.ind forecast: ☒ Unplanned consumption

MRP ind. forecast: ☒ Unplanned requirements

Reduce forecast: ☐

Automatic calculation of

☐ Safety stock

☐ Reorder point

Additional control parameters

Screen sequence: 001

Additional selection parameters

Planning method: ☐

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

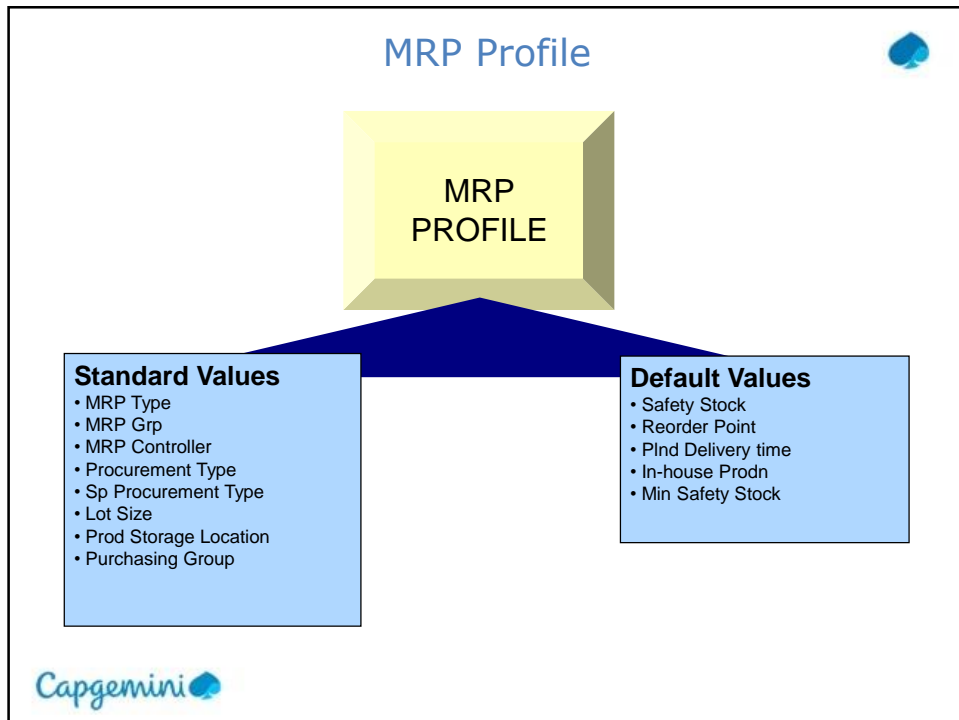
Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



- MRP Profile helps in storing MRP parameters that do not depend on the Material Master. The information contained in the Profile is standard information which is needed again and again when maintaining Material Master records. Thus MRP Profiles simplifies the maintenance of administration data
- MRP Profile also help to make a key fields write protected that by controlling the authorization issues. The values in write protected fields need to maintained in the MRP Profile
- MRP Profile also helps in the listing the Material Master records that use the same MRP Profile.

MRP Profile



Create MRP Profile: Selection Screen

Data screen 1 | Data screen 2

Z111 Profile description MRP Profile for Training

Checkboxes for MRP Profile

Selected fields will be copied to the profile Write-protected in matl maintenance Only default value in matl maintenance

Field	Fixed val.	Default value
MRP Type	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MRP controller	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ABC indicator	<input type="checkbox"/>	<input type="checkbox"/>
Planned delivery time in days	<input type="checkbox"/>	<input type="checkbox"/>
In-house production time	<input type="checkbox"/>	<input type="checkbox"/>
Scheduling Margin Key for Floa	<input type="checkbox"/>	<input type="checkbox"/>
Dependent requirements ind. fo	<input type="checkbox"/>	<input type="checkbox"/>
Indicator for Requirements Gro	<input type="checkbox"/>	<input type="checkbox"/>
Safety stock	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reorder Point	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lot size (materials planning)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Create MRP Profile: Data Screen 1

Selection screen | Data screen 2

Basic data

MRP Type PD
MRP controller 001
Safety stock 10
Reorder Point 100

Lot size data

Lot size E1

Transaction Code:
MMD1: Create
MMD2: Change
MMD6: Change
MMD3: Display
MMD7: Usage



When an existing MRP Profile is changed, system creates a background job to update all the Material Masters which are already created with the changed profile.

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

Reorder based Planning

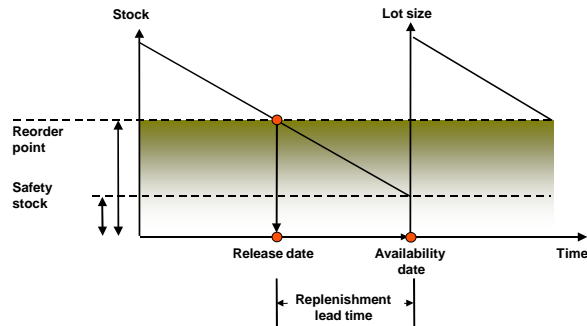
Forecast based Planning

Time phased Planning

Lot Size

Planning Run

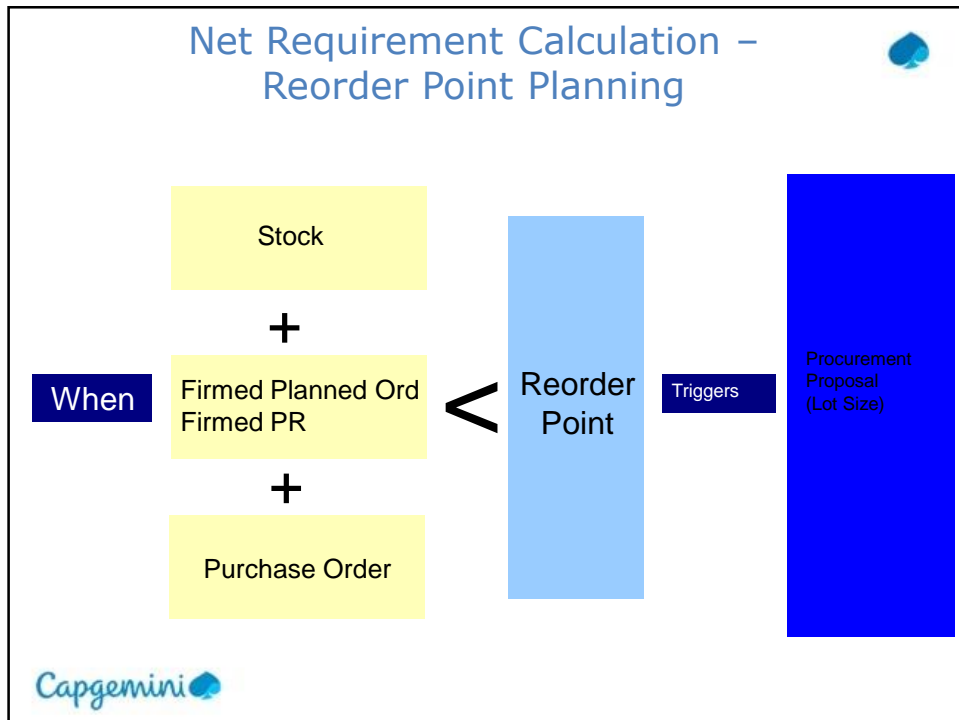
Reorder Point Planning



- System keeps a continuous check on the stock level. Whenever a material is issued from the warehouse, system checks for the level of stock. If the Total Stock falls below the reorder level, system generates an entry in the planning file for the next MRP run
- In case of return material, the system checks whether the available warehouse stock exceeds the reorder level again. If this is the case, an entry is made in the planning file, which acts as an indicator for the planning run to delete any unnecessary procurement proposals

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- Once the requirement is triggered, system calculates the Procurement quantity by taking into consideration the “Lot size” if any maintained in the Material Master
- For Reorder Point Planning the system supports the “Fixed Lot size” and “Replenish up to maximum stock level” lot sizing procedure
- “Optimum lot-sizing procedures” can also be used for Reorder Point Planning. In this case, you must calculate future requirements using the forecasting functions. The forecast values are then interpreted as requirements
- MRP Types controls whether the Reorder Point needs to be determined automatically



- In reorder point planning, the available warehouse stock is a result of the following calculation: Warehouse stock + open purchase order quantity (purchase orders, firmed planned orders, firmed purchase requisitions)
- There will be a material shortage if the available warehouse stock is less than the reorder point
- The shortage quantity is the difference between the reorder point and the available warehouse stock. The purchase order quantity is created from the lot-sizing procedure in the material master record

Forward Scheduling for External Procurement



- When the stock falls the reorder point, procurement start immediately. Forward scheduling means defining the date on which the material will be available from the date of Planning run
- Forward Scheduling starts from the current date. It specifies the order start date for Planned orders and PR release date
- Forward Scheduling considers Purchasing Department processing time, Goods receipt processing time
- Purchasing Department processing time, is the time available for buyer to convert a Purchase Requisition to Purchase Order
- Goods receipt processing time, is the time between the receipt of material and the addition to stock

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Material Master

MRP Group

MRP Type

MRP Profile

Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run

Forecast based Planning



- This planning method takes the historical values into consideration to generate the requirements for the future. The forecast values are determined via an integrated program. In contrary to re-order point planning strategy, the value generated by forecast based planning forms a part of the planning profile during the MRP run.
- Calculation for the future requirements is carried at regular interval. This results in continual adaptation to suit the current consumption requirements. The change in the forecast requirements is based on the average daily consumption and not on actual consumption.

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- MRP Type controls the Forecast based Planning
- In Forecast Planning, system copies the requirements quantities that it has forecast in the requirements planning run and **calculates net requirements**. During this calculation, every period is checked to make sure that the forecast requirements are covered either by available stock, by planned receipts from purchasing or by production. If a material shortage occurs, the system generates a procurement proposal
- The system calculates the **quantity** recorded in the procurement proposal according to the **lot-sizing procedure** that you specified in the material master. Depending on the lot-sizing procedure, several forecast requirements are grouped together into one lot
- For every procurement proposal, the system calculates the date on which it must be converted into a purchase order or a production order

Forecast based Planning



- The system calculates the average daily requirement is calculated using formula:

$$\frac{\text{Forecast requirement}}{\text{Number of days in forecast period}}$$

- Reduction in forecast requirements is done by formula :

$$\text{Number of workdays worked} \times \text{av. Daily requirements}$$

Agenda



Material Master

MRP Group

MRP Type

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Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run

Time Phased Planning



This type of planning is useful in case when the delivery of a material is fixed on a particular day of a week.

The planning date for the material is pre-set during creation of material record and it is re-set after every procurement.

This type of planning does not provide the flexibility of automatically varying the planned purchase date with variation in the requirement. Manual change is required to change the planned purchase element (purchase requirement etc.)

Time Phased Planning



Settings

- Maintain MRP Type (R1, R2) in the Material Master MRP – 1 View
- Maintain Planning Cycle in the Material Master MRP – 1 View. Planning cycle is a Planning calendar which determines the day on which the material is planned and ordered
- Entered "lot-for-lot order quantity" as the MRP lot size (*MRP 1* view). Optimum Lot size can also be used for Time phased planning

Process Flow

- In Time Phased Planning, system checks the MRP data in the planning file to calculate the actual planning for the material. The Planning date is calculated using the Planning cycle
- The system determines the **Time Interval** taking into account all the requirements up to next MRP date including the delivery time. The Net requirement for the system is minus of stock and firm receipts.



Formula followed by the system to calculate Time Phased Planning:

Actual Requirements = Forecast Requirements – Other requirements in the time interval + Safety Stock.

Time Interval = Planning Cycle + Purchase Processing Time + Planned Delivery Time + Goods Receipt Processing Time.

Time-Phased Planning Process with delivery cycle



- If there exists a limitation on the delivery date(a particular day of week or month) of material by the Vendor, then SAP provides integration of *Time-Phased Planning with Delivery Cycle*. This is an important functionality of SAP Retail System. Here the system proposes the delivery cycle from vendor sub-range while creation of material master
- {Vendor Sub-range is the list of material supplied by a vendor, that can be grouped together for logistic point of view}
- Prerequisite: In MRP-2 view of material Master, planning calendar is defined as delivery cycle in addition to the planning cycle

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Example for Time Phased Planning Process with delivery cycle:

- If you start the planning run, the system uses the MRP date recorded in the planning file to check which materials are actually to be planned. The system calculates requirements independently from that, whether you have entered a delivery cycle or not
- The system uses the time interval between the MRP date and the availability date for the next MRP date as a basis for calculating the requirements quantity. It also takes for granted that the vendor requires at least the planned delivery time the planned delivery time before he can deliver his goods
- This means the following (if no goods receipt processing time has been maintained):
 - If the MRP date is a Monday, the interval used for the calculation is from Monday to Friday, as the Friday is the goods receipt date of the next MRP date (Tuesday)
 - If the MRP date is a Tuesday, the interval used for the calculation is from Tuesday to the Wednesday of the following week, as the Wednesday is the goods receipt date of the next MRP date (Monday)
 - The material's stocks (stock plus firmed receipts in the interval) must cover this interval. If a material shortage occurs, the system creates a new procurement proposal
 - The system interprets the planned delivery time as the 'minimum delivery time'. That is, it takes at least this number of days for the goods to be delivered from the time that the order was placed. Thus, the system recognizes in the example above that if the planning run is carried out on Tuesday, the material will not be delivered until Friday and not on Wednesday

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

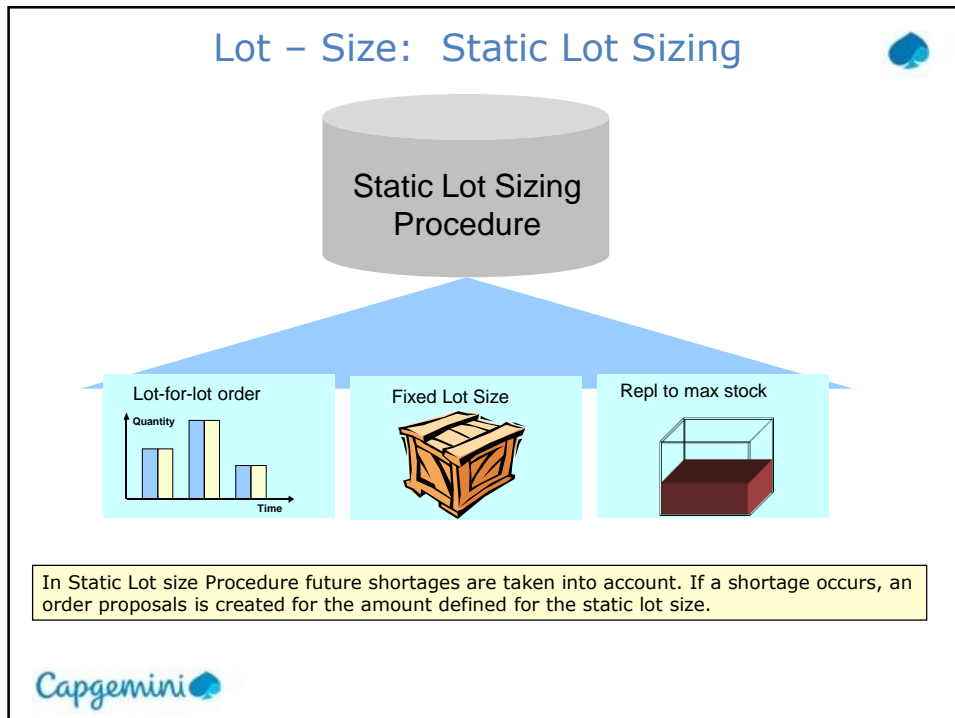
Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



Lot-for-lot-order:

- The system uses the exact shortage quantity (requirement minus available stock) as the order quantity in the case of a material shortage.
- The indicator “EX” is maintained in the Material Master – MRP View 1 for Lot for lot order.

Fixed Lot Size:

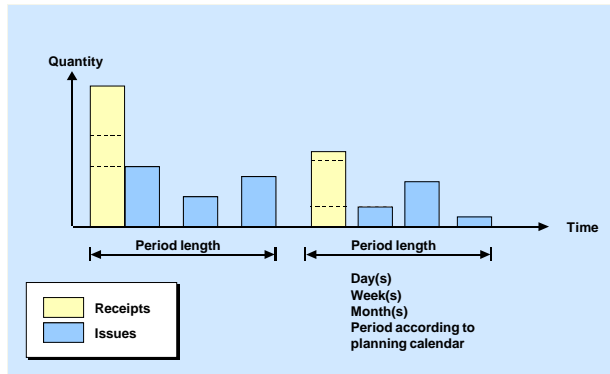
- This is useful when material is delivered in a fixed lot size. Example: Pallets of a certain quantity, tanks of a certain size
- When planning using fixed lot size, the system will use the fixed order quantity recorded in the material master for the lot-size calculation if a material shortage exists. If the fixed lot size is not sufficient to balance out the material shortage, then several lots are planned for the same date until the material shortage is eliminated

- The indicator “FX” is maintained in the Material Master – MRP View 1 for Fixed Lot Size

Replenishment up to Maximum Stock Limit:

- Replenishment up to Maximum Stock Limit is used to fill the stock up to highest possible level
- The system creates an order quantity to bring the stock level up to the maximum stock level. If, however, the requirements for one day are greater than the maximum stock level the system creates an order quantity for the required quantity. In this case, a balanced stock/requirements situation is given higher priority than the lot-sizing procedure
- The indicator “HB” is maintained in the Material Master – MRP View 1 for Replenishment up to Maximum Stock Limit

Periodic Lot size Procedure



The system groups the requirement within the time interval together to form a Lot.
Example: for days, weeks, months...
Splitting and overlapping is also possible with Periodic Lot size procedure.



In periodic lot-sizing procedures, the system groups several requirement quantities within a time interval together to form a lot. The period lengths can be either days, weeks, months or a period of flexible length equal to posting periods as well as freely definable periods according to a planning calendar.

- Daily lot size: All requirement quantities that fall within a day or within a specific number of days (which you have determined) are grouped together to form a lot
- Weekly lot size: All requirement quantities that fall within a week or within a specific number of weeks (which you have determined) are grouped together to form a lot
- Monthly lot size: All requirement quantities that fall within a month or within a specific number of months (which you have determined) are grouped together to form a lot
- Lot size according to flexible period length: All requirement quantities that fall within one flexible period length or within a specific number of flexible period lengths (which you have determined) are grouped together to form a lot. You determine the period lengths according to the accounting periods. This lot size is also called period lot size

Optimum Lot Size Procedure



- The aim of optimum lot-sizing procedure is to group shortages together in such a way that costs are minimized. These costs include lot size independent costs (setup or order costs) and storage costs

Example:

If you order often, you will have low storage costs but high order costs due to the high number of orders. If you only seldom place orders then you will find that your order costs remain very low, but your storage costs will be very high since warehouse stock must be large enough to cover requirements for a much longer period

- In Optimum Lot Size following procedures are available:
 - Part Period Balancing
 - Least Unit Cost Procedure
 - Dynamic Lot Size Creation
 - Groff Reorder Procedure

Lot Size – Other Key features



Lot Size with Splitting & Overlapping:

We can determine whether a fixed or period lot size is divided into partial quantities and that these are to be produced at regular intervals that overlap each other.

This lot-sizing procedure is very useful if the actual requirement quantities that occur in the period or the quantity to be produced for a certain date are very large but production is only laid out for smaller quantities.

Short Term & Long Term Lot Size

Short-term and a Long-term lot size can be maintained for a material. This results in splitting up the time axis for the material requirements planning into a Short-term and a Long-term area and thus carry out the procurement quantity calculation using two different lot-sizing procedures.

Lot-for-lot-order remaining Quantity

It helps in determining the lot-sizing procedure that the last lot of the planning run is always planned exactly. This prevents the procurement quantities exceeding the requirement quantities and thereby avoids high scrap cost.

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

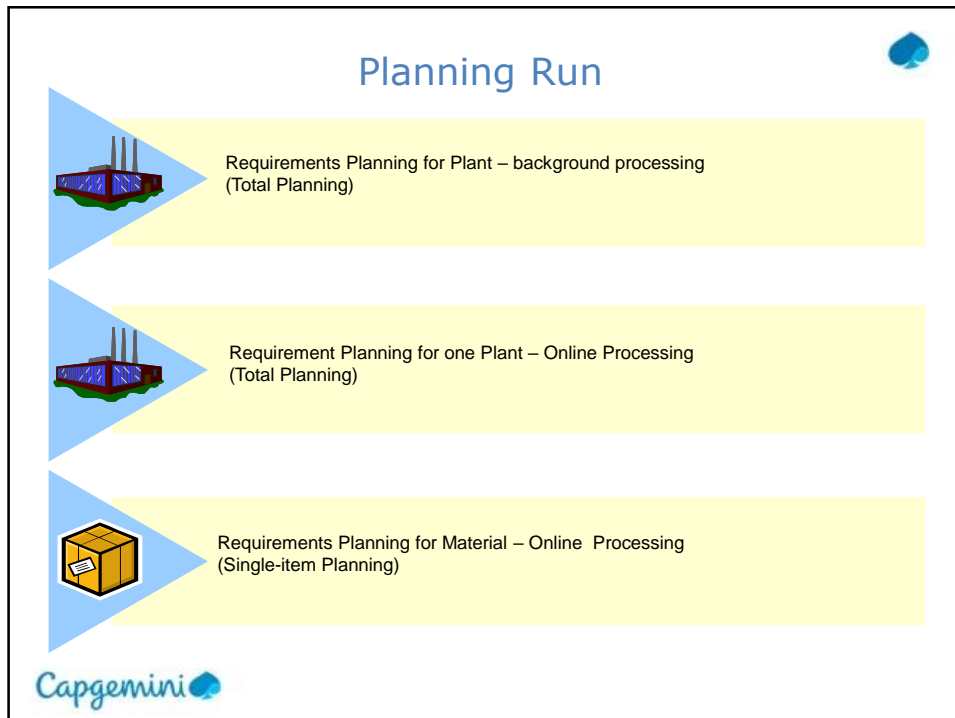
Reorder based Planning

Forecast based Planning

Time phased Planning

Lot Size

Planning Run



- When Planning is run as a total planning in one Plant, all the material in that Plant that are relevant for Planning are considered for Planning. It includes BOM explosion for BOM Materials
- The total planning run can be carried out online or in the background processing mode. If Planning needs to run for several plants and/or MRP areas, use the scope of planning function. Scope of planning is defined in Customizing, by specifying its plant and MRP area
- Planning run can also be executed for a single material as Single item Planning. In this case, the planning run is carried out for one particular material either single or multi-level. In single-level, single-item planning, the system only plans the BOM level of the selected material. In multi-level, single-item planning, the system plans the level of the selected material plus all the lower BOM levels

Planning Run – Online Plant



MRP Run

Scope of planning
Plant

MRP control parameters

Processing key	<input type="text" value="NETCH"/>	Net change for total horizon
Create purchase req.	<input type="text" value="2"/>	Purchase requisitions in opening period
Schedule lines	<input type="text" value="3"/>	Schedule lines
Create MRP list	<input type="text" value="1"/>	MRP list
Planning mode	<input type="text" value="1"/>	Adapt planning data (normal mode)
Scheduling	<input type="text" value="1"/>	Basic dates will be determined for plan
Planning date	<input type="text" value="13.08.2015"/>	

Process control parameters

☐ Parallel processing
☐ Display material list

User exit: select materials for planning

User exit key
User exit parameter

This field provides the option to club more than 1 MRP area or Plant for a Planning run

This field provides the option of controlling the selection of material for a planning run. With the use of User Exit a certain group of materials can be selected for MRP run.

This field provides additional flexibility in selection of materials for the planning run. For example, the materials to be considered can be sort on the basis of the MRP Controller.

Planning Run – Single Item



MRP Run	
Scope of planning <input type="text"/>	
Plant <input type="text"/>	
MRP control parameters	
Processing key	NETCH Net change for total horizon
Create purchase req.	2 Purchase requisitions in opening period
Schedule lines	5 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	13.08.2015
Process control parameters	
<input type="checkbox"/> Parallel processing	
<input type="checkbox"/> Display material list	
User exit: select materials for planning	
User exit key	<input type="text"/>
User exit parameter	<input type="text"/>

Flexibility of MRP for a material is controlled from this field. To make the Net Change Planning firm or changeable is controlled here.

The purchase element (Planned Order or Purchase Requisition) to be generated from MRP run is controlled from this field

Creation of Delivery Schedules to the vendor after MRP run, is controlled by this field. There exist some other dependencies for creation of delivery schedules.

This field controls the treatment for the procurement proposals from last planning run. Decision that whether system reactivates the un-firmed procurement proposals from last run or not.

Planning File



- The planning file contains entries for all the materials in a plant relevant to planning, provided that MRP is activated for the plant
- The planning file controls the planning run and the scope of the planning
- When a change relevant to planning (for example, creation of a purchase order) occurs, a change indicator is set in the planning file for the respective entry (file entry NETCH). When a change relevant to planning occurs within the planning horizon, another change indicator is set (file entry NETPL)

Changes relevant to planning can be:

- Changes involving stocks, provided they change the stock/requirements situation of the material
- The addition of purchase requisitions, purchase orders, planned orders, sales requirements, forecast requirements, dependent requirements, or reservations
- Changes to fields relevant to planning of these goods receipts or issues, or of the material master record. The deletion of goods receipts or goods issues

Planning File



Create Planning File Entry

Material ☒

MRP Area

Plant

Planning file entry

☐ Net change planning

☐ Ping file entry NETPL

☐ Reset ord.props

☐ Re-explode BOM

Planning date

This check box is relevant when a material needs to be considered for net change planning run.

For considering the material in short term planning horizon

It checks the relevance of procurement elements from last planning run in fresh planning run.

Agenda



Material Master

MRP Group

MRP Type

MRP Profile

Reorder based Planning

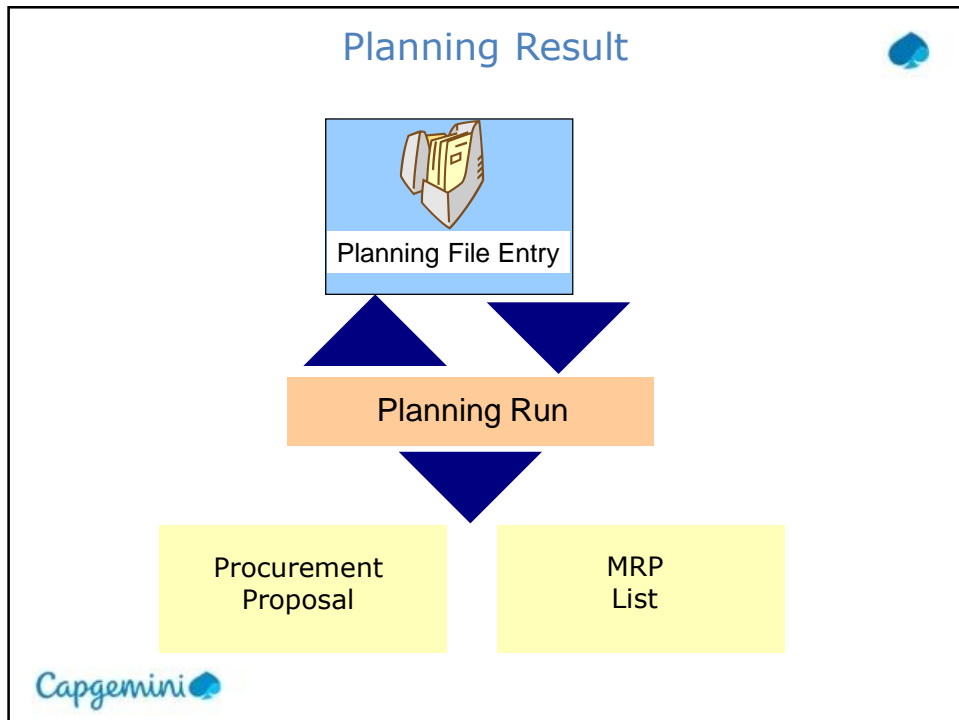
Forecast based Planning

Time phased Planning

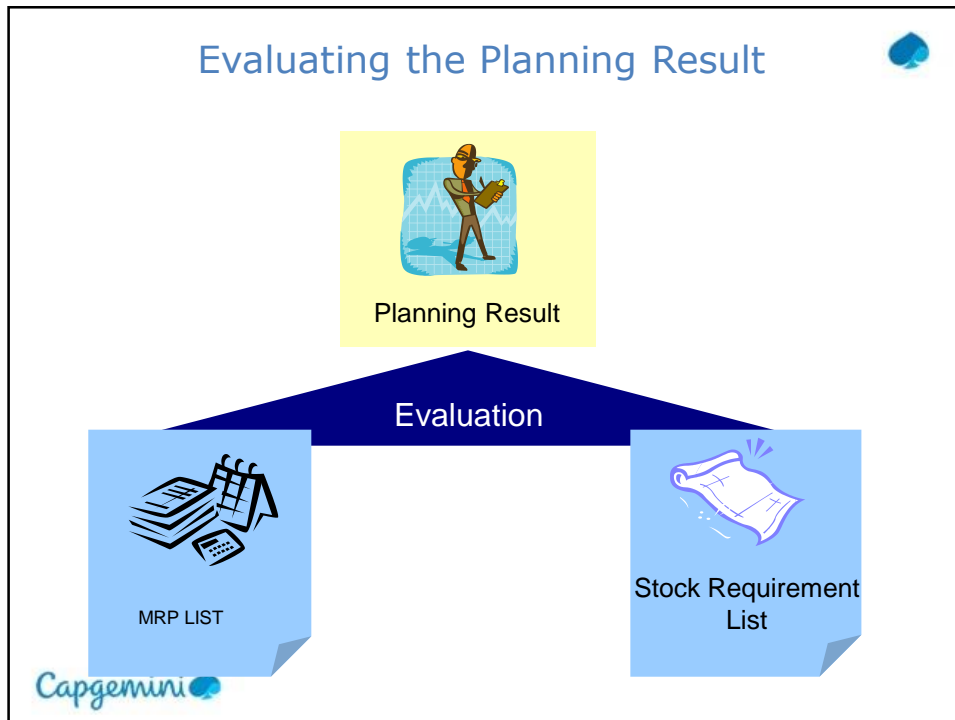
Lot Size

Planning Run

Planning Evaluation



- The Planning Run creates update the MRP List and also generates Procurement Proposal
- Procurement Proposal can be a Planned order, Purchase Requisition or a Schedule Line. This is controlled by the Creation Indicator in the Planning Run
- Requirements planning can be carried out for various numbers of materials. The planning run type controls the scope of the materials to be planned



MRP List:

MRP List is created according to the settings in the Creation Indicator. These lists contain the planning result for the material. The MRP list always displays the stock/requirements situation at the time of the last planning run and it also provides a work basis for the MRP controller. Changes that are made after the planning date are not taken into consideration, so the list is static.

MRP lists are stored in the system until they are either deleted manually or replaced by new lists from a subsequent planning run.

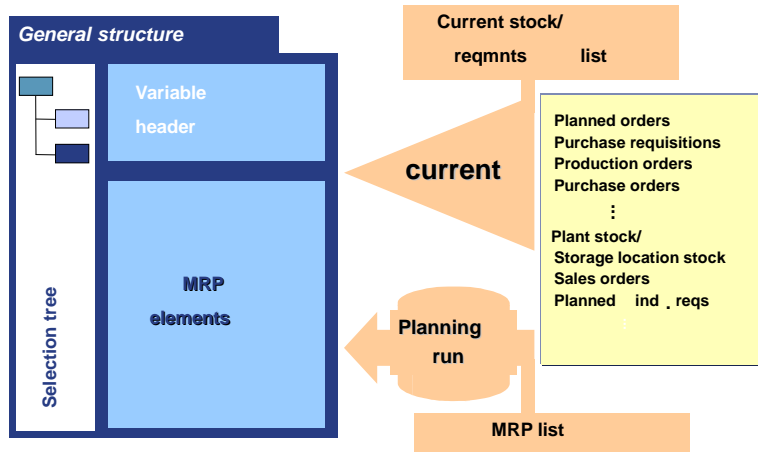
Stock Requirement List:

The Stock Requirement List always displays the most up to date stock and requirement situation.

The main difference between the MRP list and the stock/requirements list is that each time the stock/requirements list is called up, the system selects the various MRP elements and displays the most up-to-date situation. You thus always see the current availability situation of the material in the stock/requirements list. Changes that are made after the planning date are displayed directly, so the list is therefore dynamic.

Stock/requirements lists are not saved in a fixed state in the system, but are subject to change and only exist in the working memory.

MRP List & Stock Requirement List



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- The basic structure of both lists is the same:
 - Links (optional) are in the form of a tree in the MRP controller's work list
 - At the top of the list is the header with the material number. The header details display more information
 - The list itself contains the individual MRP elements and the corresponding available quantities
- The current stock/requirements list is a dynamic list: It shows the present stock, requirements and receipts situation. Changes become obvious as soon as you call the current stock/requirements list, or choose *Refresh* to read the elements from the database in the display of the stock/requirements list
- The MRP lists shows the result of the most recent planning run and is therefore static: Changes made after the planning run are not shown. You can decide in the planning run, whether a MRP list is to be created

Stock Requirement List - Individual



Stock/Requirements List as of 16:36 hrs

Show Overview Tree

Material: 000-100 Casings

MRP area: 1000 Hamburg

Plant: 1000 MRP type: PD Material Type: BALB Unit: PC

A. Date	MRP ...	MRP element data	Reschedul...	E. Receipt/Reqmt	Available Qty	St...
13.08.2015	Stock				1,257	
07.05.2010	OrdRes	P-110			10~	1,247 0001
24.10.2014	PurRqs	0010016311/00010 *	20	100		1,347
24.10.2014	PurRqs	0010016312/00010 *	20	100		1,447
24.10.2014	PurRqs	0010016313/00010 *	20	100		1,547
08.05.2015	PchOrd	4500018173/00010	20	50		1,597
19.05.2015	OrdRes	T-XS			1~	1,596 0001
17.07.2015	OrdRes	T-COP			100~	1,496 0001

Transaction Code
MD04: Stk Req List
MD07: Stk Req List Coll
MD05: MRP List
MD06: MRP List Coll



- Stock Requirement List – Individual displays the requirement list for a material in a Plant
- Date reflects when a Material has been received or when a Material requirement exist
- MRP Element indicates the type of document. Example: Order stands for Sale Order, Plord stands for Planned Order.
- Each document can be also displayed directly from the Stock Requirement list
- Vendor and Customer for Purchasing documents and Sales documents can also be displayed

Stock Requirement List - Collective

Stock/Requirements List: Material List

Selected Stock/Requirements Lists | Define Traffic Light | Exception Groups

Plant: Hamburg Plant

Light: Material	MRP Area	Material Description	A MRP	Stocks	1st R...	2nd R	1	2	3	4	5	6	7	8	Plant stock	B...	Sal
2459	1000	Adamanturndiskeleton	001	999.9	1.0	1.0						1			0	Oz	
5111	1000	Training	001	999.9	1.0	1.0			1						0	EA	
24262	1000	Test-MRP	001	999.9	1.0	1.0						1			0	EA	
24276	1000	test	001	999.9	1.0	1.0						1			0	EA	
24275	1000	test	001	999.9	1.0	1.0						1			0	EA	
100-250	1000	Hexagon Nut 1.5" Acme Thread	101	999.9	1.0	1.0						1	1		0	PC	
100-260	1000	Clamp 1.5" Sanclamp	101	999.9	1.0	1.0						1	1		0	PC	
100-261	1000	Gasket 1.5" Sanclamp neoprene white	101	999.9	1.0	1.0						1	1		0	PC	
APRICOT JAM	1000	Apricot Jam for Pastry Production	000	999.9	1.0	1.0			1			1			0.000	BRL	
AS-20	1000	Basic pallet	001	999.9	1.0	1.0						1	1		0	PC	
AS-30	1000	Intermediate layer	001	999.9	1.0	1.0						1	1		0	PC	
AS-40	1000	Pallet-Id	001	999.9	1.0	1.0						1	1		0	PC	
AS-600	1000	Primer	001	999.9	1.0	1.0						1	1		0	KG	
AS-700	1000	Primer Coating	001	999.9	1.0	1.0						1	1		0	KG	
AS-800	1000	Clear Coat	001	999.9	1.0	1.0						1	1		0	KG	
GT2-CLASS-01	1000	Hexagon head screw M10	101	999.9	1.0	1.0						1	1		0	PC	
GT2-CLASS-01	1000	Hexagon head screw M10	101	999.9	1.0	1.0						1	1		0	PC	
P-410	1000	Pump standard IDESNORM 100-410	001	999.9	1.0	1.0						1			0	PC	
P-23005	1000	Hexagon head screw M10	SC1	999.9	1.0	1.0						1			0	PC	
T-A0301	1000	Diskette Drive, 3.5", HD	101	999.9	1.0	1.0						1	1		0	PC	
T-A0302	1000	Diskette Drive, 3.5", HD	101	999.9	1.0	1.0						1	1		0	PC	
T-A0303	1000	Diskette Drive, 3.5", HD	101	999.9	1.0	1.0						1	1		0	PC	
T-A0304	1000	Diskette Drive, 3.5", HD	101	999.9	1.0	1.0						1	1		0	PC	
T-A0305	1000	Diskette Drive, 3.5", HD	101	999.9	1.0	1.0						1	1		0	PC	
T-A0306	1000	Diskette Drive, 3.5", HD	101	999.9	1.0	1.0						1	1		0	PC	

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- Collective List can be searched at MRP Controller or Product Grp level. The search can also be further limited at MRP date, Processing date, Days supplies, Exception group, Processing indicator & Material data
- The selection criteria for collective access in the MRP lists are not the same as those in the current stock/requirements lists. Here, for example, the MRP or processing date and/or the processing indicator for the selection are available
- Requirement List can be display for individual Material also
- Traffic Lights displays the processing priority. Materials with Red Traffic light have the highest priority and with green has the lowest priority
- Range of Coverage: Materials with the highest days supply are those with high stock level

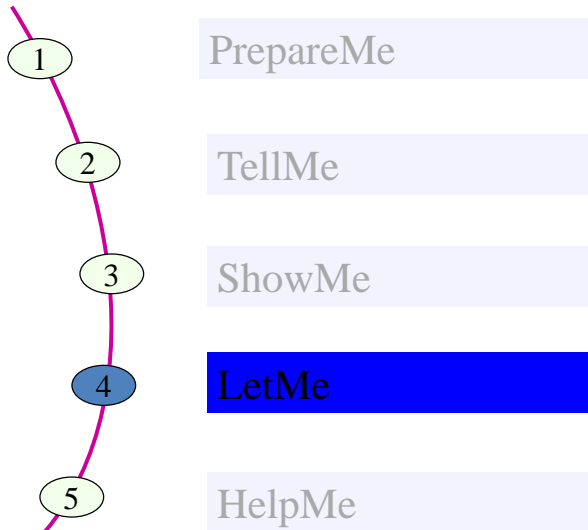
Exception Message



- Exception Message indicate:
 - New order proposals created by MRP
 - Dates in the past (start date, finish date or opening date)
 - Problems during BOM explosion & Scheduling
- Exception Message can be customized for
 - Determining which exception message to be displayed if in the MRP List
 - several exception messages are created
 - Grouping of several exception message

- Exception messages depend on the procedure and indicate exceptional situations that have to be considered (for example, start date in the past, stock level falling below safety stock)
- Exception messages are used to control the planning results. The MRP controller is able to select materials from the planning result that have to be processed manually

Consumption Based Planning





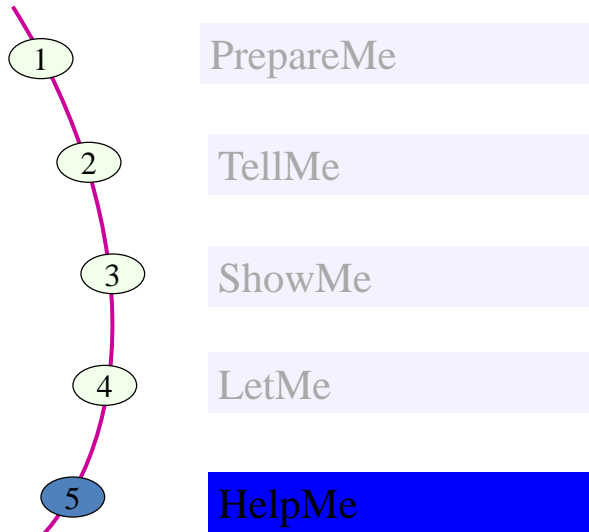
- Identify and maintain MRP relevant fields in Material Master MRP View - 1
- How can a planning file entry be displayed?
- How can we check material/stock requirement for a plant?
- At what level a re-order point is determined?
- How can we carry out Single-item planning run?
- How can we convert a Purchase Requisition into a Purchase Order?
- What is the role of MRP controller?

Let Me



- What is the relevance of Lot- size?
- Where do we specify the minimum and maximum lot size?
- Where do we specify type of procurement element to be generated by a MRP run?
- Is it possible to control the selection of old procurement proposals in a planning run? If yes, then how?

Consumption Based Planning



Additional Info



- Lot size can be restricted by defining limiting values (minimum lot size & maximum lot size) in the Material Master – MRP 1 View. During lot-size calculation, the system takes into account these limiting values. That is, the lot size is either rounded up to the minimum lot size, or the system prevents the grouping of requirements to form more than the maximum lot size
- Lot size can be restricted through Rounding Profile. The Rounding Profile helps the system to determine during lot-size calculation that the lot size quantity is a multiple of an order unit (for example, pallet size, if the material is only delivered in complete pallets)
- User Exit can be used to restrict total planning run to certain material that fulfill freely definable criteria. Example:
 - only materials planned using MRP
 - only materials for a particular MRP Controller
 - only materials procured externally or in-house

Additional Info



- In the Stock Requirement & MRP list, user – specific settings can be customized. Customer exit are also available to show additional data in the Requirement planning
- Main Transaction codes in Consumption Based Planning

Transaction	Activity
MD01	Carry out total planning online
MD03	Carry out single-item, single-level planning
MDBT	Carry out total planning in background mode
MD05	Display MRP list
MD06	Access collective display of MRP list
MDLD	Print MRP list

Additional Info



Transaction	Activity
MD04	Display current Stock Requirement List
MD07	Display collective display of current stock/requirements list
MD11	Create planned order
MD12	Change planned order
MD13	Display planned order (individual)
MD16	Access planned order (collective display)
MD14	Convert planned order to purchase requisition (individual conversion)
MD15	Convert planned order to purchase requisition (collective conversion)

Additional Info



Transaction	Activity
MD20	Create planning file entry
MD21	Display planning file entry
MDAB	Set up planning file entries
MDRE	Consistency check of planning file entries



Thanks & Question ?