Levels	Planning Horizon	Level of detail	Review frequency
Business plan	3-5 Years	High Level	Once a Quarter
Sales and operations plan	Typically 6-12 months	Product group level	Once a Month
Master production scheduling	Typically 6-12 months	end product level	Once a Week
Materials Requirement Planning	Combined manufacturing and purchase lead time	Very high	Once a Week
Purchasing and Production activity control	day or shift	Very high	Daily

Levels	Purpose
Business plan	$ This plan talks about long term goals, objectives etc. $ Jointly agreed by all teams in the organization.
Sales and operations plan	$ This is a joint plan developed by Sales and Marketing team together. $ This plan details the quantities of different product groups that need to be produced in each period , resources needed for each period.
Master production scheduling	$ This plan details the plan of finished products to be made in each period. $ Used for Available-to- Promise check and to promise date of delivery to customer.
Materials Requirement Planning	$ This is a plan for production and purchase of components needed for making the items in MPS. $ his tells how much quantity is needed and when it is needed.

Purchasing and Production activity control	$ Implementation phase of Production planning and control systems.
	$ purchasing controls flow of materials from vendor to factory.
	$ production activity control plans and controls flow of work through the factory.

SOP

$ S&OP process synchronizes Supply Chain.
$ Basic Factors:
    $ Minimize costs / maximize profits
    $ Minimize inventory costs
    $ Minimize change in production runs
    $ Minimize impact on workforce
    $ Maximize utilization of plant & equipment
    $ Maximize customer service

Master Production Schedule (MPS)

$ MPS is done for individual products and it states the requirements for products that need to be produced.
$ It tells manufacturing which items need to be made on what date and how much quantity.
$ MPS drives MRP
$ MPS is the basis for making order promises
$ MPS is a priority plan for manufacturing

Available To Promise (ATP)

$ In case the material is supposed to come from a vendor or need to be manufactured, the date of scheduled receipt from manufacturing or vendor is taken for promising availability.
$ ATP is the quantity = quantity - quantity already reserved for other customer orders.
$ ATP value is not constant – it varies with time.

MRP – Materials Requirement Planning

$ Planning for materials required to produce expected output.
$ Material includes those to be procured plus created in-house.
$ Material is based on BOM - Bill Of material.

MRP vs. CBP(Consumption Based Planning)

MRP	CBP
1)Mainly followed for production items	1)Mainly followed for consumables,regular spares, office supplies etc
2)Plan is driven by finished goods requirement	2)Plan is driven by past consumption and forecast
3)MRP need a BOM	3)CBP does not need a BOM

MRP – Backward Scheduling

$ When delivery dates for finished products are known / committed, the components and raw materials need to be ordered by a particular date referred as Release Date.
$ Purchase Requisition Date = MRP date - Goods receipt processing time - Vendor lead time - Processing time for procurement

Time Fences

$ Time Fence policy defines during which period how much change in the end-product demand is allowed.

MRP

Exception Messages

$ Getting values that are outside the expected range / impossible.
$ Below safety stock
$ Needs to be corrected and re-run
$ Take Action

```
# Outputs

$ Purchase Requisitions (PR) :– items procured from suppliers
$ PRs need to be converted to Purchase Orders
$ Planned Orders need to be converted to Production Orders

# Limitations

$ It only projects how much material or capacity is required to meet the sales
forecast.
$ Cannot consider actual capacity available in shop.
$ Cannot do any optimization
$ Requires very high accuracy of data
$ Cannot replan fast enough.
$ Requires high user discipline
$ Not appropriate for all areas

# Closed Loop MRP

$ MRP is an infinite planning tool.
$ MRPs may produce plans which are not executable.
$ MRP is a process of iterative planning. This is known as Closed Loop MRP.
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Capacity Planning

At Different levels :

Resource Planning (RP)-SOP
Rough Cut Capacity Planning (RCCP)-MPS
Capacity Rqmt Planning (CRP)-MRP
Capacity Control (CC)-PAC
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Distribution Requirement Planning (DRP)

$ DRP is the process of shipment of finished goods from manufacturing locations to
end customers.
$ it is an extension of MRP logic.
$ Provides a time-based finished goods inventory replenishment plan.
$ Objectives:
    $ To improve customer service levels.
    $ To provide an accurate requirements plan.
    $ To optimize the distribution of available stock.
    $ Minimizes inventory.
$ Inputs:
    $ Gross requirement
    $ Balance on hand
    $ Target safety stock
    $ In transit
    $ Planned Shipments
$ Outputs:
    $ Which goods of what quantity to where & when
    $ Stock transport requisitions
-------------------------------------------------------------------------------------------------------
Long Term Planning (LTP)

$ evaluates different long term scenarios.
$ simulate different versions of the future demand programs
$ Focus is on critical / long lead time materials
$ ERP’s part in Long Term Planning (LTP):
    $ Long term capacity requirement planning
    $ Planning of critical / long lead time materials
    $ Help creating purchasing budget based
$ bottleneck:
    $ Supply constraints
    $ Statutory constraints
```

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$ Difference between LTP and MRP:
    $ LTP run is for a longer horizon say 1-3 years. Typical MRP run is only for
one month.
    $ There is no simulation run in MRP
    $ MRP run always uses actual BOM
    $ LTP may need separate master data from MRP.
$ LTP needs good amount of customization.
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Master Data elements

$ Mainly 4 types of data:
    $ Material Master - General Data,Sales Specific data,plant specific
data,Storage loc specific data
    $ BOM
    $ work Center:
        $ Place where activity is performed.
        $ Closely linked to ‘cost center’ of finance module
    $ Routing:
        $ Operation sequence
        $ Material moves from one work center to next
        $ Important for scheduling

$ Combination of work center and routing provides ample scope for optimizing
combinations.
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