

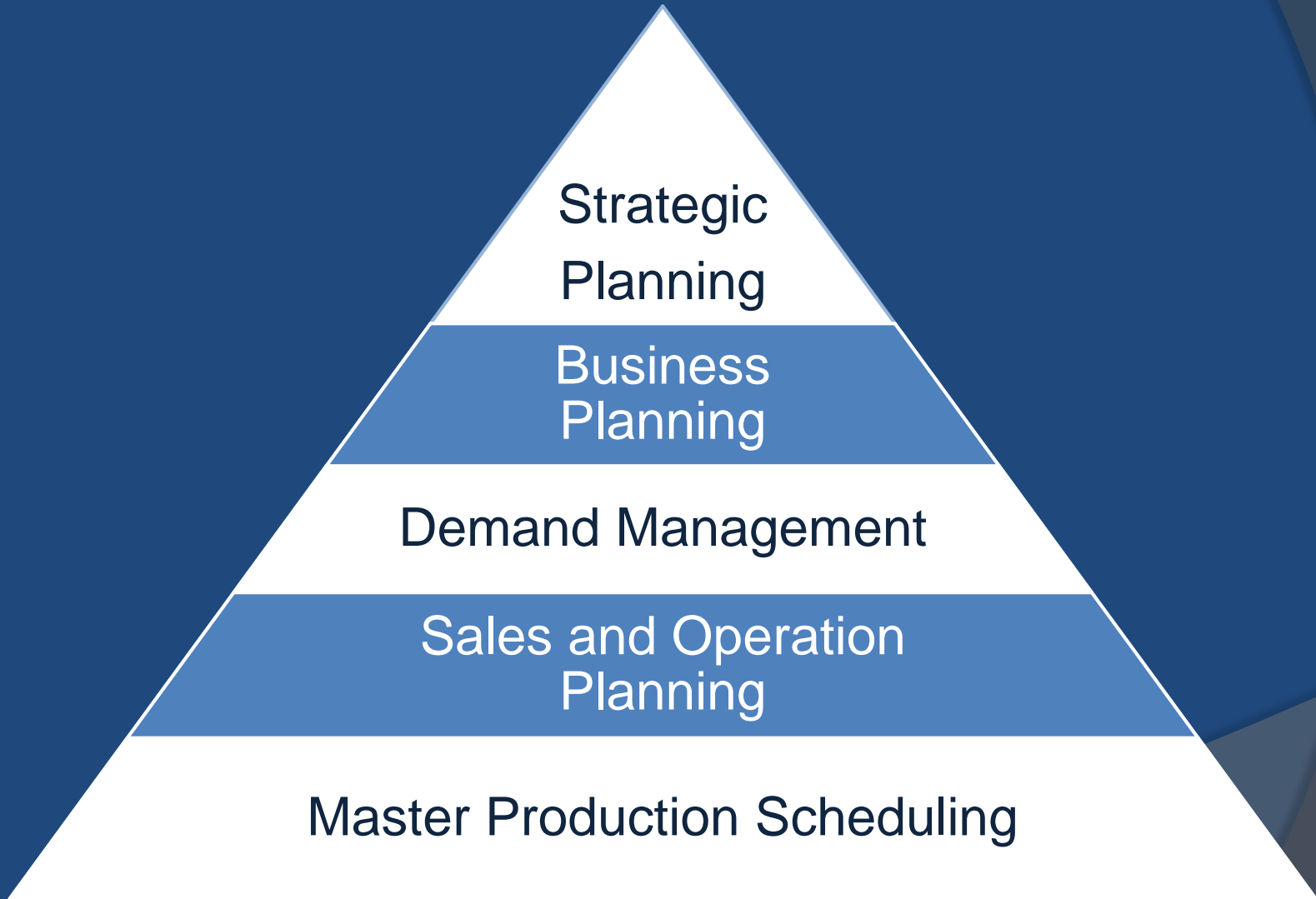
Inventory Management

Material Requirement Planning (MRP)

Nov 19,2017

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The Planning Hierarchy



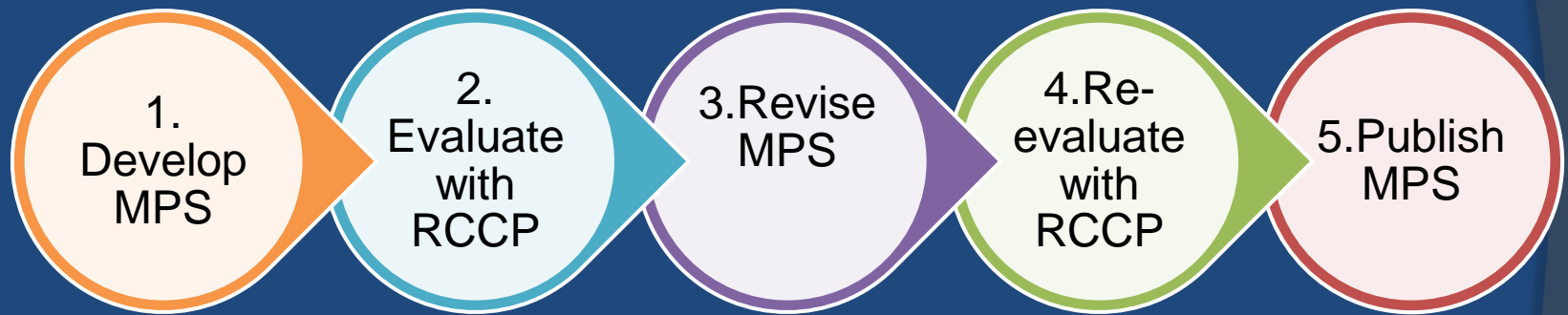
Manufacturing Environment

- Engineering to order
- Make to order
- Make to stock
- Assemble to order

Master Production Scheduling

- ⦿ The data sources for determining the MPS include:
 - Customer orders (Back orders or Forward orders)
 - Forecasts of future demand by item
 - Safety stock requirements
 - Seasonal variations
 - Internal orders from other parts of the organization.

Master Scheduling Process step



What is MRP?

MRP. (Materials Requirements Planning).

MRP is the basic process of translating a production schedule for an end product (MPS or Master Production Schedule) to a set of requirements for all of the subassemblies and parts needed to make that item.

MRP Calculations

- ⦿ There are two basic operations comprising the explosion calculus:
 - Time phasing. Requirements for lower level items must be shifted backwards by the lead time required to produce the items
 - Multiplication. A multiplicative factor must be applied when more than one subassembly is required for each higher level item.

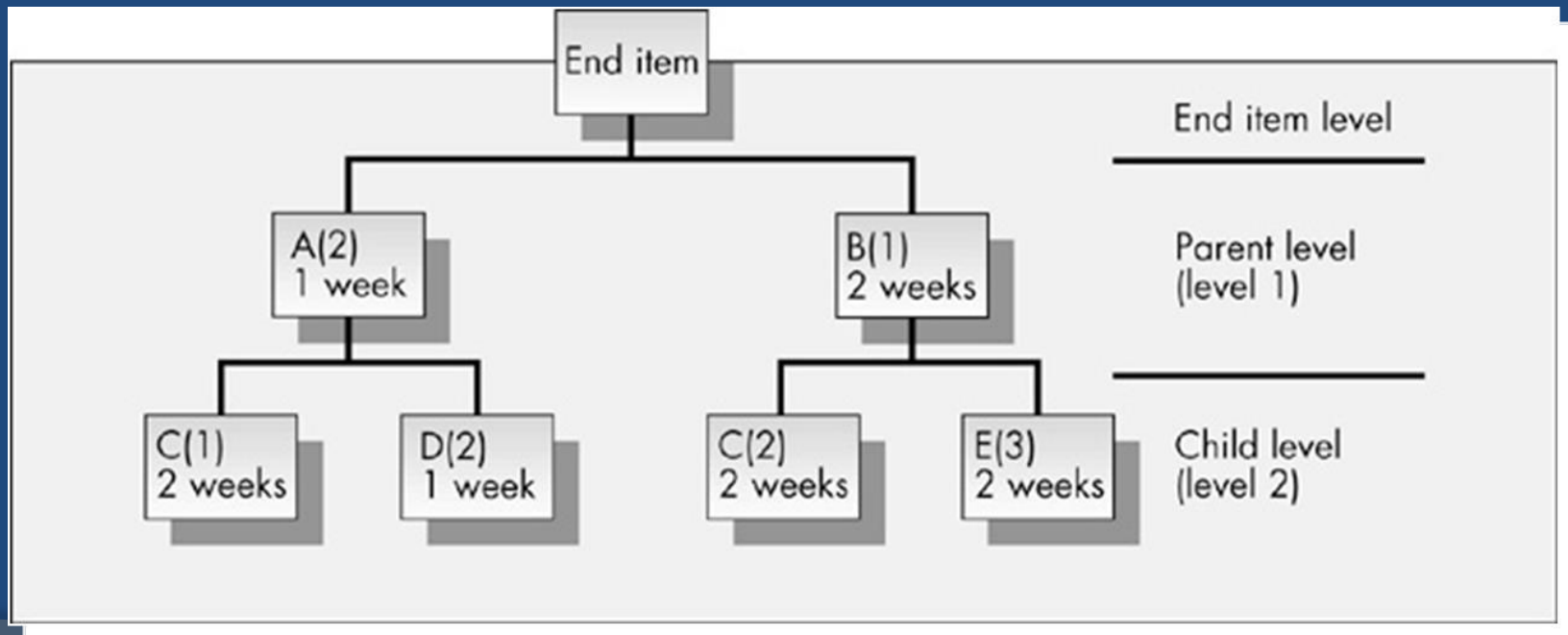
Input for MRP calculation

- ⦿ Master production schedule (MPS)
- ⦿ Inventory status (on hand, on order, GIT)
- ⦿ Planning horizon.

Input for MRP calculation

◎ BOM explosion

- In BOM explosion, the system calculates the components or assemblies required for the appropriate BOM
- The key date for evaluation of the BOM (Explosion date) is the order finish date of the planned order
- Using the lead time offset in the BOM you can displace the dependent requirements date of a specific component



Lead time

Common Lead Time Categories

- ***Manufacturing Lead Time*** : The time from when the production order is created to when the finished good is available.
- ***Setup Lead Time*** : A subcomponent of the overall manufacturing lead-time.
- ***Procurement Lead Time*** : The time from when the procurement order is placed to when it is received.
- ***Transportation Lead Time***: The time from when an item is shipped to when it is received.
- ***Goods Issue Time***: The time from when an item is released to when it is available (normally for production or for shipment)
- ***Goods Receipt Time***: The time from when the item is received to when it becomes available as inventory.
- ***Quality Inspection Lead Time*** : The time from when an item is released to when it passes quality inspection.

Lot size Procedures

◎ Example Lot sizing procedures

A. **Static lot sizing**

- Lot-to-lot order quantity
- Fixed lot size
- Replenish up to maximum stock level

B. **Periodic lot sizing**

- Daily lot size
- Weekly / Monthly lot sizing
- Flexible periods according to planning calendar

C. **Optimum lot sizing**

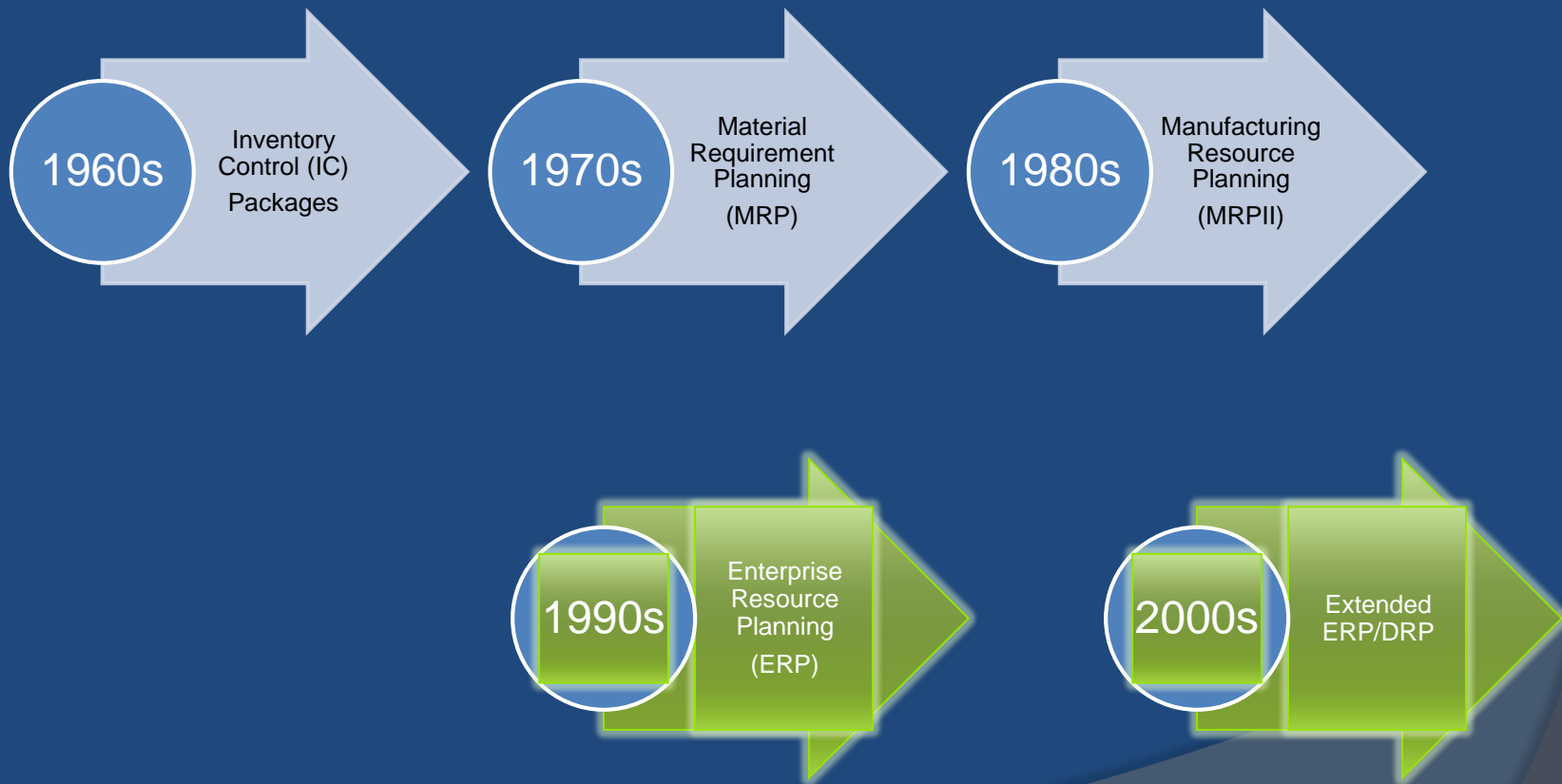
- Part period procedure
- Least unit cost procedure
- Gross reorder procedure
- Dynamic lot size creation
- Net requirements are used in lot size calculations to determine the quantities of the individual order proposals
- For period or optimum lot-sizing procedures, several net requirements are clubbed together in one order proposal.

MRP Output

- ⦿ Recommended production
- ⦿ Recommended purchasing schedule.
 1. Purchase requisition (Inside ordering horizon)
 2. Planned Order (outside ordering horizon)
 3. MRP Exceptions report
 - Pull in/Push out for Open PO
 - Cancellation request

MRP VS ERP/DRP

Evolution of Systems



Q&A
Thank you