

The background is a dark blue gradient. On the left side, there are several vertical teal lines of varying thicknesses, some of which are slightly offset from each other, creating a layered effect. At the bottom, there are several horizontal teal lines, some of which are also slightly offset, creating a sense of depth and movement. The overall aesthetic is modern and technical.

MRP AND ERP.

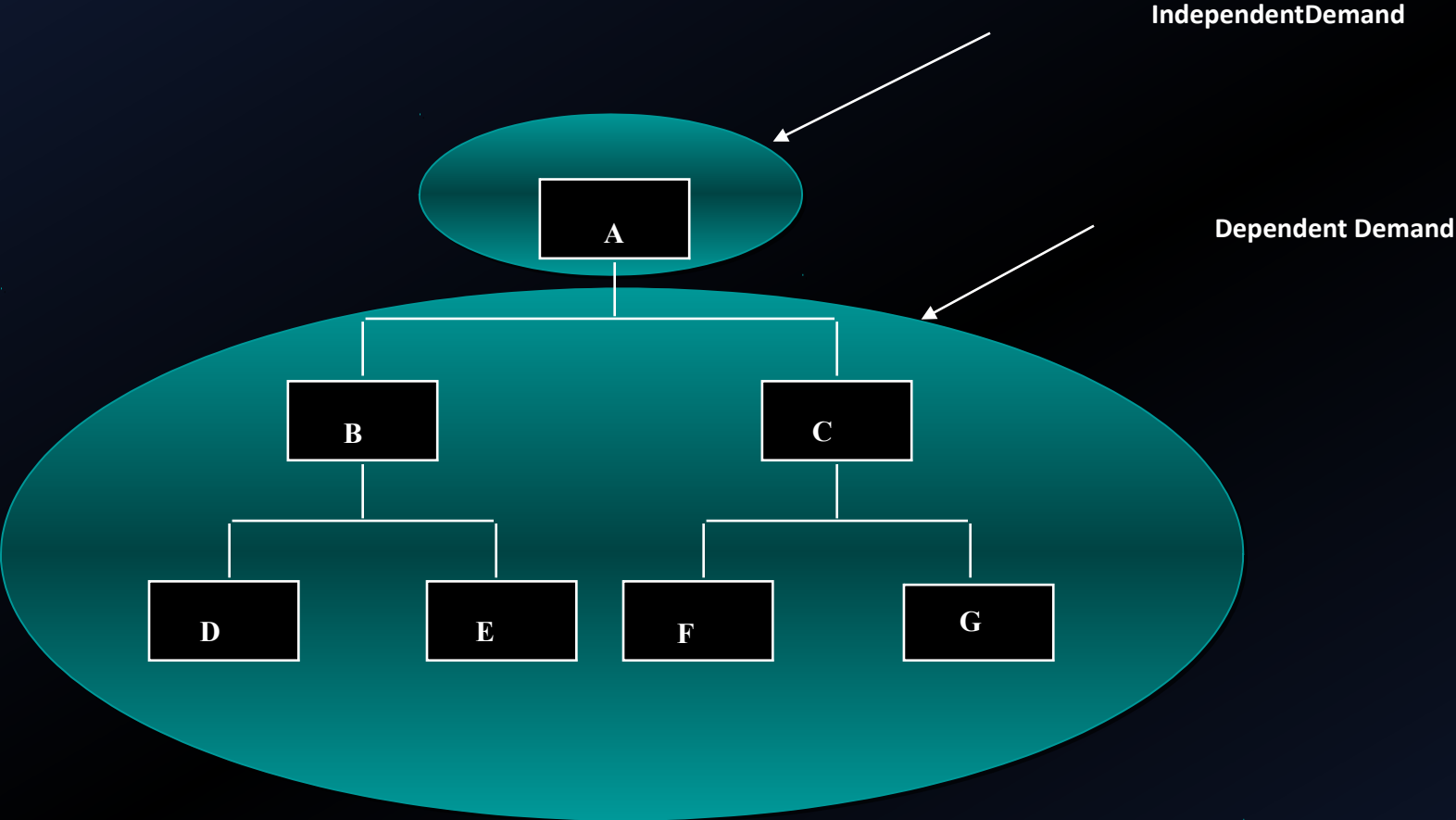
MRP AND ERP

- MRP stands for Material Requirements Planning. In more advanced applications, MRP represents Material Resources Planning.
- ERP stands for Enterprise Resources Planning. At each increasing step, from MRP to MRP2 to ERP, more functional areas like manpower, equipment, capital are brought into the resource planning system.
- MRP, MRP2 and ERP are steps of increasingly complexity aimed toward managing corporate resources effectively and efficiently. MRP is the simplest resource planning system, while ERP is the most complex.

OVERVIEW OF MRP

- MRP begins with a schedule for finished goods that is converted into a schedule of requirements for the subassemblies, component parts, and raw materials needed to produce the finished items in the specified time frame. Thus, MRP is designed to answer three questions: *What* is needed? *How much* is needed? and *When* is it needed?
- The primary inputs of MRP are a bill of materials, which tells the composition of a finished product; a master schedule, which tells how much finished product is desired and when; and an inventory records file, which tells how much inventory is on hand or on order. The planner processes this information to determine the *net* requirements for each period of the planning horizon.
- Outputs from the process include planned-order schedules, order releases, changes, performance-control reports, planning reports, and exception reports.

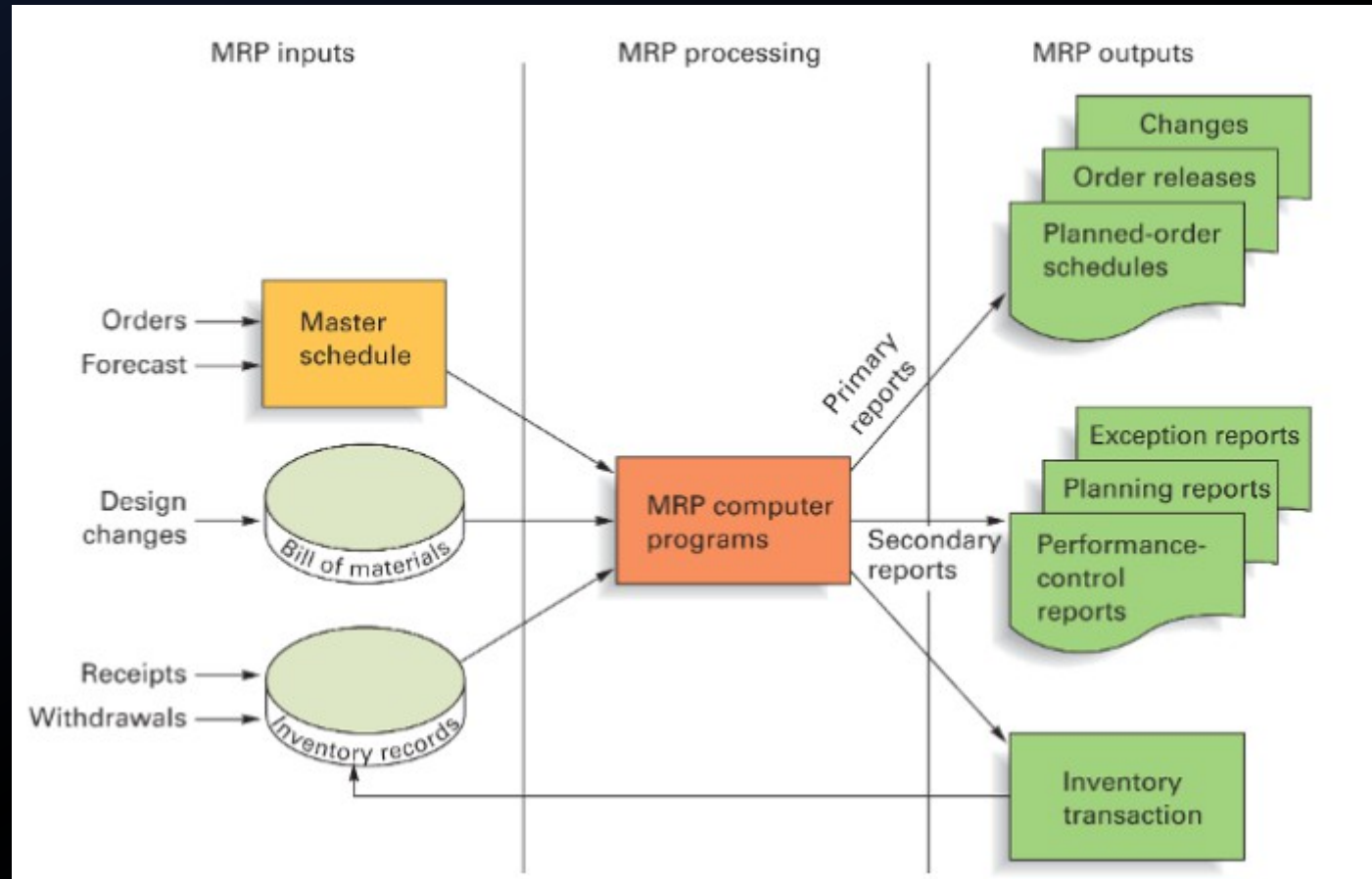
INDEPENDENT DEMAND AND DEPENDENT DEMAND.



Independent demand is uncertain.

Dependent demand is certain.

MRP PROCESS



MRP INPUTS

- An MRP system has three major sources of information: a master schedule, a bill-of-materials file, and an inventory recordsfile. Let's consider each of these inputs.
- The **master schedule**, also referred to as the *master production schedule*, states which end items are to be produced, when they are needed, and in what quantities.
- A **bill of materials (BOM)** contains a listing of all of the assemblies, subassemblies, parts, and raw materials that are needed to produce *one* unit of a finished product. Thus, each finished product has its own bill of materials.
- **Inventory records** refer to stored information on the status of each item by time period, called *time buckets*. This includes gross requirements, scheduled receipts, and expected amount on hand. It also includes other details for each item, such as supplier, lead time, and more.

MRP PROCESSING

- **Gross requirements:** The total expected demand for an item or raw material *during* each time period without regard to the amount on hand. For end items, these quantities are shown in the masterschedule.
- **Scheduled receipts:** Open orders (orders that have been placed and are scheduled to arrive from vendors or elsewhere in the pipeline by the *beginning* of a period).
- **Projected on hand:** The expected amount of inventory that will be on hand at the *beginning* of each time period: scheduled receipts plus available inventory from last period.
- **Net requirements:** The actual amount needed in each time period.
- **Planned-order receipts:** The quantity expected to be received by the *beginning* of the period in which it is shown.
- **Planned-order releases:** Indicates a *planned* amount to order in each timeperiod.

UPDATING THE SYSTEM.

- Regenerativesystem.
 - Updates MRP recordsperiodically.
- Net-changesystem.
 - UpdatesMRP records continuously.

MRP OUTPUTS.

➤ **Primary Reports.**

Production and inventory planning and control are part of primary reports. These reports normally include the following:

- **Planned orders**, a schedule indicating the amount and timing of future orders.
- **Order releases**, authorizing the execution of planned orders.
- **Changes** to planned orders, including revisions of due dates or order quantities and cancellations of orders.

➤ **Secondary Reports.**

Performance control, planning, and exceptions belong to secondary reports.

- **Performance-control reports** evaluate system operation.
- **Planning reports** are useful in forecasting future inventory requirements.
- **Exception reports** call attention to major discrepancies such as late and overdue orders, excessive scrap rates, reporting errors, and requirements for nonexistent parts.
- The wide range of outputs generally permits users to tailor MRP to their particular needs.

OTHER CONSIDERATIONS.

- Aside from the main details of inputs, outputs, and processing, managers must be knowledgeable about a number of other aspects of MRP. These include the holding of safety stock, lot-sizing choices, and the possible use of MRP for unfinished products.
- SafetyStock.
- Lotsizing.
 - Lot-for-lotordering.
 - Economic orderquantity.
 - Fixed-periodordering.

MRP IN SERVICES

- Food catering service
 - End item => catered food
 - Dependent demand => ingredients for each recipe, i.e. bill of materials
- Hotel renovation
 - Activities and materials “exploded” into component parts for cost estimation and scheduling

BENEFITS AND REQUIREMENTS OF MRP.

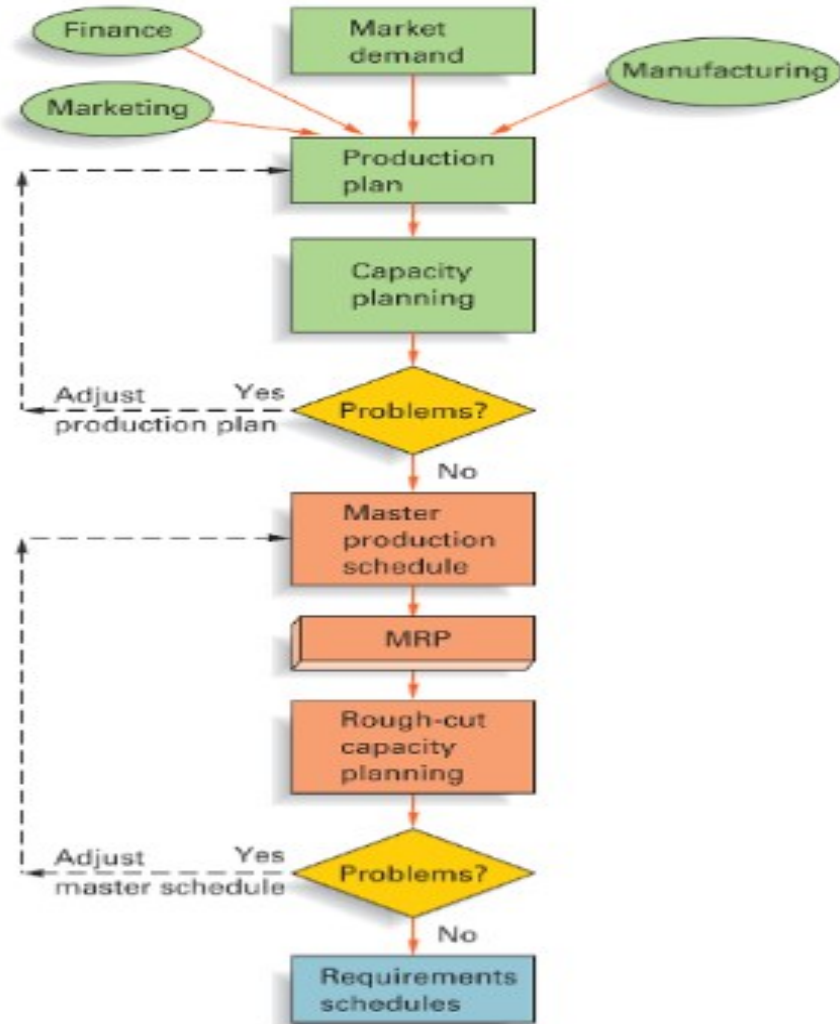
➤ BENEFITS:

- Low levels of in-process inventories.
- Ability to track material requirements.
- Ability to evaluate capacity requirements.
- Means of allocating production time.

➤ REQUIREMENTS:

- Computer and necessary software
- Accurate and up-to-date
 - Master schedules
 - Bills of materials
 - Inventory records
- Integrity of data

MRP II DIAGRAM



MRP II

- Expanded MRP with emphasis placed on integration
 - Financial planning
 - Marketing
 - Engineering
 - Purchasing
 - Manufacturing

CAPACITY REQUIREMENT PLANNING:

Capacity requirements planning: The process of determining short-range capacity requirements.

Load reports: Department or work center reports that compare known and expected future capacity requirements with projected capacity availability.

Time fences: Series of time intervals during which order changes are allowed or restricted.

ERP:

➤ Enterprise resource planning (ERP):

- Next step in an evolution that began with MRP and evolved into MRPII
- Integration of financial, manufacturing, and human resources on a single computer system.

➤ ERP Strategy Considerations:

- High initial cost
- High cost to maintain
- Future upgrades
- Training



THANK YOU