

ACS-1803

Introduction to Information Systems

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Functional Area Systems
Production / Operation Systems
Lecture Outline 5 – Part 4

Examples: Functional Area Info Systems

| Functional Area | Information System | Examples of Typical Systems |
|---------------------------|---|---|
| Accounting and Finance | Systems used for managing, controlling, and auditing the financial resources of the organization | <ul style="list-style-type: none">■ Inventory management■ Accounts payable■ Expense accounts■ Cash management■ Payroll processing |
| Human Resources | Systems used for managing, controlling, and auditing the human resources of the organization | <ul style="list-style-type: none">■ Recruiting and hiring■ Education and training■ Benefits management■ Employee termination■ Workforce planning |
| Marketing | Systems used for managing new product development, distribution, pricing, promotional effectiveness, and sales forecasting of the products and services offered by the organization | <ul style="list-style-type: none">■ Market research and analysis■ New product development■ Promotion and advertising■ Pricing and sales analysis■ Product location analysis |
| Production and Operations | Systems used for managing, controlling, and auditing the production and operations resources of the organization | <ul style="list-style-type: none">■ Inventory management■ Cost and quality tracking■ Materials and resource planning■ Customer service tracking■ Customer problem tracking■ Job costing■ Resource utilization |

Functional Area Information Systems

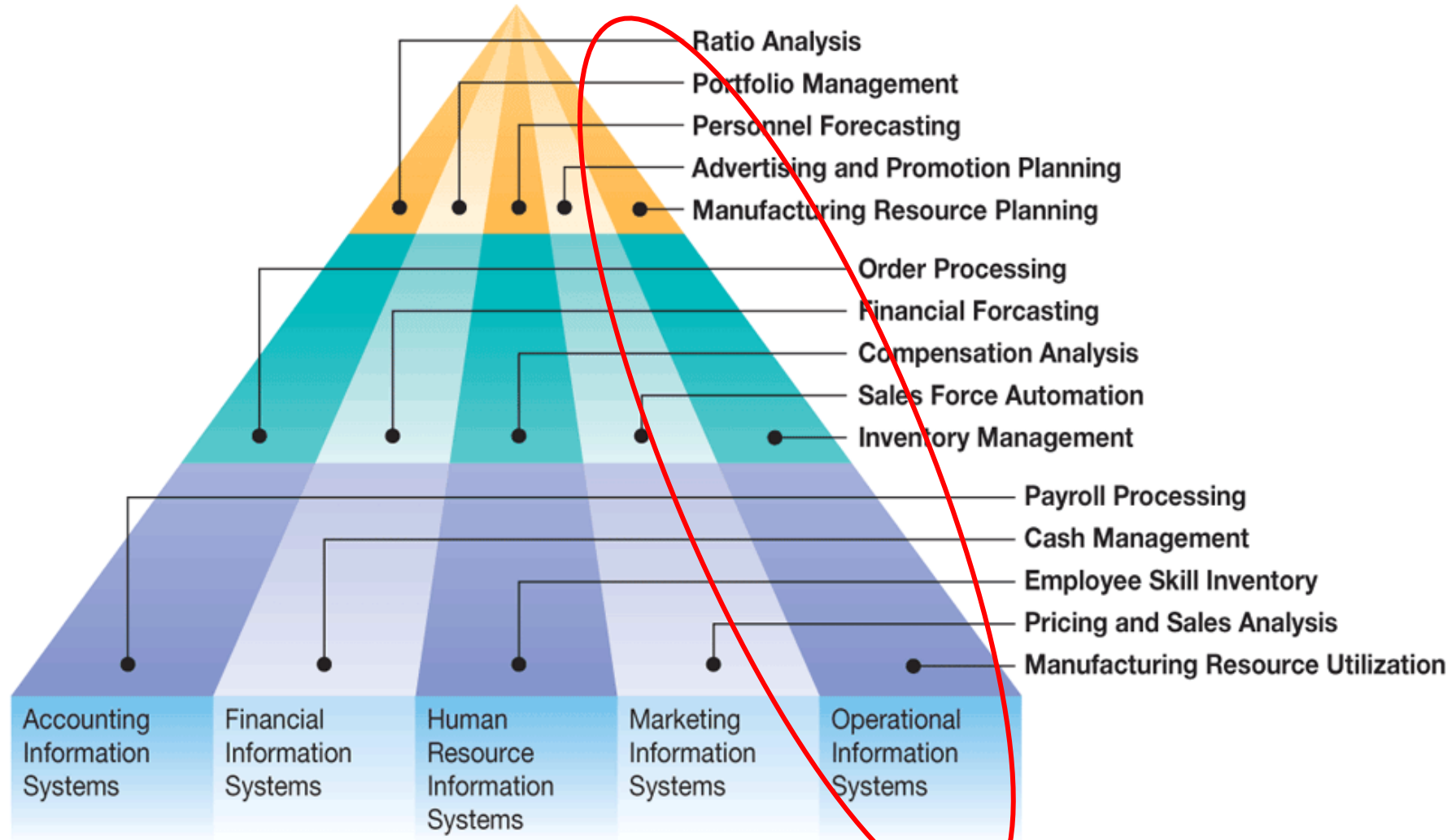
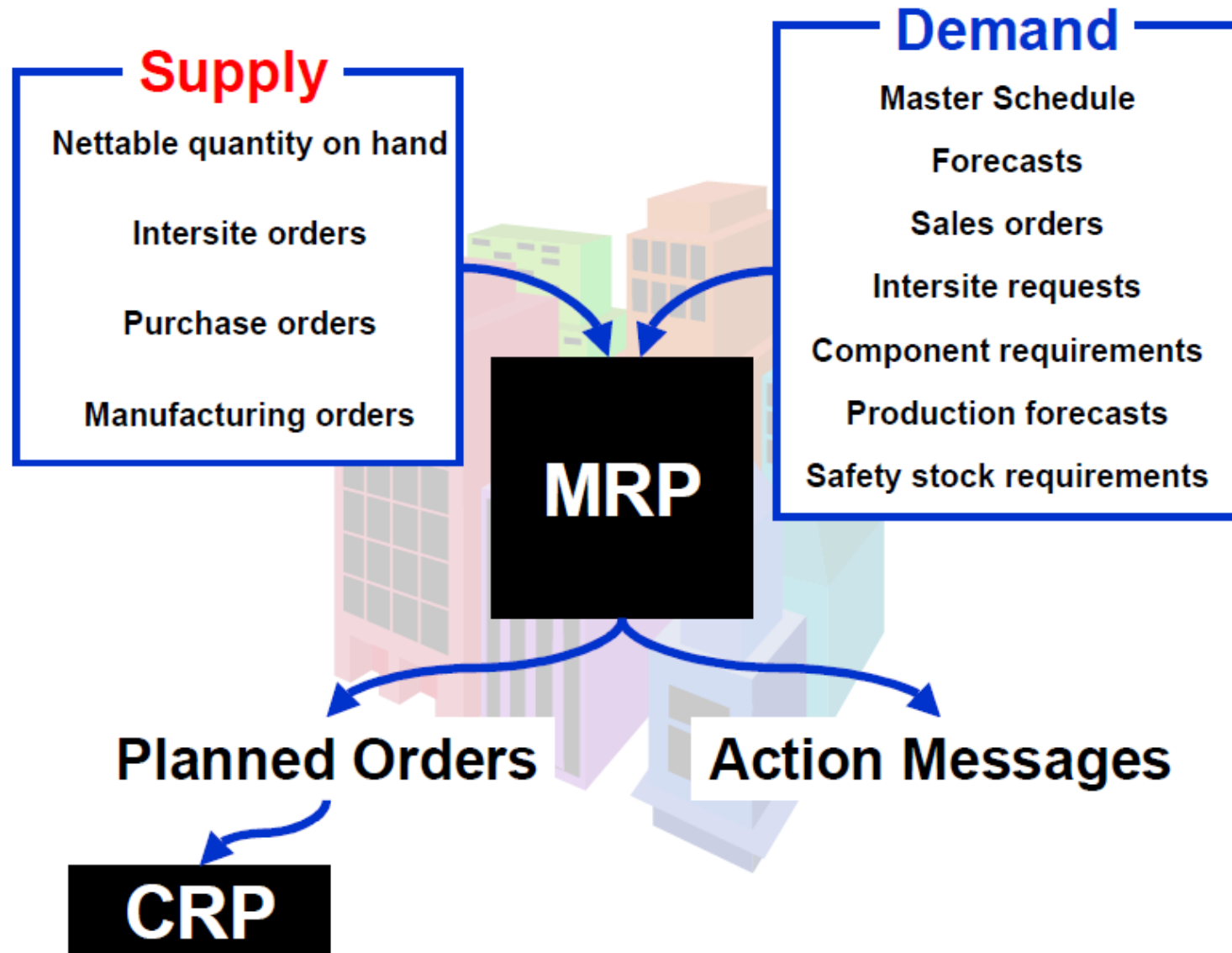


Figure 6.34 Functional area information systems.

Computers in Manufacturing

- In manufacturing, we have:
 - Raw materials inventory
 - Work-in-process inventory
 - Finished goods inventory
- Systems keep track of **quantities** and **costs** of each

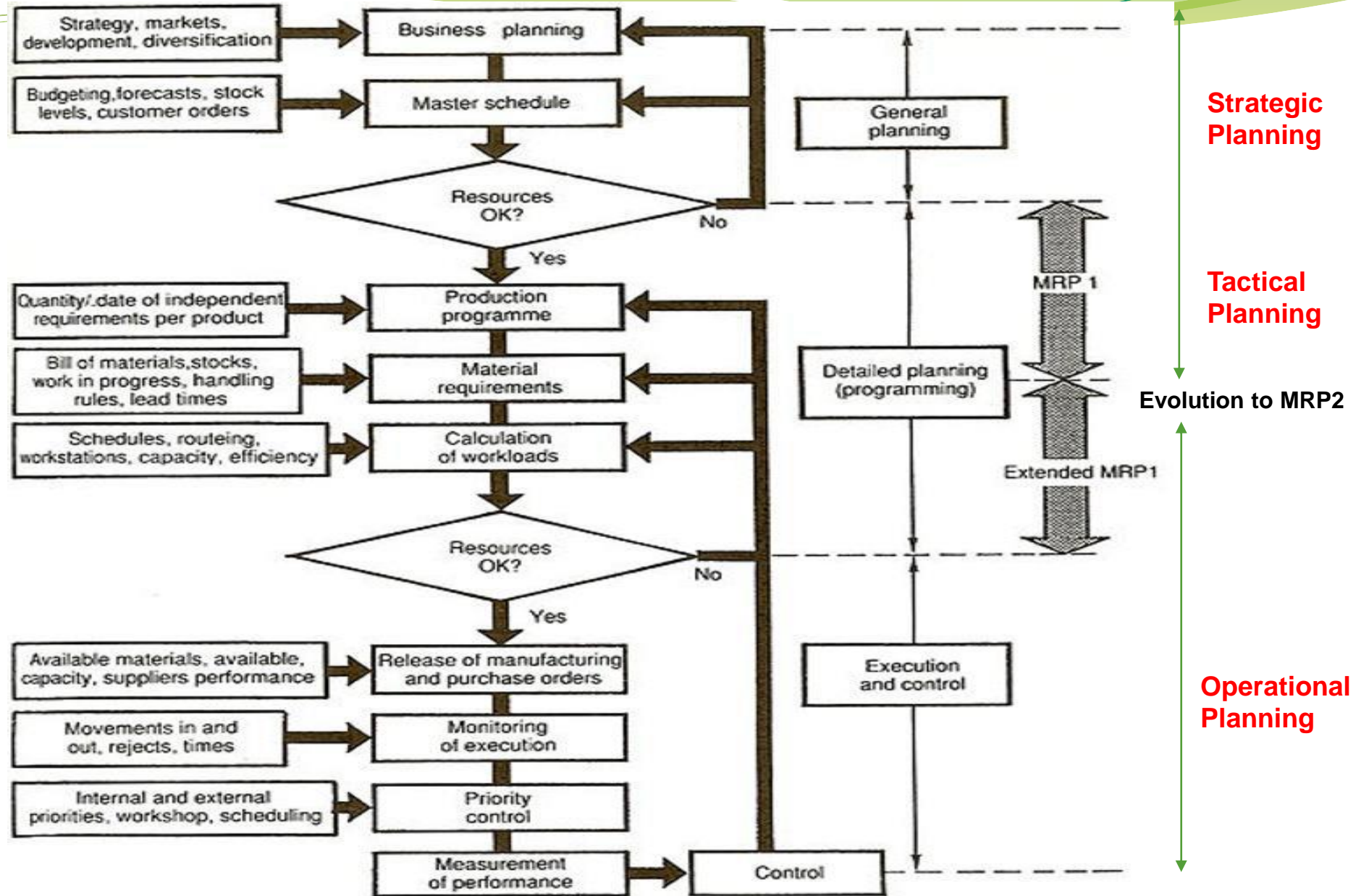
Manufacturing Resource Planning (MRP)



MRP

Bill of Materials:
List of raw materials needed to produce one unit of finished product and the quantity of each material

Route Sheet:
Describes sequence of different operations in the manufacturing of a part and identifies different work centers where the part is processed.
-Required operations
-Standard time
(People + Machine)



Around 1980, over-frequent changes in sales forecasts, entailing continual reajustments in production, as well as the unsuitability of the parameters fixed buy the system, led MRP (Material Requirement Planning) to evolve into a new concept : Manufacturing Resource Planning or MRP2

Strategic/Tactical/Operational Systems

- Master Production Scheduling System (Strategic)
- Material Requirements Planning system (Tactical)
 - Bill of Materials (BoM)
- Capacity Requirements Planning system (Tactical)
 - Route Sheet
- Detailed Production Schedule (Operational)
- Shop Floor Control (Operational)
- Quality Control (Operational)
- Inventory Control (Tactical) & (Operational)
- Cost Accounting (Tactical) & (Operational)

Strategic Manufacturing Systems

- Assist top management with
 - Selecting a plant site
 - Building a new plant
 - Designing and laying out a production facility
 - Assessing technologies to be used in production processes
- May use both internal and external data

MRP (Strategic) Planning

Master Production Schedule

- Based on
 - Accepted sales orders
 - Sales forecast
 - Current finished goods inventory
- Lists #units to be produced each week

MRP (**Tactical**) – Materials Requirements Planning

A list of raw materials needed to produce one unit of finished product and the quantity of each material

- Material Requirements Planning (MRP)
 - With the Materials Planning & Scheduling (MPS) and Bill of Materials (BOM), a system can produce time-phased purchase orders for raw materials (main output of MRP)

Bill of Materials

- A list of raw materials needed to produce one unit of finished product and the quantity of each material

Bill of materials

Item: 100 CALF Variant: BLACK

Collec: NOVA Season: FW 09-10 Category: Sandal Price: 98,00

Custom fee: Net weight:

| Voice | Category | Items | Variant | Um | Quantity | UnLoz | Work stage | Cod. |
|----------------|----------|---------------------|---------|---------|----------|-------|---------------|------|
| Material | Leather | Calf | BLACK | sq. mt. | 0,200 | 1 | Cutting | 1 |
| Material 2 | | | | | | 1 | Binding | 3 |
| Heel ribbon | | | | | | 1 | Extern. Proc. | 5 |
| Sole ribbon | | | | | | 1 | Assembly | 7 |
| Lininf | Lining | CAM. 56 | NATURAL | sq. mt. | 0,100 | 1 | | |
| Inner sole | Lining | CAM. 56 | NATURAL | sq. mt. | 0,050 | 1 | | |
| Camoscina | Lining | CAM. 56 | BLACK | sq. mt. | 0,300 | 1 | | |
| Reinfor. | | | | | | 1 | | |
| Accessory 1 | | | | | | 3 | | |
| Accessory 2 | | | | | | 3 | | |
| Accessory 3 | | | | | | 3 | | |
| Last | Last | STY56 | * | Pairs | 1,000 | | | |
| Sole | Sole | So 6790 | Black | Pairs | 1,000 | 7 | | |
| Heel | Heel | H-12 | NATURAL | Pairs | 1,000 | 7 | | |
| Inner sole | | | | | | 7 | | |
| Toecap | | | | | | 7 | | |
| Contrafforte | | | | | | 7 | | |
| Box | | | | | | 7 | | |
| Packing | | | | | | 7 | | |
| Bag | | | | | | 7 | | |
| Various | | | | | | 7 | | |
| Various | | | | | | 7 | | |
| Semi-finished | Various | Tomaia tagliate 100 | BLACK | Pairs | 1,000 | 3 | | |
| Semi-finished | Various | Tomaia cucite 100 | BLACK | Pairs | 1,000 | 5 | | |
| Semi-finished | | | | | | 7 | | |
| Semi-finished | | | | | | 5 | | |
| Finished prod. | Sandal | 100 CALF | BLACK | Pairs | 1,000 | 7 | | |


Work stage Cod.

Cutting 1

Binding 3

Extern. Proc. 5

Assembly 7



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1)

2)

3)

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MRP (**Tactical**) - Capacity Requirements Planning (CRP)

- **Route Sheet** shows sequence of required operations and the standard time allowed for each operation (usually person + machine)
- How much machine time and worker time do we have?
 - May need to rent more floor space and / or machines
 - May need to hire temp workers
- CRP generates a **detailed production schedule**
- It releases **manufacturing orders** to the production floor

MRP (Operational) - Production Planning & Control

- Raw **materials** acquisition (when, how much)
- **Machine** and **worker** requirements
- Detailed **production schedules**
- Gathering **evaluation statistics**
 - Sensors, scanners, shop floor terminals
 - Quality control
 - Comparing performance data to plans
- **Cost accounting** for mfg. goods

IT Considerations in Manufacturing

- **Large databases** designed for varied and quick retrieval
- **Data capture in variety of ways** (incl. sensors, measurement devices, scanning)
- **Connectivity throughout** production facilities
- **Both operational and tactical** (e.g. Shop floor control)
- **Integration with system outside** mfg.

Supply Chain Management Software (SCM)

- Supply chain: flow of materials, services and information from suppliers of merchandise and raw materials through to the organization's customers
 - Now: supply network
- Supply chain management: process and procedures used to ensure the delivery of goods and services to customers at the lowest cost while providing highest value to the customers.

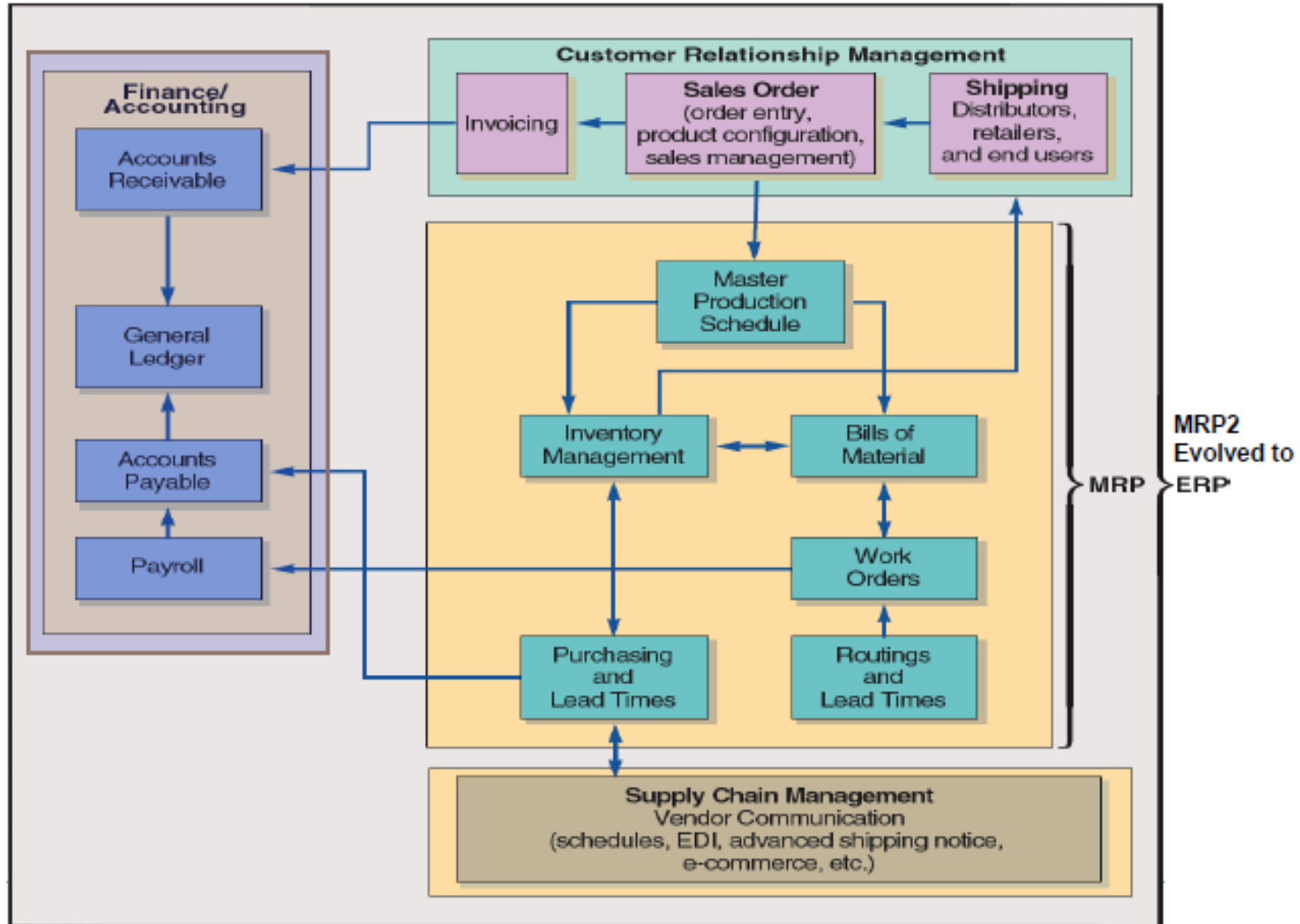
Vendor Managed Inventory

- Suppliers are gaining access to an organization's production planning schedules to assure an ability to fulfill orders
- Producing organization is opening its systems to the customer to allow the customer to view inventory and production levels before placing orders

Just-In-Time (JIT) Manufacturing

- **Raw materials arrive just when they are needed on the production floor**
 - Minimizes inventory
 - Requires complex information systems (operational)
 - May have *vendor managed inventory*
 - (supplier's computers tap into our inv. systems)

MRP2 Evolution to ERP



Functional Area Systems – Production / Operation Systems

End of Lecture 5 – Part 4