

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

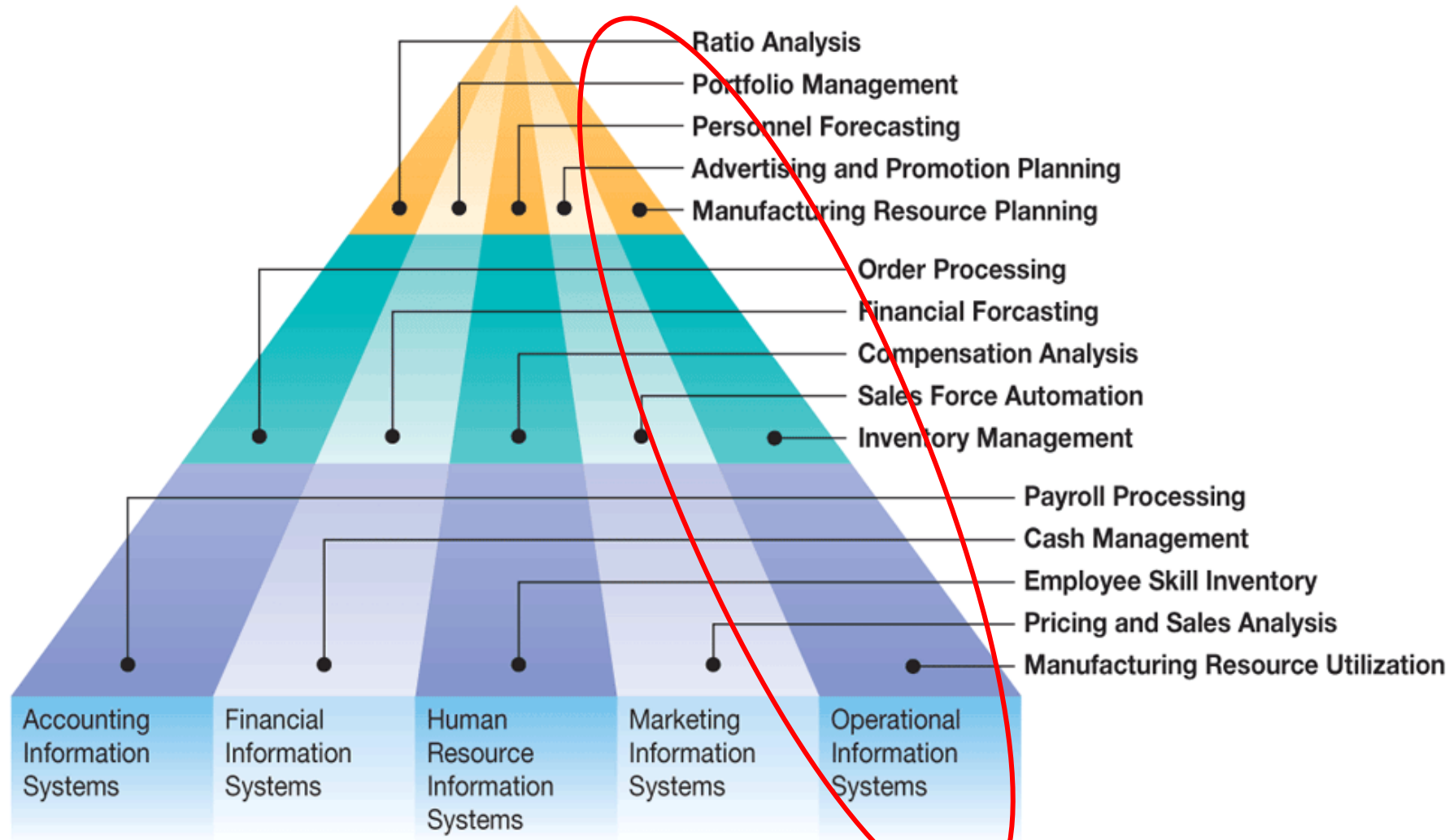
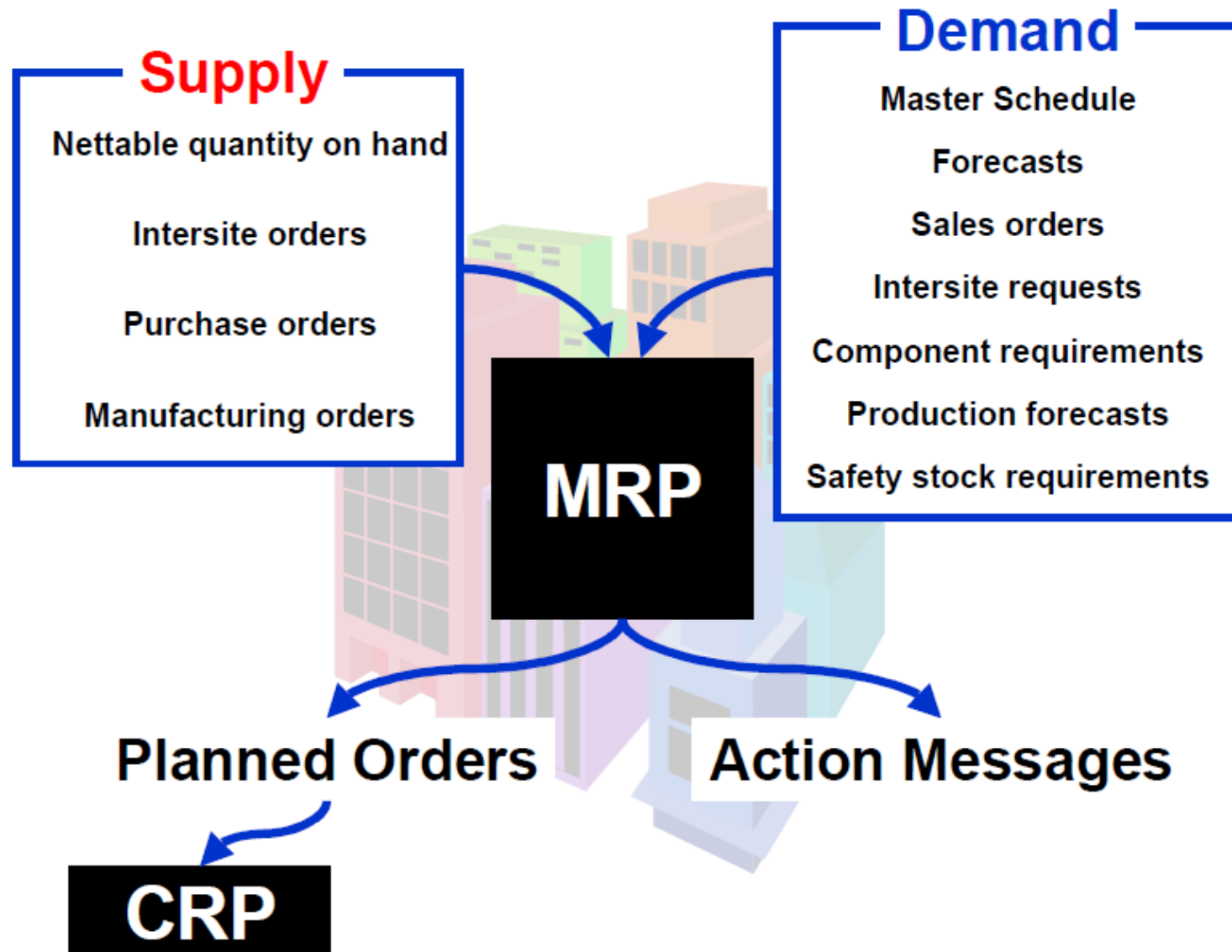


Figure 6.34 Functional area information systems.

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

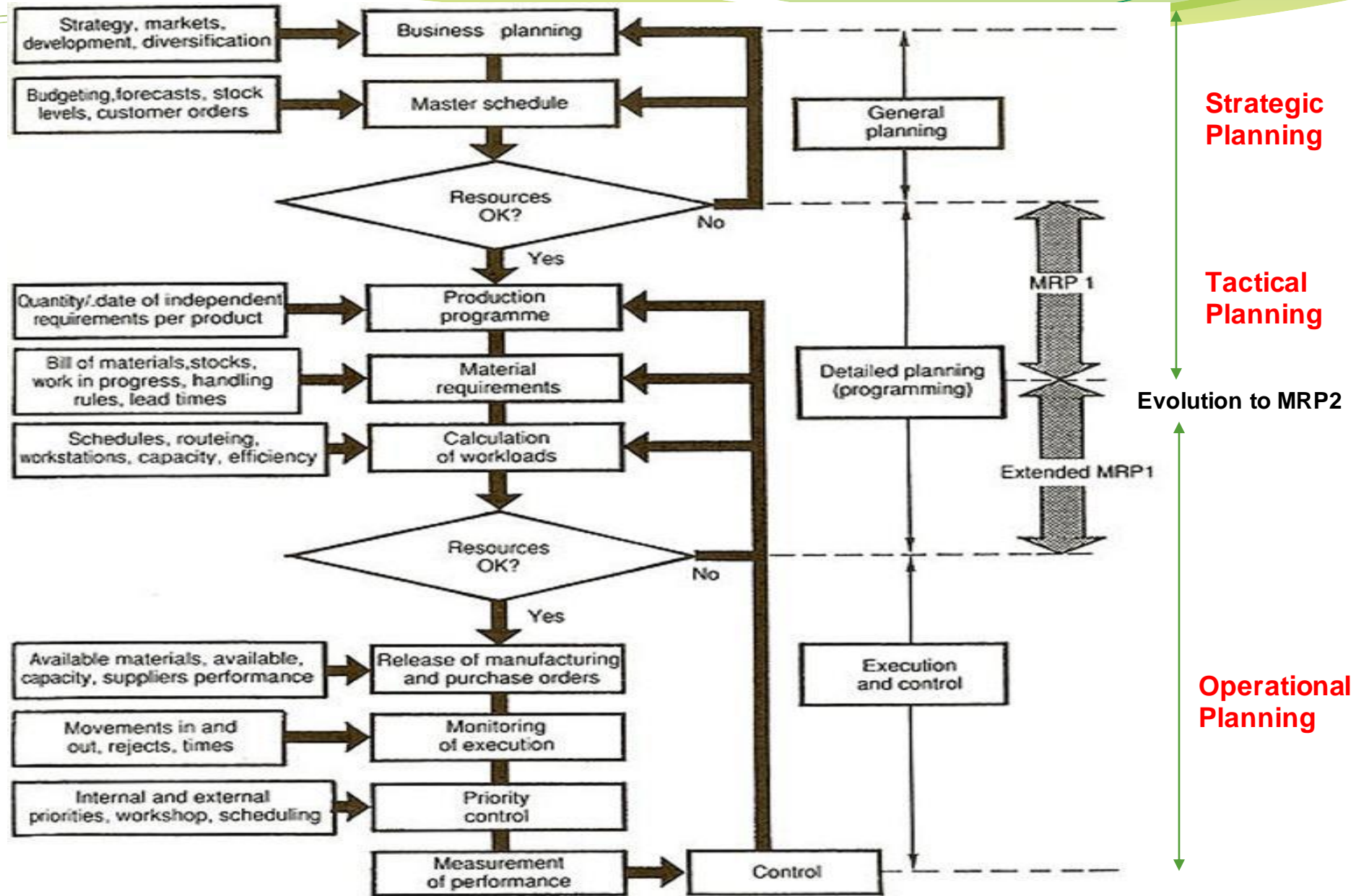
Manufacturing Resource Planning (MRP)



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 readjustments in production, as well as the unsuitability of the parameters fixed by 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 site
 - Designing and layout of new production facilities
 - Assessing technologies to be used in the production process
- May use internal and external data

MRP (Strategic) Planning

- Master Production Schedule
 - Based on
 - Accepted Sales Orders
 - Sales Forecasts
 - Current Finished Goods
- Lists #units to be produced each week

MRP (Tactical) Material Requirements Planning

- A list of raw materials need to produce one unit of a finished product and the quantity of each material needed
- Materials Requirements Planning (MRP)
With the Materials Planning & Scheduling (MPS) and Bill of Materials (BOM), a system can produce a time phased purchase orders for raw materials (main output of MRP)

Bill of Materials

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

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	UnkLo	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 1	Various	Tomaia tagliate 100	BLACK	Pairs	1,000	3		
Semi-finished 2	Various	Tomaia cucite 100	BLACK	Pairs	1,000	5		
Semi-finished 3						7		
Semi-finished 4						7		
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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Mod. e Revis.

MRP (Tactical) Capacity Requirement Planning

- Route Sheet shows sequence of required operations and the standard time allowed for each operation (usually person and machine)
- How much machine time and worker 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 order 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 manufactured goods

IT Considerations in Manufacturing

- Large databases designed for varied and quick retrieval of data
- Data captured in a variety of ways (sensors, scanning, cameras etc.)
- Connectivity throughout production facilities
- Machine and worker requirements
- Both operational and tactical (e.g. Shop floor control)
- Integration with systems outside of manufacturing

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.

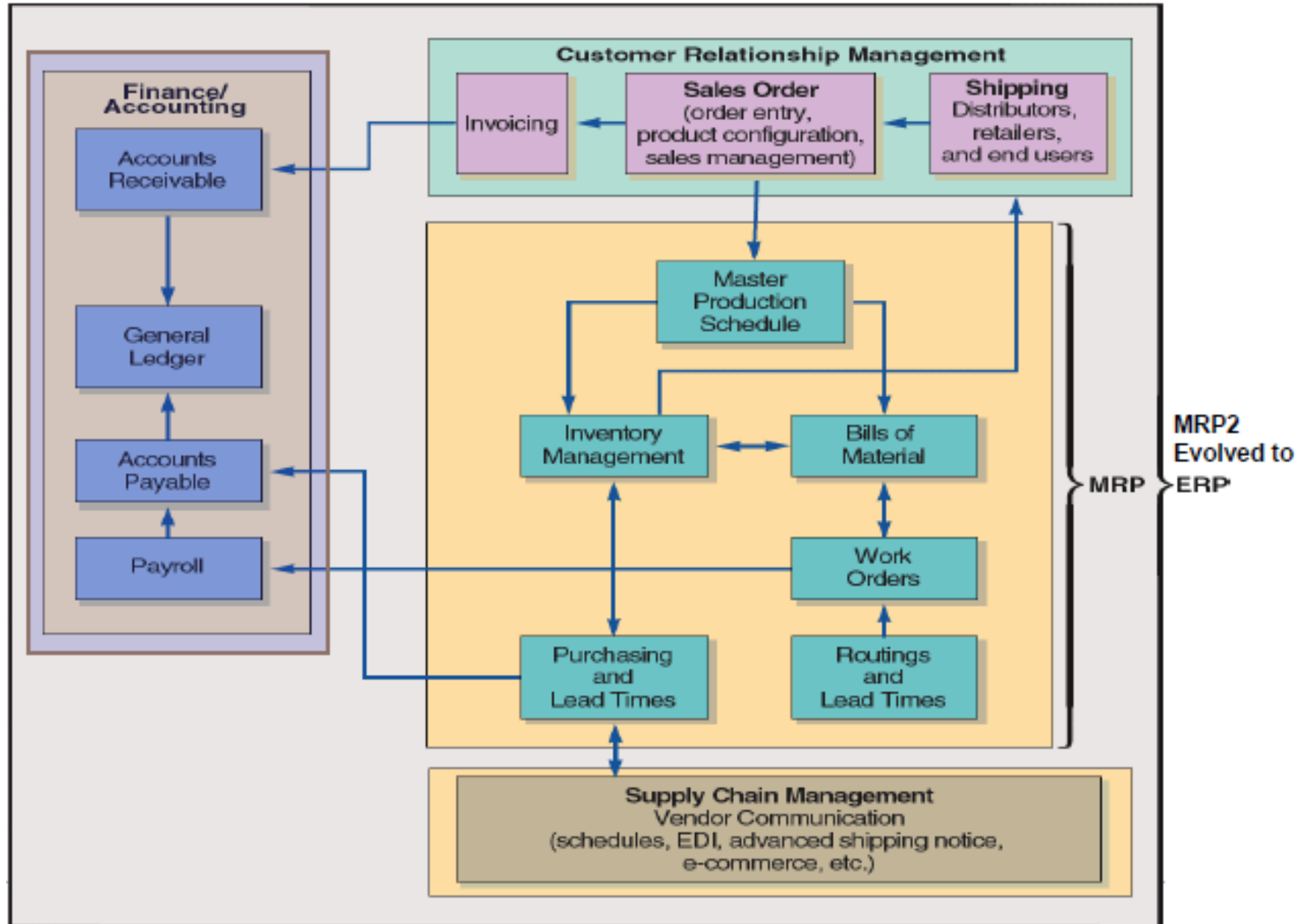
Vendor Managed Inventory

- 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



Summary

- HR
 - Payroll
 - Employee Information
 - Performance Management
 - Position Control
 - Recruiting
 - Compensation and benefits
- Marketing
 - Sales Automation
 - Contact Management
 - Market Research
 - Customer Loyalty Programs
- Manufacturing
 - Characteristics of IT in manufacturing
 - MRP>MRPII->ERP

Functional Area Systems – Production / Operation Systems

End of Lecture 5 – Part 4