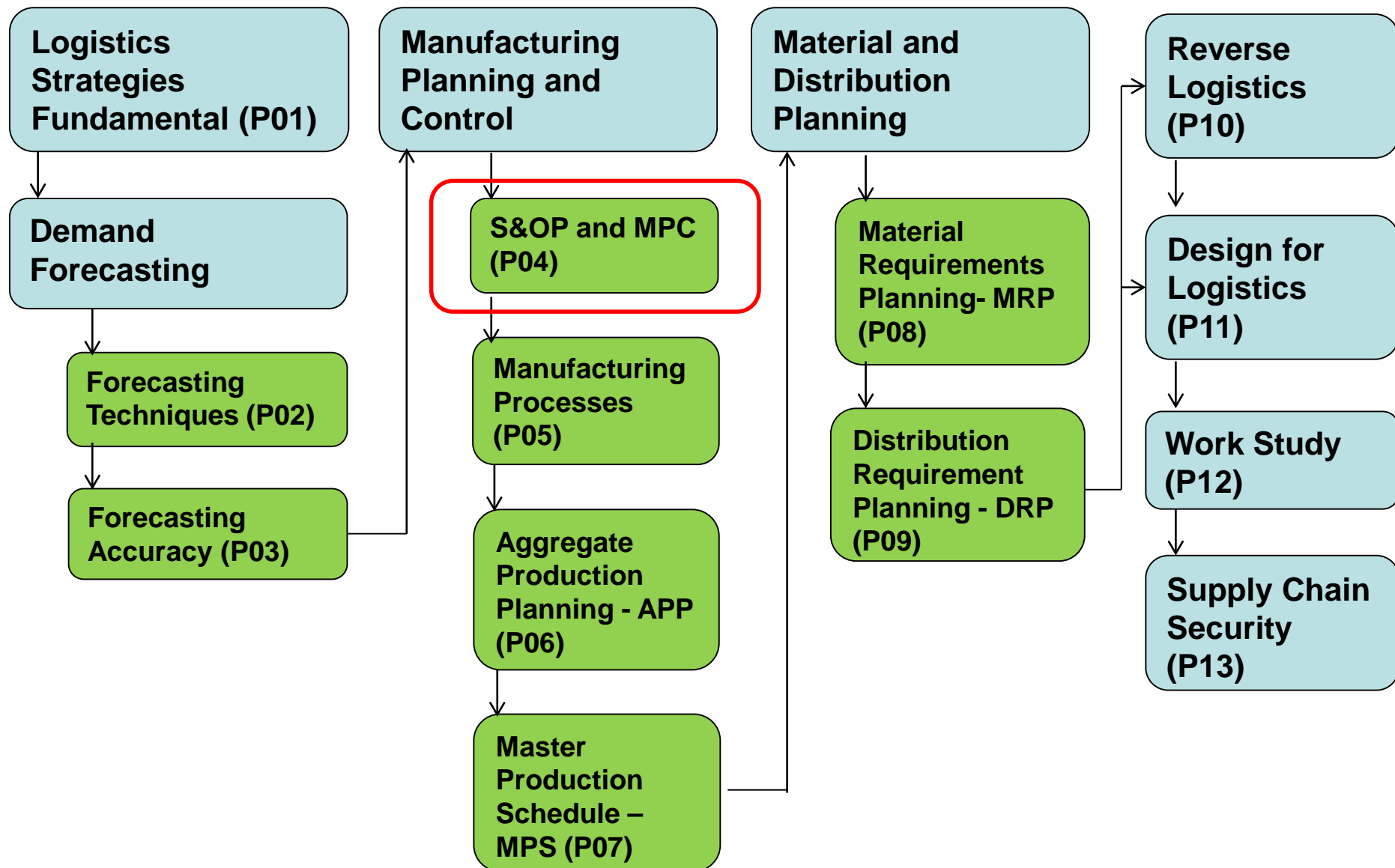


Problem 04

The BIG Plan

SCHOOL OF
ENGINEERING
E222 – Logistics
Planning and
Control

E222 Logistics Planning and Control – Topic Tree





- Explain the Sales and Operations Planning (S&OP) process
 - Monthly S&OP process
- Explain the Manufacturing Planning and Control (MPC) System
 - Roles of MPC
 - Principles of MPC
 - Activities in MPC

What is S&OP? - Definition



- A process that provides management the ability to strategically direct its business to achieve competitive advantage on a continuous basis *by integrating customer-focused marketing plans for new and existing products with the management of supply chain. (ref: APICS Dictionary).*

S&OP roles



- Sales & Operations Planning (S&OP) balances the sales/marketing plans with available production resources.
- To work out an agreed-on business plan that determines the manufacturing role in meeting company strategy.
- To get more management attention as the need for coordination is recognized in progressive firms.

Objectives of S&OP



- Develop and agree upon:
 - Sales plan
 - Rate of production
- Ensure plans are realistic and valid (e.g. adequate resources are available)
- Integrate manufacturing with other activities of the business plan
- Focus on corporate production goal
- Identify production rates, inventories/backlog levels, capacity, workforce management, and resource management

Aspects of S&OP



- Overall context is called: Game Planning
 - Strategy (e.g. increase market share)
 - Tactic (e.g. increase inventory to improve customer service level).
- Balance the needs of markets against the factory' capability.
 - Supply and demand
 - Volume and Mix
- Focus on aggregate (product family) level
- Production plan is not necessarily equal to a forecast of aggregate demand

Factors Affecting S&OP



- Management perception of the business
 - Direction of the business
 - Impact of macroeconomics influences
- Market conditions
 - Customer needs
 - Competitors actions
 - Etc
- Financial and budgetary planning activities in the company

Issues Addressed by S&OP



- Variances (plan vs. actual)
- Market conditions
- New products
- Alternate plans
- Conflict
- Contingency plan
- Accountability

The Monthly S&OP Process



The Monthly S&OP Process



- Step 1: Run month end sales forecast reports
 - Update all the files necessary to develop the new statistical forecast.
- Step 2: Demand planning
 - Sales and marketing representatives review the updated medium term management forecast.
- Step 3: Supply planning
 - Compare required workload (demand for capacity) to demonstrated capacity (proven supply of capacity)
- Step 4: Pre-S&OP meeting
 - Break down the barriers between functional areas and get agreement on up-to-date set of numbers to guide decisions in all functions
- Step 5: Executive S&OP meeting
 - Make decisions the numbers forwarded from the pre-S&OP meeting, or may take another path

Executive S&OP Meeting



- The monthly executive meeting, which lasts approximately 2 hours, should include the top management of the company (e.g. vice presidents from various areas such as sales, supply chain, marketing, operations, logistics, product development, etc).
- The assembled executives may accept the decisions and the numbers forwarded from the pre S&OP meeting, or they may take another path. They will make decisions pertaining to each product family, authorize any decisions with significant financial implications, compare the sales and operations plan to the business to see if either needs adjustment to keep them consistent, and review other issues

Attendees of Executive S&OP Meeting



Department	Mandatory Participant (Core Team)	Others (Optional)
Sales	General Manager / President Department Manager / Head / Vice President	CS Manager Distribution Manager Service Parts Manager Demand Manager
Marketing	Department Manager / Head	Chief Forecaster Product Manager(s)
Manufacturing	Department Manager / Head / Vice President Materials Manager	Manufacturing Manager Master Scheduler Purchasing Manager Quality Assurance Manager
Engineering	Department Manager / Head / Vice President	Drafting Manager Engineering Scheduler Manager - Design Engineering
Finance	Department Manager / Head / Vice President	Budget Manager Cost Accounting Manager
Human Resource	Department Manager / Head / Vice President	
Special Projects	Managers	

What is Manufacturing?



- **Manufacturing** : A series of interrelated activities and operations involving the design, material selection, planning, production, quality assurance, management, and marketing of discrete consumer and durable goods.

– From APICS Dictionary

- It is a value-adding process. The raw material is converted by adding cost (or value) progressively until the final product is created.



Manufacturing Goals



Cost : The cost of making the product must be equal or lower than its competitors



Cost

Time : The product must be delivered to the customer on time, every time



Time



Quality



Quality: The manufactured product must be equal or better than its competitors

Cost, Quality and Time



Cost

- Unit product cost
- Unit labor cost
- Unit material cost
- Total manufacturing overhead cost
- Inventory turnover-raw material, WIP, finished gds
- Capital productivity
- Capacity/machine utilization
- Materials yield
- Direct/Indirect labor productivity



Time

- Quoted delivery time
- % of on-time delivery
- Average lateness
- Inventory accuracy
- Master Production schedule performance/stability

Quality

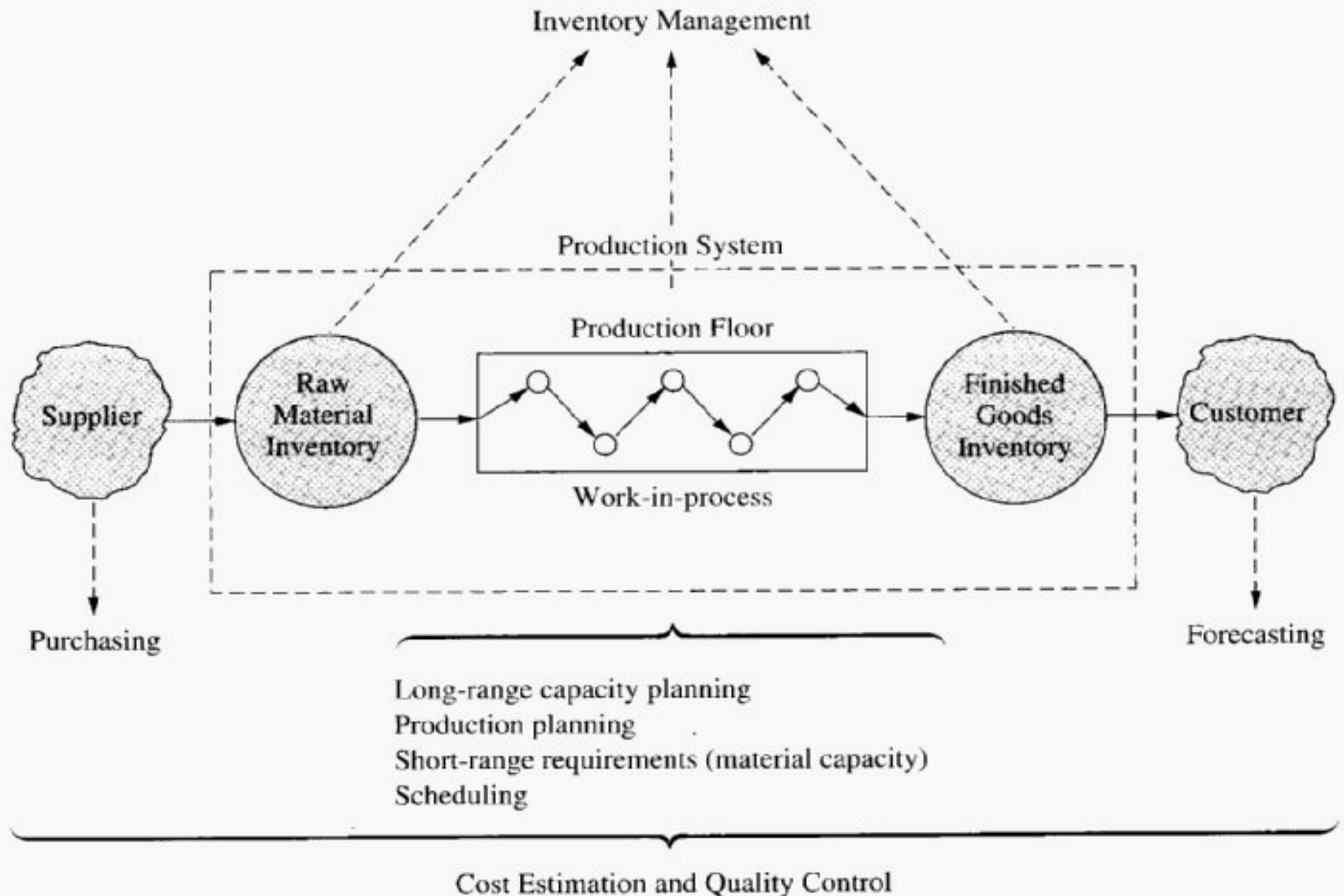
- Internal failure cost
- External failure cost
- Quality of incoming materials from suppliers
- Warranty cost as % of sales
- Rework cost as % of sales

Manufacturing Planning and Control System

A Manufacturing Planning and Control (MPC) system is a methodology designed to manage efficiently the flow of material, the utilization of people and equipment, and to respond to customer requirements by utilizing the capacity of our suppliers, that of our internal facilities, and in some cases that of our customers to meet customer demand.

(Source: Vollman, Berry, Whybark & Jacobs, “Manufacturing Planning and Control for Supply Chain Management”, Mc-Graw-Hill Inc, 5th Edition”)

Role of MPC in Manufacturing



Principles of MPC



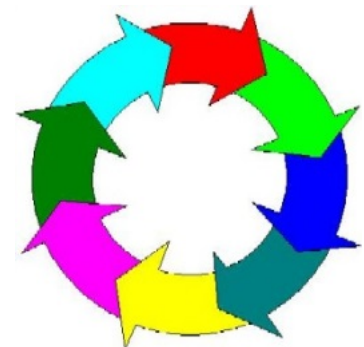
- Manufacturing planning and control systems should support the strategy and tactics pursued by the firm.
- The MPC system's design will vary, depending on the distinctive needs of the firm.
- Different manufacturing processes often dictate the need for different designs of the MPC system.
- The framework for MPC is general, and all three phases must be performed, but specific applications necessarily reflect particular company conditions and objectives.
- The system should evolve to meet changing requirements in the market, technology, products, and manufacturing processes.

Short Term: MPC Activities



There is a need for **detailed scheduling of resources** to meet production requirements.

- Involves time, people, material, equipment and facilities.
- Involves people working on the right things.
- Involves tracking the use of resources and execution results.
- Provide problem-solving support.



Intermediate Term: MPC Activities



The fundamental issue is **matching supply and demand** in terms of both volume and product mix.

- Planning for the right logistics.
- Providing customers with information on correct quantities and location to meet market needs.
- Planning of capacity to determine employment levels, budgets, overtime and subcontracting needs, etc.

Long Term: MPC Activities



The system is responsible for providing information to make decisions on:

- The appropriate amount of capacity (including supplier capacity) to meet the market demands of the future.
- Provide the appropriate mix of human resource capabilities, technology, and geographic locations (e.g. new plant).

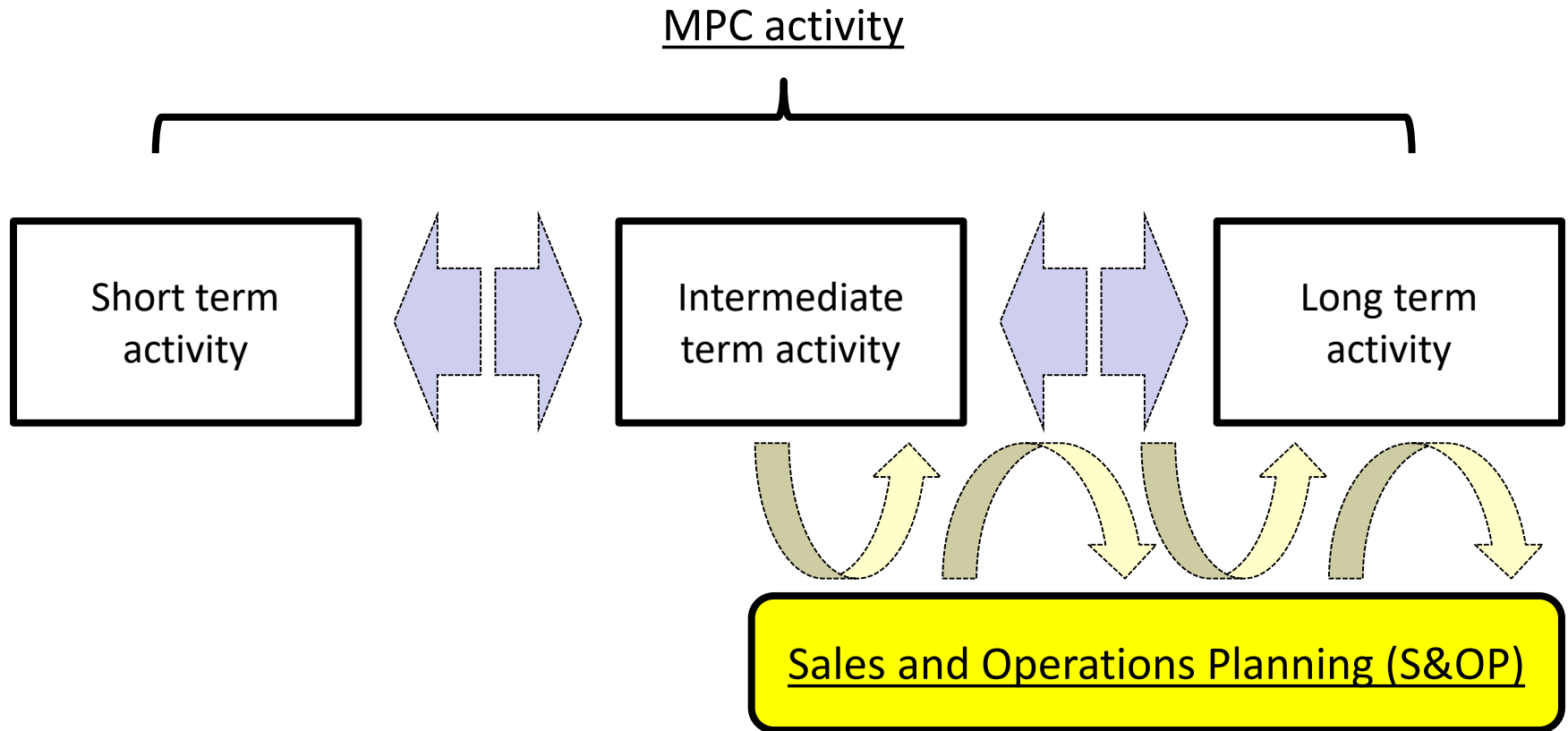
S&OP and MPC



So...both S&OP and MPC are about planning...

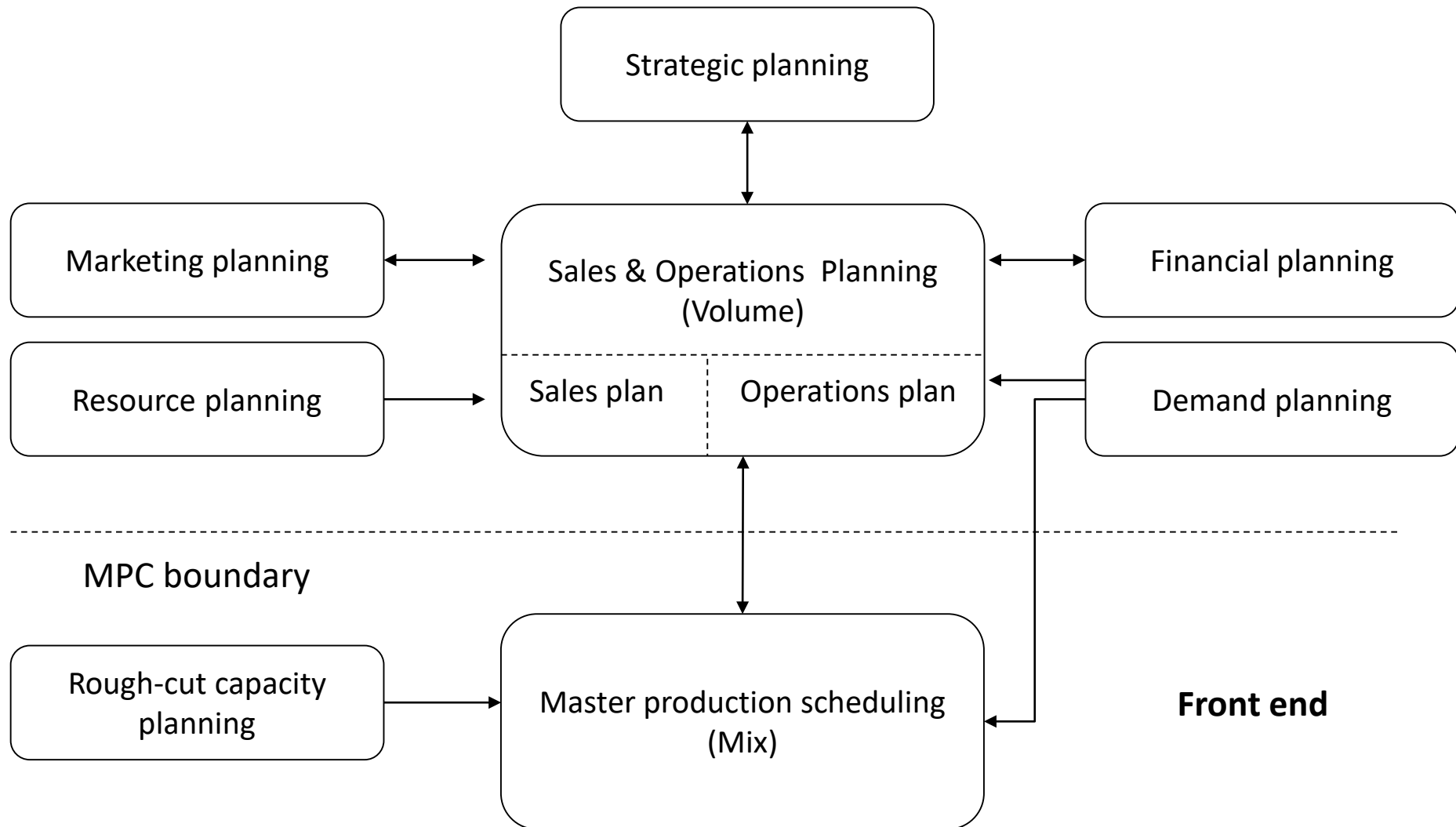
How are they related to each other?

S&OP and MPC



The representative front-end of MPC system

Key Linkages between S&OP and MPC engine



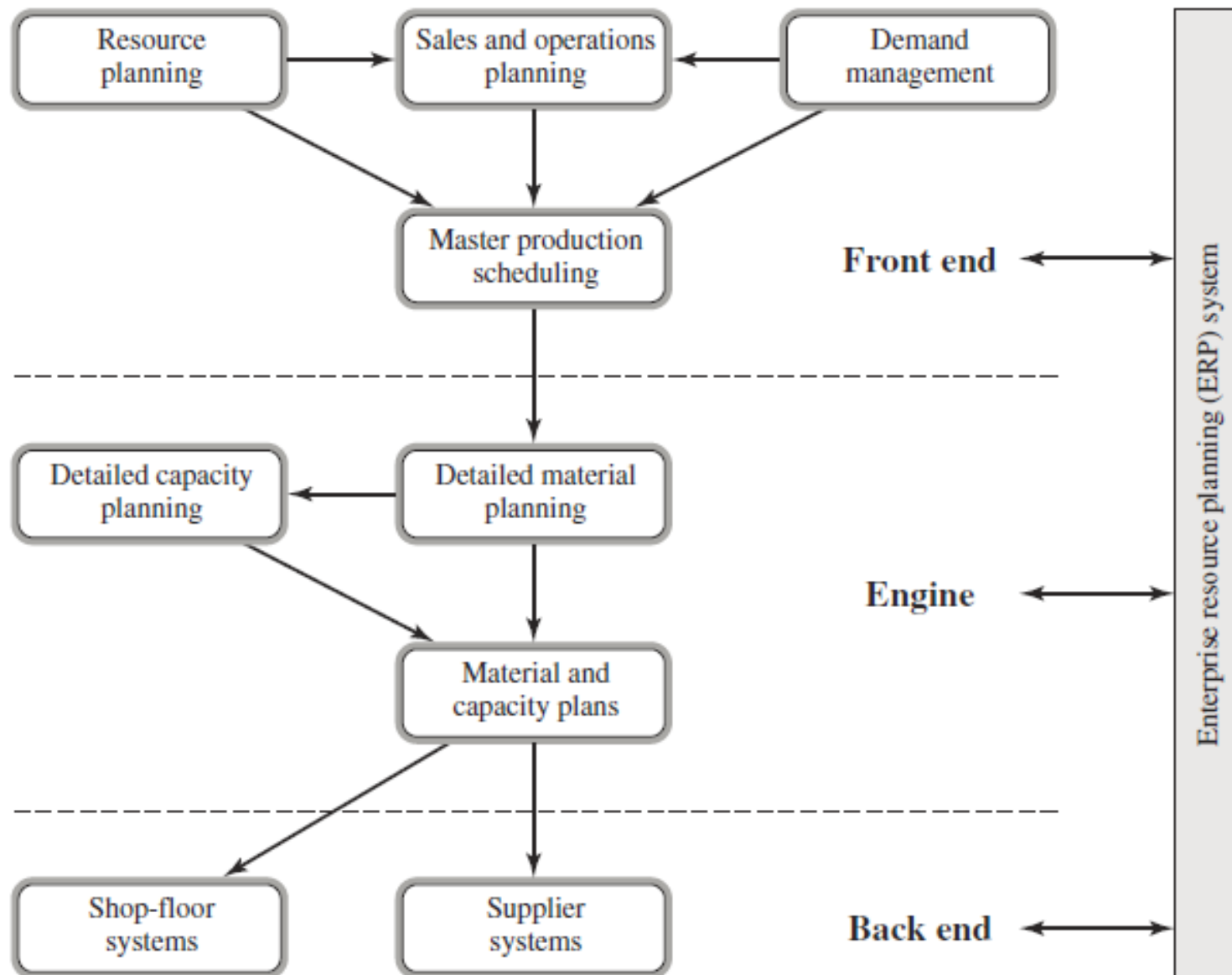
Source: Vollmann, T.E., Berry, W.L., Whybark, D.C., and Jacobs, F.R., 2005. Manufacturing planning and Control for Supply Chain Management 5th edition. McGraw-Hill, Singapore.

Key Linkages



- Link to Master Production Schedule
 - MPS disaggregates the operations plan
 - The result drives the detailed scheduling through detailed material planning and other MPC functions
- Link with Demand Management
 - Order entry, order promising, and physical distribution coordination as well as forecasting
 - Ensure that the influence of all aspects of demand is included and properly coordinated.
- Link with Resource Planning
 - Long-range planning of facilities
 - Translation of the extended operations plans into capacity requirements, usually on a gross or aggregate basis

MPC System Framework



Recommended solution for MPC activity



Alfred's objectives would include:

- ✓ Provide **good-quality, competitive-price** air purifier and **deliver promptly** to customers.
- ✓ Have good MPC system with following activities

- **Short term**

- Schedule production activities so people and equipment are working on the correct things.
- Track material, people, customers' orders. equipment and other resources in the factory.
- Respond when things go wrong and unexpected problems arise.

Today's Problem (continued)



- **Intermediate term**

- Maintain appropriate inventories of raw materials (e.g. filters), work in process and finished goods (e.g. complete set of purifiers) in the correct locations.
- Plan for materials/components to arrive on time in the right quantities needed for product production.

- **Long term**

- Plan capacity requirements and availability to meet market-place needs.
- Communicate with customers and suppliers on specific issues and long- term relationships.

Learning Outcomes



- Explain the Sales and Operations Planning (S&OP) process
 - Monthly S&OP process
- Explain the Manufacturing Planning and Control (MPC) System
 - Roles of MPC
 - Principles of MPC
 - Activities in MPC