

# Lecture Series: Consumer Electronics Supply Chain Management

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# Lecture 3: OEMs and Sales Companies Planning Processes

# Agenda

- CE Products and Supply Chain Structure
- CE Planning Processes and Roles
- OEM and Sales Companies Planning Processes
  - Demand Planning
  - Supply Planning
  - Allocation Planning
- Summary: Demand and Supply Balance

# CE Products and Supply Chain Structure

# End Product Offerings - Diverse Product Range

## Digital Still Cameras

PV-SD5000



4-month life cycle

## Plasma TV



Hi Tech  
Low turn  
High Margin

## Electric Shavers



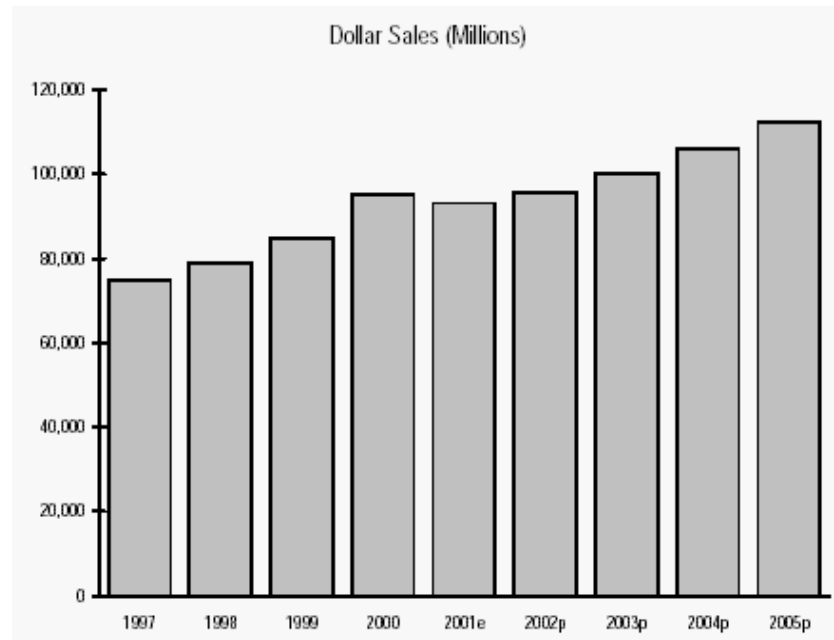
50 % sales done in December

## VCR'S



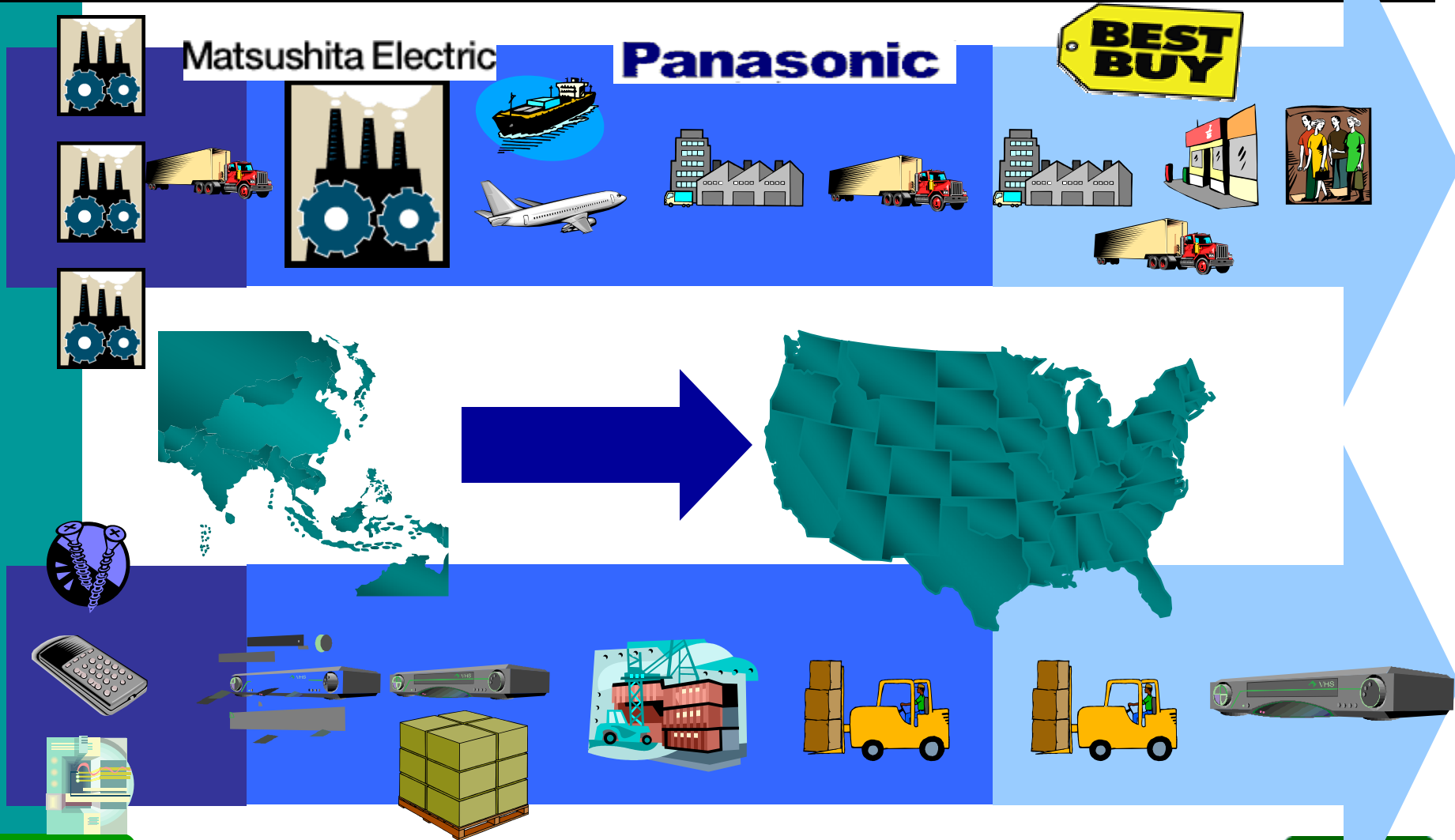
Commodity  
Low Tech  
High Turn  
Low Margin

# Consumer Electronics US Market Sales



US Consumers bought 95 billion dollars of CE product in 2002

# Supply Chain for End Product



# Industry Characteristics

4 month lead time

Coordination

Built to stock

Delays,  
Out of stock  
Overstocked

# CE Industry Issues

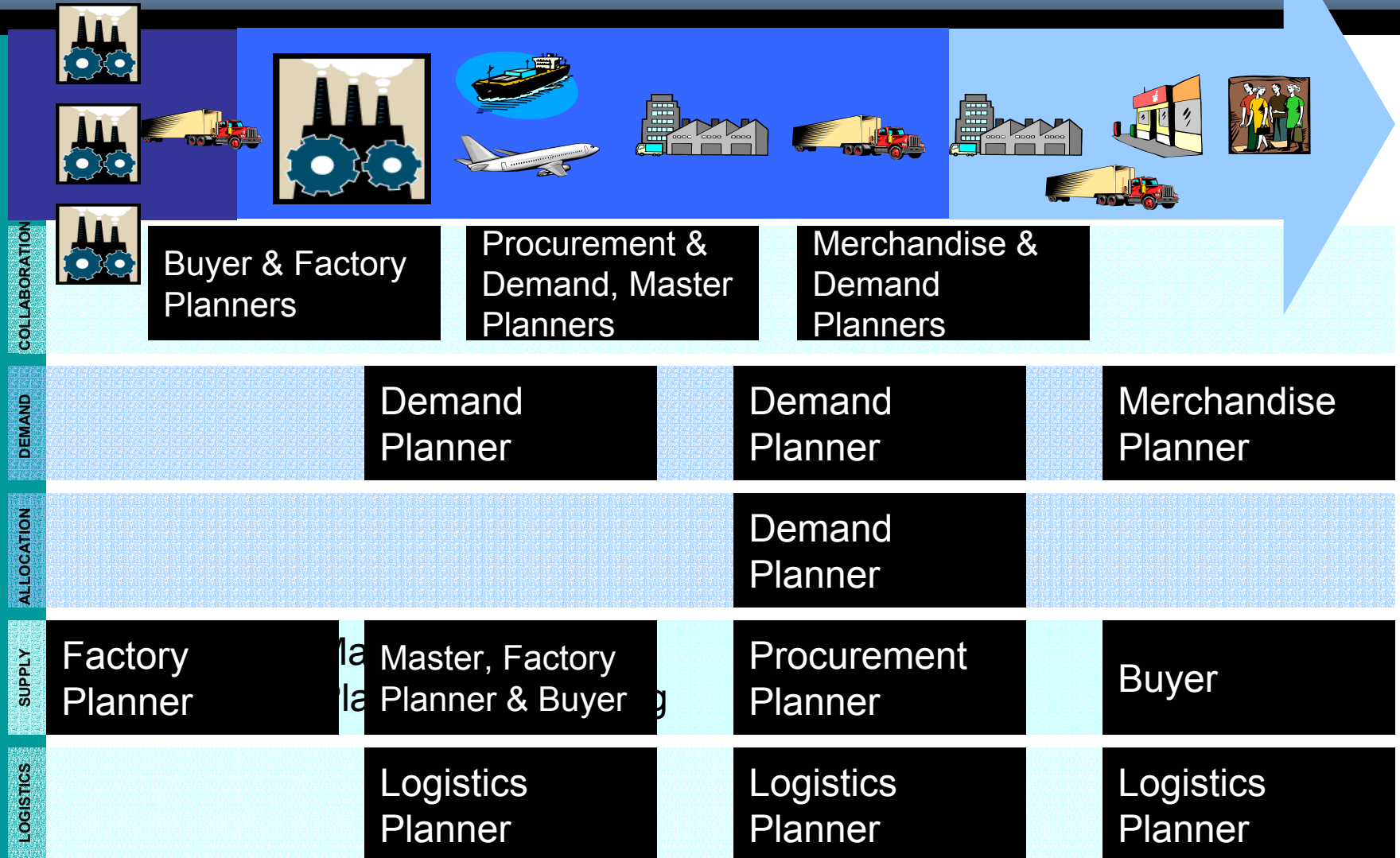


- High degree of parts customization
- Long R&D design process times
- Long lead time to create additional capacity for custom parts
- Poor customer service / supply flexibility
- Low re-use of parts
- Short component life cycles leading to service issues
- High supply risk due to reliance on custom parts
- Short product lifecycles
- High demand unpredictability, inflexible manufacturing
- Unresponsiveness to demand signals due to manual monthly planning
- Fragmented procurement across factories
- Inventory boom-bust cycle (bull-whip effect)
- Low customer service levels
- Geographically fragmented supply chain
- Margin erosion
- High spares inventory, inconsistent availability
- Stock outs
- Reducing margins
- High logistics costs
- High inventory, store level stockouts
- High promotions costs

# CE Planning Processes and Roles



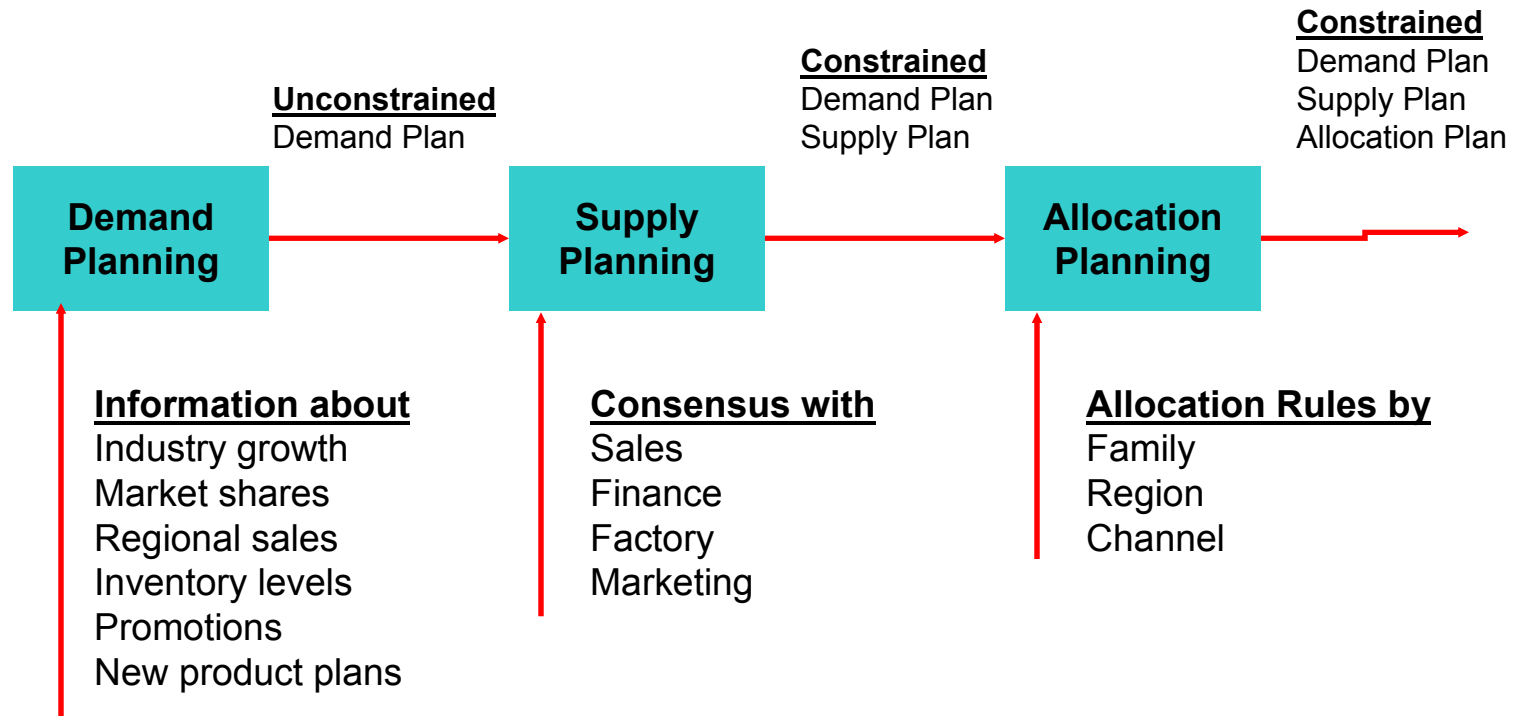
# CE Industry Key Planning Roles



# Planning Processes in OEMs and Sales Companies

Demand, Supply and Allocation Planning

# Demand and Supply Balance



# Demand Planning

Definition, Process and Organizations

# Demand Planning

## ■ Definition

- The Demand Planning process helps predict and influence future sales by customer

## ■ Benefits

- Decrease inventory obsolescence and mark downs
- Increase customer service and fill rates

## ■ Sales companies

- forecast based on shipments and historical sales, market information as well as planned promotions. They forecast across retailers in a market.

## ■ OEM's

- forecast across sales companies based on market analysis, business plan as well as historical shipments to sales companies.

# Demand Planning Process

- Basic Data Structure for DP
- Basic Forecast Types
- Typical Forecast Generation Process
- Forecasting Techniques

# Basic Data Structure for DP

- Organization Hierarchy
- Product Hierarchy
- Time

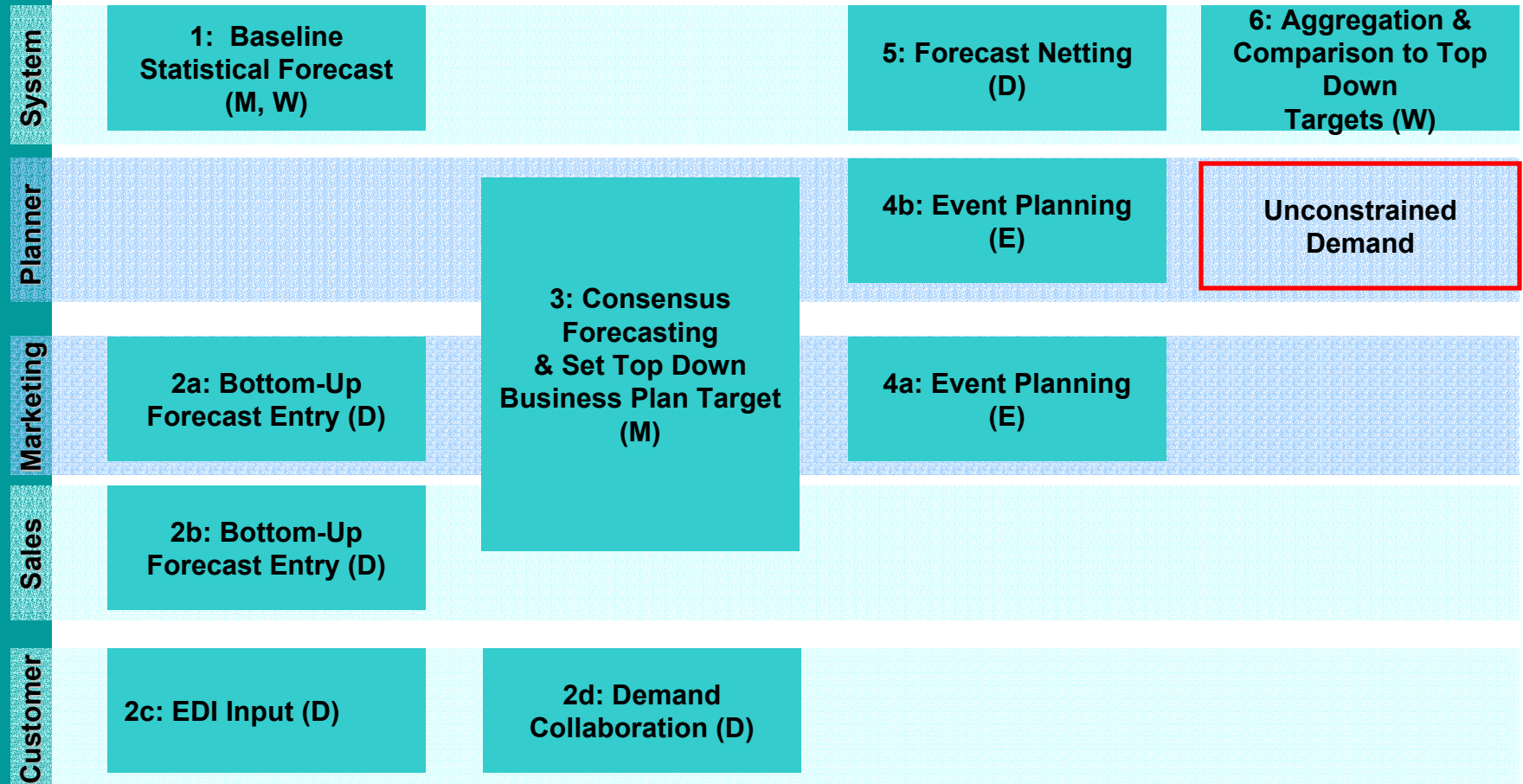
# Basic Forecast Types

- Revenue Forecasting
- Unit Forecasting
  
- Key Parameters
  - Planning Horizon : 9 – 24 months
  - Planning Frequency : Weekly/Monthly
  - Planning Buckets : Weeks > Months

# Typical Forecast Generation Process

- 
- **Top Down (Strategic)**
    - \$, Executive, Annual
    - Statistical forecast works here
    - Forecast based on Market Share for Business plan
  - **Bottom Up (Operational)**
    - SKU, sales rep, customer, Weekly or Monthly
    - Consensus forecast works here
  - **Middle Out**
    - \$, Manager, Weekly or Monthly
  - **Consensus (statistics vs sales rep) / Collaboration (sales rep vs customer)**
    - SKU, Sales rep, customer, Weekly or Monthly

# Typical Forecast Generation Process



# Forecasting Techniques

- Statistical Techniques
  - 500 +
  - Exponential Smoothing
  - Moving Average
  - .....

# Organization involved in Demand Planning

- Sales Companies
  - Sales
  - Marketing
  - Demand Planning Group
- OEMs
  - Demand Planning Group

	Revenue	Unit	Top-Down	Middle-Out	Bottom-Up	Attach Rate	Statistical	Rule Based
<b>Sales</b>								
<b>Marketing</b>								
<b>Demand Planning</b>								

# Supply Planning Process

Definition, Process and Organizations

# Supply Planning

- Definition
  - The supply planning process optimizes the use of both capacity and material in order to maximize satisfying anticipated demand
- Benefits
  - Reduce cost of inventory, expediting
  - Global coordination – sharing information across supply chain entities
- Sales companies perform a distribution plan
  - creates the material purchase
  - creates the inventory deployment across warehouses
- OEMs
  - create a capacity and material feasible master plan across factories and make factory sourcing decisions
- OEM/Component supplier - Factory
  - each factory creates a material and capacity feasible production schedule and detailed material procurement plan based on its vendor allocation and preference rules

# Supply Planning Process

- Supply Planning Process
  - Sales Companies-Distribution plan
    - Requirements plan
      - Inventory balancing across DC's
      - Maintain target safety stocks
      - Generate desired procurement requirement
    - Inventory deployment plan
      - Generate warehouse allocation
  - OEM-Master plan
    - Requirements plan
      - Factory sourcing
      - Direct procurement
    - Inventory deployment plan
      - Generate sales company allocation
    - Factory plan
      - Generate capacity schedules
      - Generate detailed procurement plans
      - Generate commit against master plan requirement

# Supply Planning Process

Inventory

2: Adjust Purchase and Sales

9: Adjust Warehouse Allocation

System

1: Generate Purchase Plan, constrained, unconstrained demand

3: Updated Purchase Plan

7: Netting Forecast and Allocation

8: Generate & Update Warehouse Allocation

10: Sends Adjustments and Destinations

3a: Generate Factory Allocation

6: Updated with Factory Commit

Constrained Demand

Factory

4: Factory gets Purchase Plan

5: Factory generates a commit

11: Factory receives adjustments and destinations

# Organizations

## ■ OEM

### ■ Procurement

- Purchase Plan (typically alternate suppliers and agreements in place for key components)
  - Recommended Purchases
  - Exceptions

### ■ Planning

- Master Plan
  - Meet demand at earliest given constraints

# Allocation Planning

Definition, Process

# Allocation Planning

## ■ Definition

- Allocation planning process refers to disaggregating expected supply / commits to the customer against anticipated demand. The order promising function is an extension of allocation planning where a sales order is promised against this allocation.

## ■ Benefits

- Increased customer service and retention
- Increased profits
- Increased order promising accuracy – hitting promise dates in execution

## ■ Sales companies

- create allocation plans from warehouse / Sales org to different retailers / groups of retailers
- Promise sales orders against allocated supply

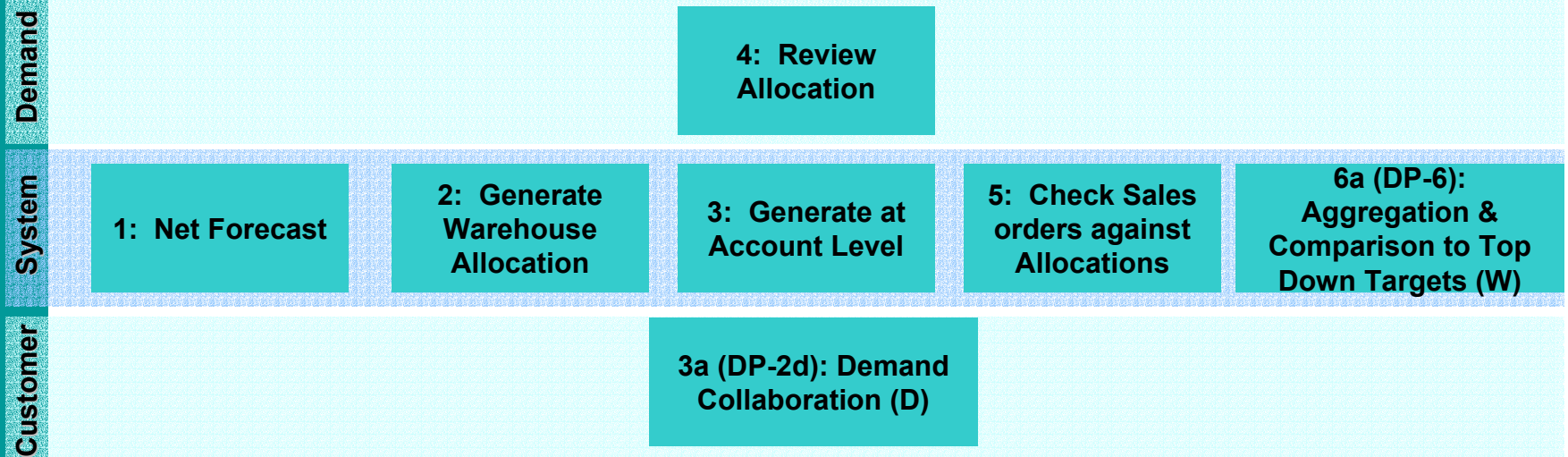
## ■ OEMs

- create allocation plans for allocation of finished goods between various sales companies – this is usually done as a part of the master plan

# Allocation Planning Process

- Allocation planning
  - Data structure for allocation planning
  - Rules – FCFS, order priority, customer priority
- Order Promising
  - Provide order shipment date to customers
  - Rules – ship complete, ASAP, alternates

# Allocation Planning Process



# Summary: Demand and Supply Balancing

