Planning During Dynamic Times

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Here's what we'll talk about?

- Crash course on the "big picture" of planning
- Tools used in planning & for re-planning
- Future trends affecting today's plans

Why & What to Plan?

What is the Alternative?

- The alternative to planning is NOT planning
- NOT planning means difficult to control
- NOT planning means difficult to manage
- Expediting is the opposite of planning

***ASAP** means: Absent Schedules Always Problems*

Organizations

- Proactive companies MAKE things happen
- Reactive companies LET things happen

Now that we know we ***want*** to plan…

… what kind of plan?

Planning

Strategic

- Large Scale
- Long Range
- Major Purpose
- What to do

Example:

Become a World Leader in communications

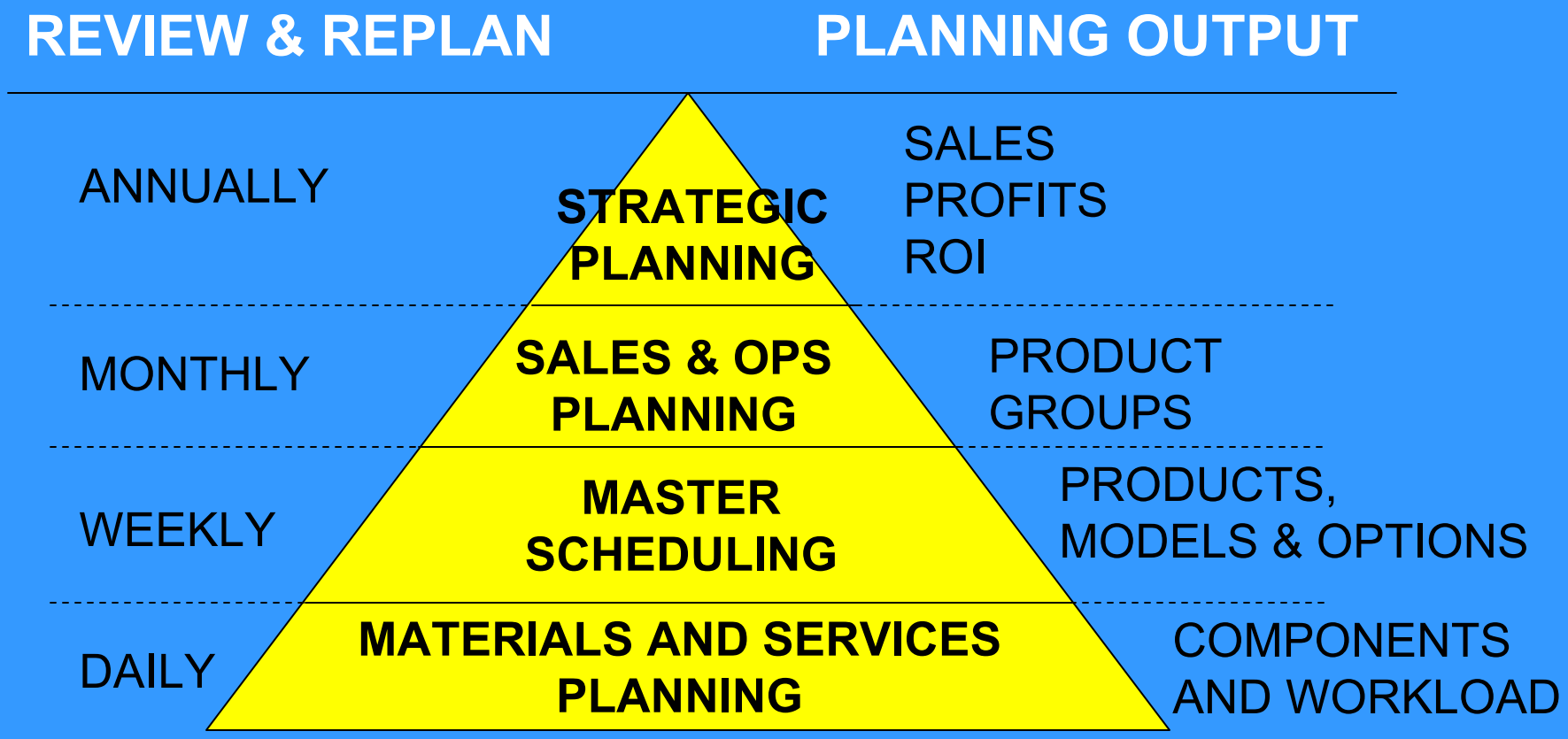
Tactical

- Limited Scale
- Short Range
- Action Oriented
- How to do it

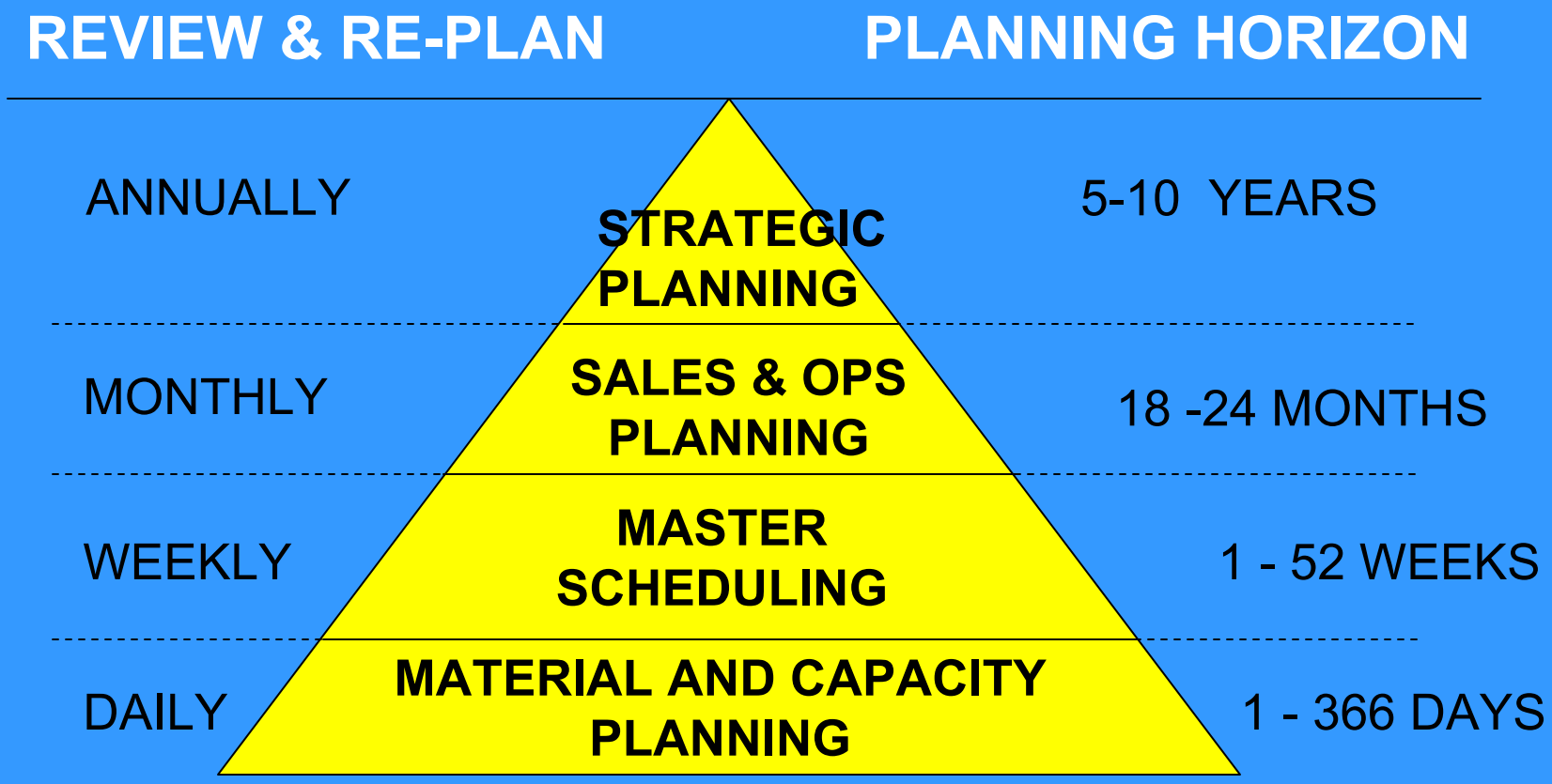
Example:

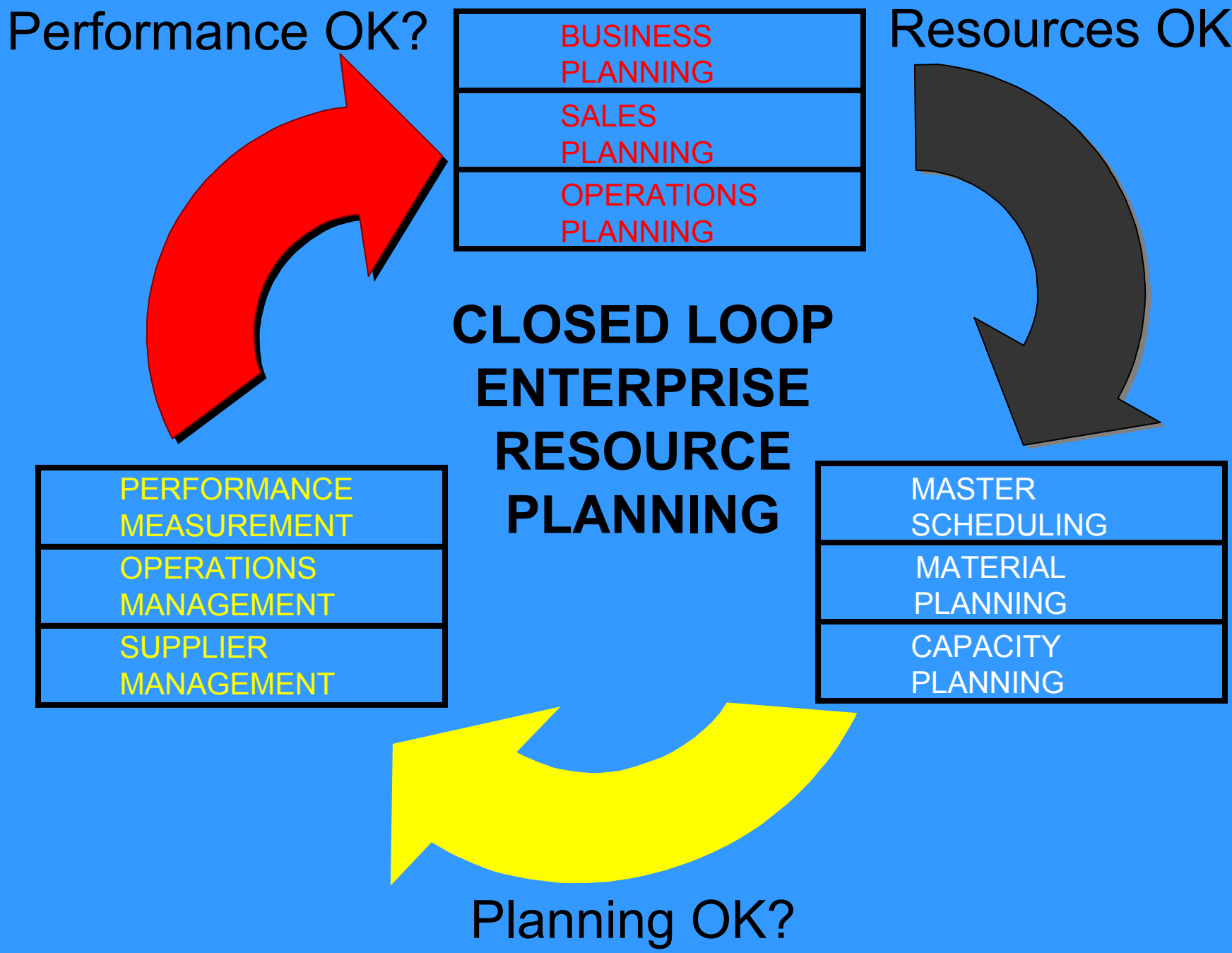
Buy your major competitor to increase market share

The Planning Hierarchy



The Planning Horizon




Performance OK?
BUSINESS PLANNING
SALES PLANNING
OPERATIONS PLANNING
Resources OK?
CLOSED LOOP ENTERPRISE RESOURCE PLANNING
PERFORMANCE MEASUREMENT
OPERATIONS MANAGEMENT
SUPPLIER MANAGEMENT
MASTER SCHEDULING
MATERIAL PLANNING
CAPACITY PLANNING
Planning OK?

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Planning Tools – *Slide 1*

- Begin using the components of Enterprise Resource Planning (ERP)
- Manufacturing Strategy

Make-to-Stock

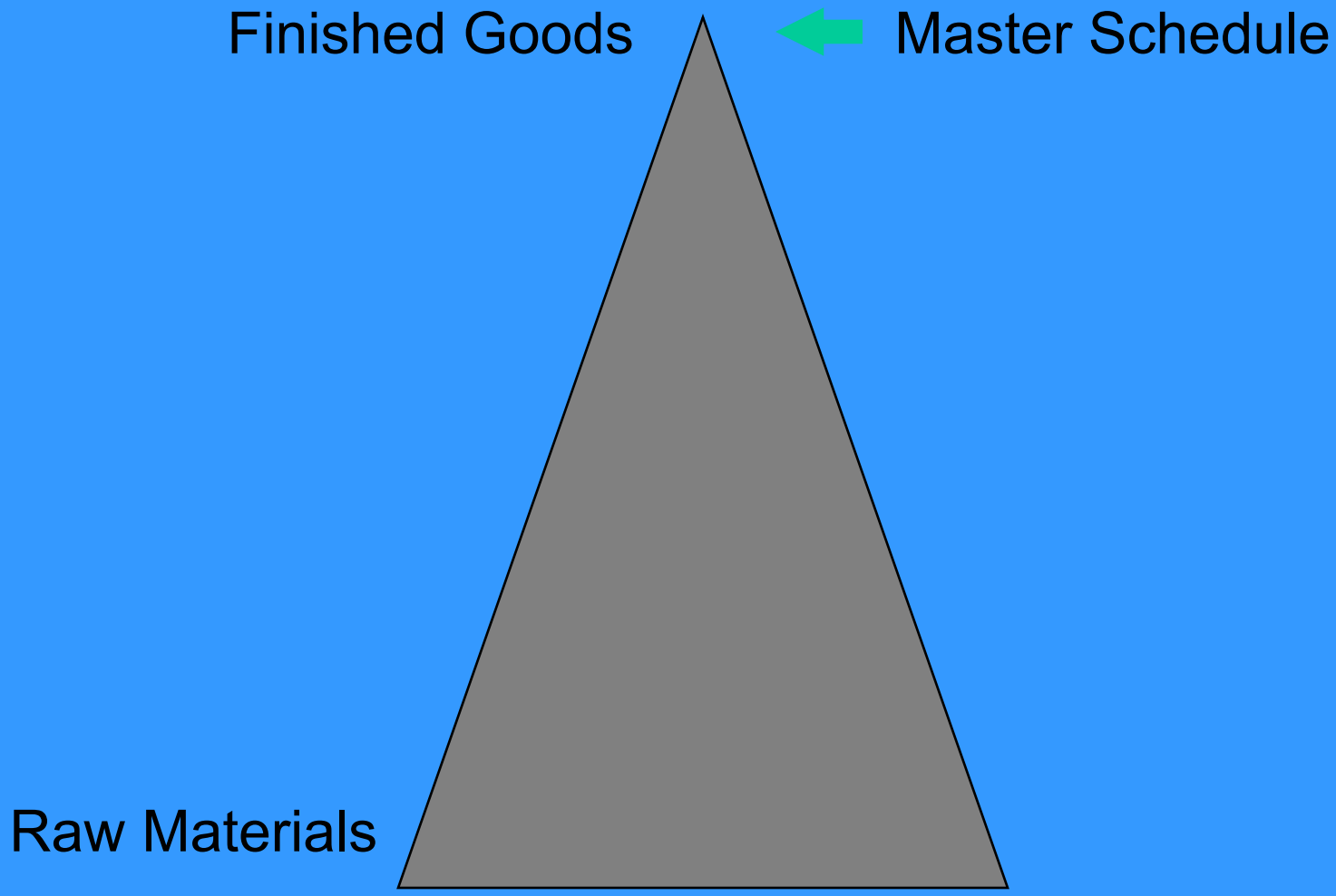
Environment

- Build to forecast
- Rapid delivery
- Standard products
- High volumes
- Low variety
- Low profit margins per unit

Business Impact

- Finished goods are stocked
- Forecast error costs money

Make-to-Stock



Make-to-Order

Environment

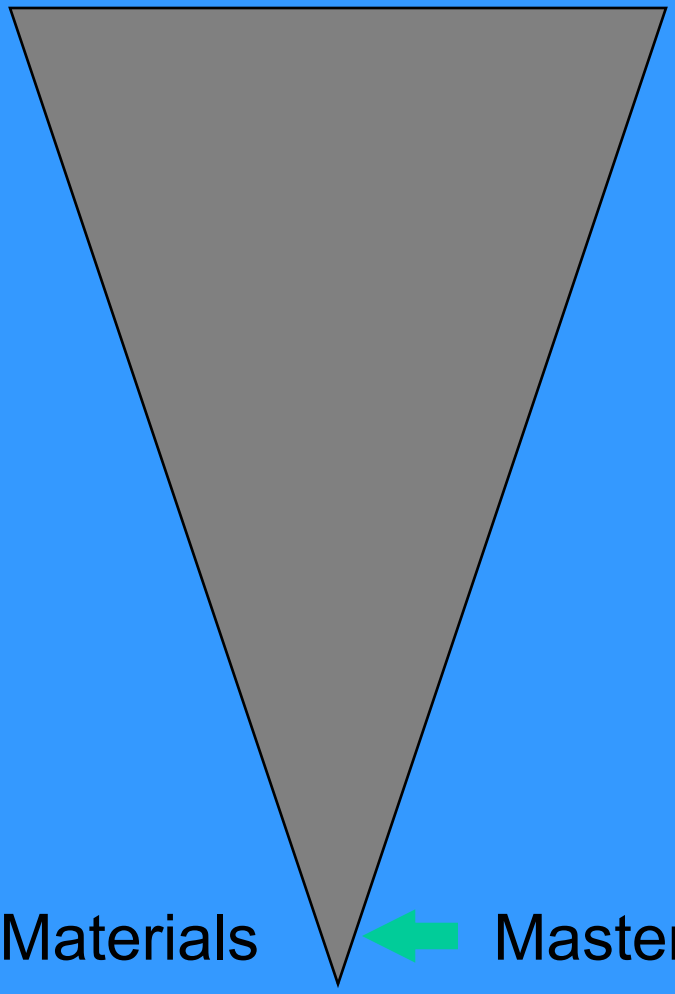
- More variety than Make-to-Stock (MTS)
- Some repeat products
- Long lead times
- Low volumes
- High end item variety
- Large profit margins

Business Impact

- Forecasted revenue only
- Raw material is stocked in anticipation of future sales

Make-to-Order

Finished Goods



Raw Materials ← Master Schedule

Assemble-to-Order

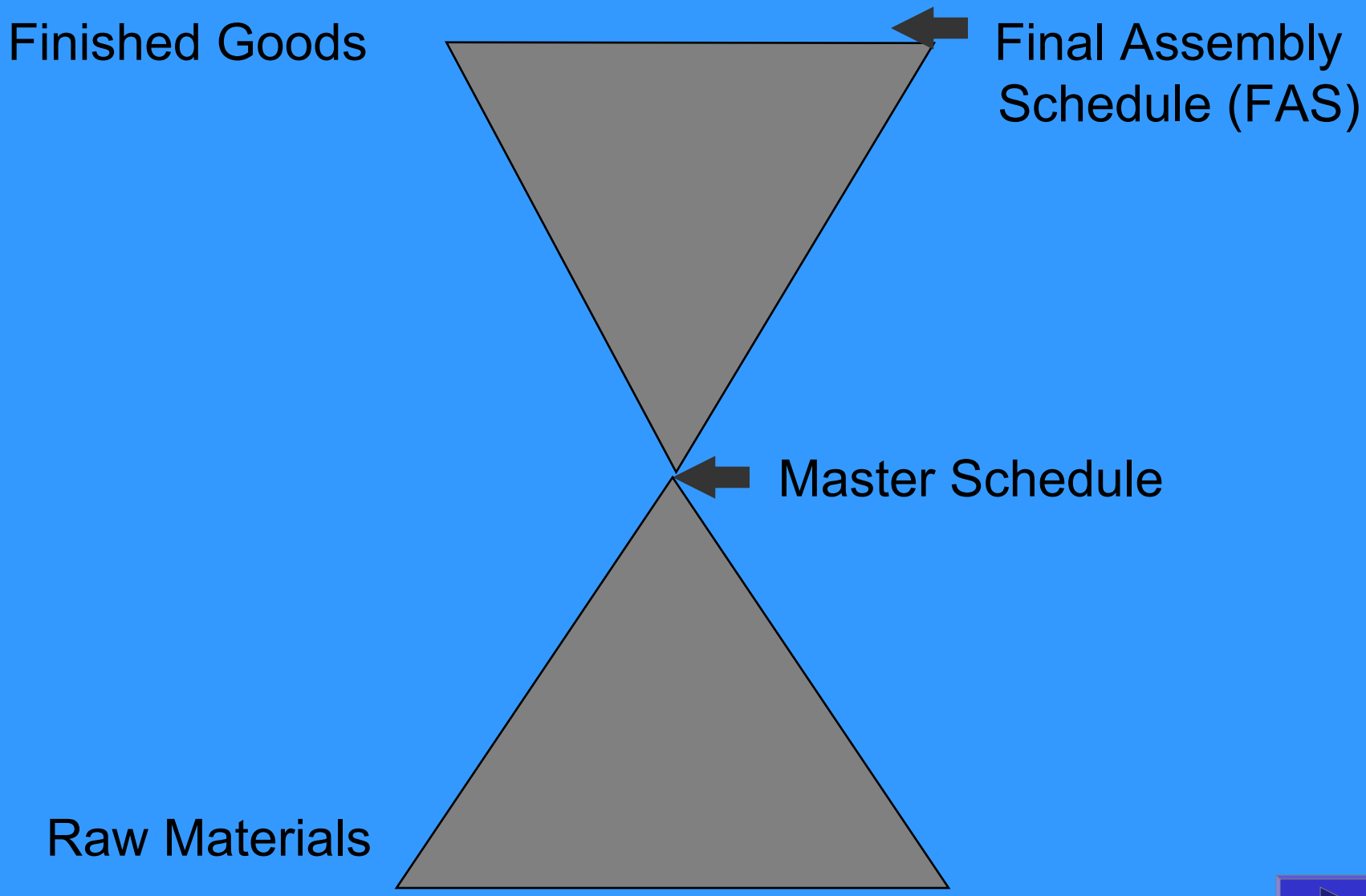
Environment

- Fewer products than MTO
- Higher volume than MTO
- Some standard sub-assemblies
- Build to forecast at the option level
- Configured to customer order
- Planning Bills

Business Impact

- Limited finished goods
- Material is stocked at a semi-finished stocking point
- Minimal configuration time
- Maximum product flexibility

Assemble-to-Order



Engineer-to-Order

Environment

- Custom designed products
- Unique bills of material
- Unique item numbers
- Very long lead times
- Low volumes
- High product variety

Business Impact

- No finished goods
- Low levels of raw material
- Revenue forecasts
- Difficult to forecast
- Estimating is very important

Planning Tools – *continued*

- Begin using the components of Enterprise Resource Planning (ERP)
- Manufacturing Strategy
- Use of Master Scheduling
  - Which level to schedule?

Two Level Master Schedules

- In an assemble-to-order environment a two level Master Schedule is required.
- The first master schedule is set at the **semi-finished goods** level and these units are made to stock.
- The second master schedule is set at the **final assembly** level where the products are made to order.

Planning Tools – *continued*

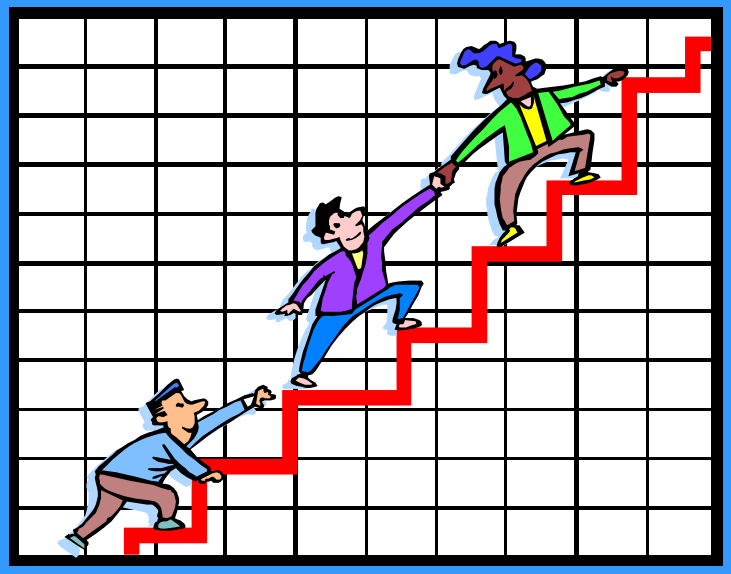
- Begin using the components of Enterprise Resource Planning (ERP)
- Manufacturing Strategy
- Use of Master Scheduling
  - Which Level?
- Production Scheduling Strategy

Level Load Strategy

- Deliver products and services at a constant rate
- Avoid making changes to operations
- Store inventory or capacity

Chase Strategy

- Produce only what you sell
- Produce products or service just-in-time
- If there are no sales - do not produce



Hybrid Strategy

- A balance between level load and chase
- Could be a mixture of both approaches

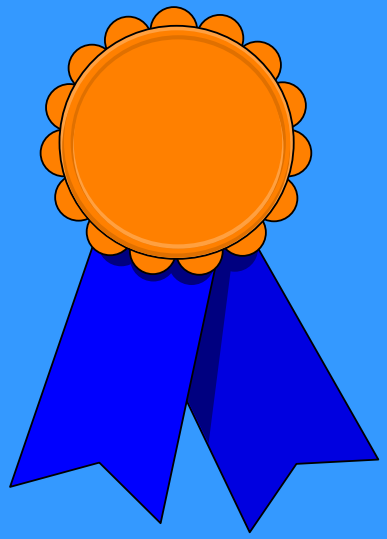
  Example: a producer of ice cream has two production levels, one shift per day during the slow season, two shifts per day during the busy season.

Planning Tools – *continued*

- Begin using the components of Enterprise Resource Planning (ERP)
- Manufacturing Strategy
- Use of Master Scheduling
  - Which Level?
- Production Scheduling Strategy
- Use of Product Configurator
  - Features & Options
  - Planning Families

Product Configurators

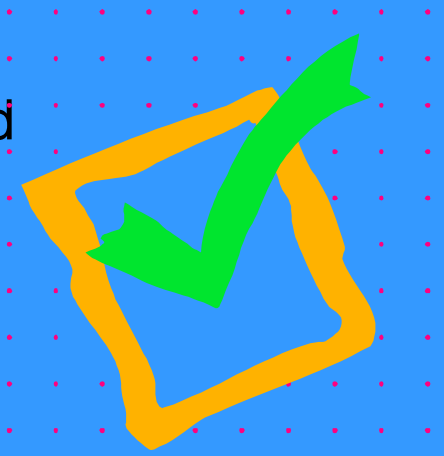
A product configurator is a piece of software that prompts the customer to make choices which result in a specific product or service being developed to meet the needs specified.



Product Features & Options

- A distinctive characteristic of a product or service.

  For example, in ordering a new car, the customer must specify an engine type and size (option), but need not necessarily select an air conditioner



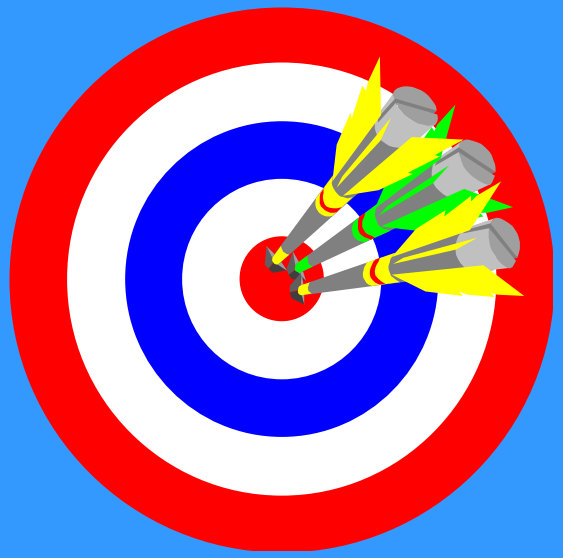
- A choice or feature that must be made by the customer or company in customizing the end product.

  In many companies, the term "option" means a mandatory choice from a limited selection.

Example (Features & Options)

A hotel resort offers the customer a range of room options:

- Smoking or Non Smoking
- King, Two Doubles or One Double Bed
- Ocean View or Lagoon view
- Meals included or not



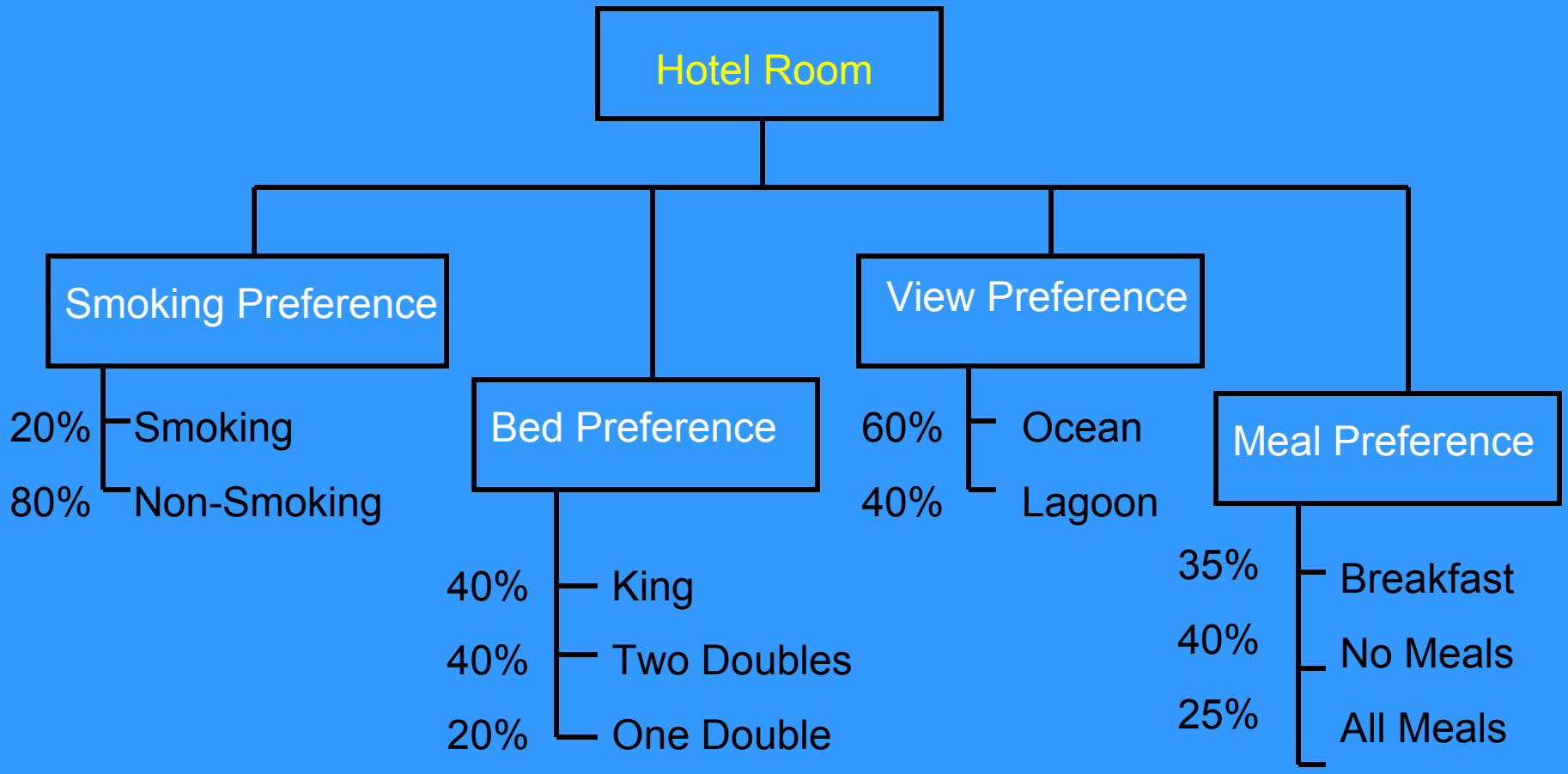
Planning Bills of Material

"An artificial grouping of items or events in bill-of-material format used to facilitate master scheduling and material planning.

APICS Dictionary 9th edition

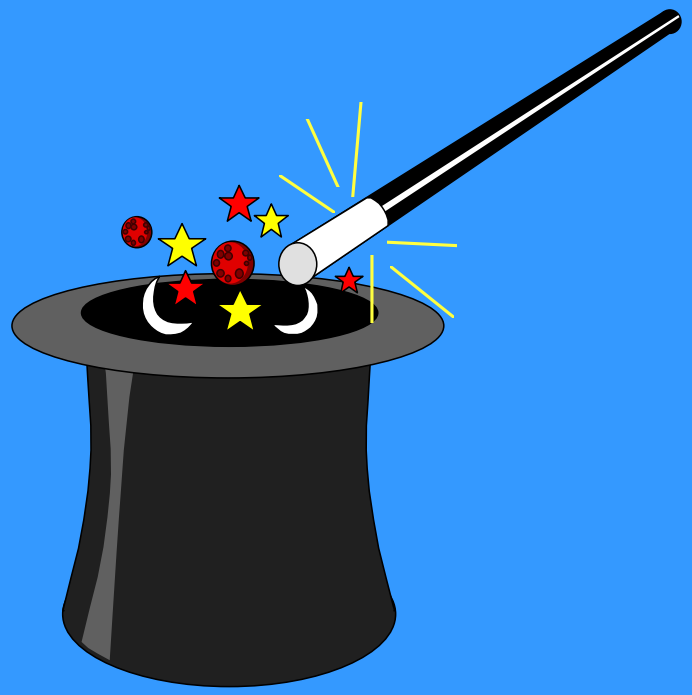
Planning Bills of Material

(shows the historical relative popularity of each option)



Planning Tools – *Slide 2*

- Lead Times
- Safety Stock
- Time Fences
  - Planning Fence
  - Demand Fence
- Time Zones



Lead Time Definition

"A span of time required to perform a process (or series of operations)."

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Definition of Safety Stock

"In general, a quantity of stock planned to be in inventory to protect against fluctuations in demand or supply."

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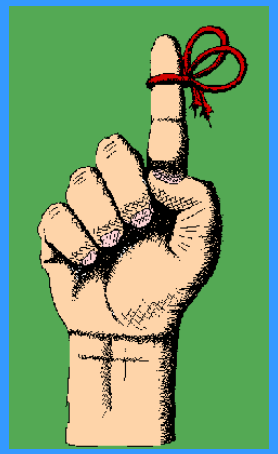
Safety Stock is inventory that is kept "Just In Case"



Demand Time Fence

"That point in time inside of which the forecast is no longer included in total demand and projected available inventory calculations; inside this point, only customer orders are considered."

APICS Dictionary - 9th edition

Planning Time Fence

"A point in time denoted in the planning horizon of the master scheduling process that marks a boundary inside of which changes to the schedule may adversely affect component schedules, capacity plans, customer deliveries, and cost."

APICS Dictionary - 9th edition

Time Fences

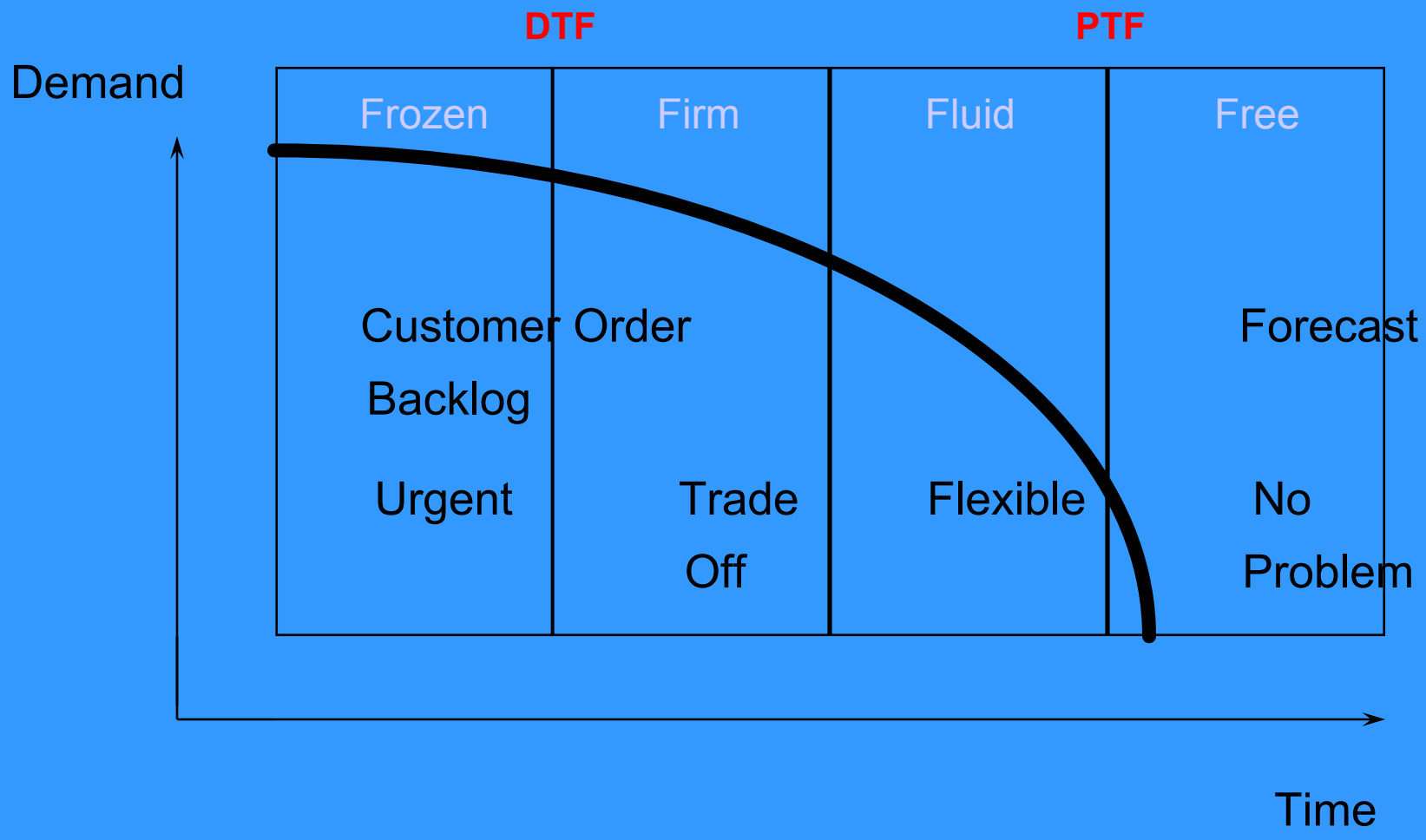
Demand

- Changes are seldom permitted
- Usually set to cover the production and assembly time for a product

Planning

- Changes can only be made by the Master Scheduler
- Usually set to include the acquisition time for materials and components

Time Zones in the Master Schedule



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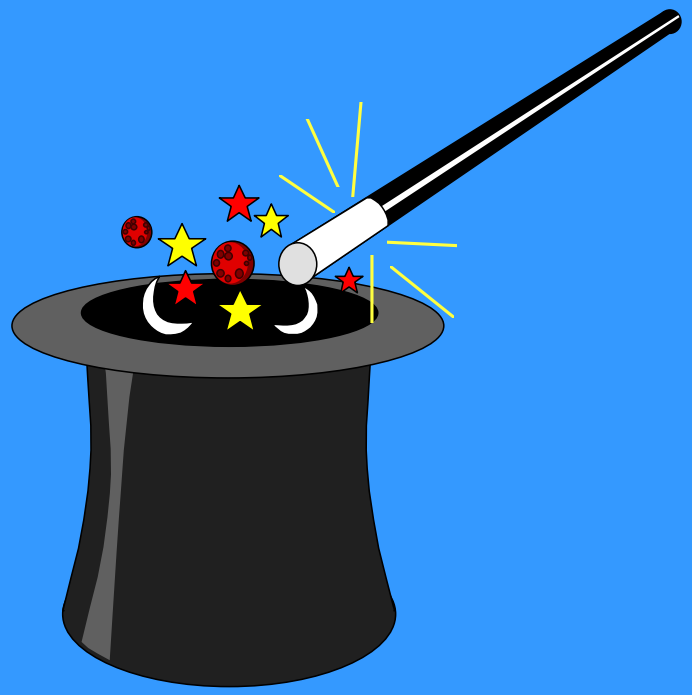

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The Business World Today

- The increased intensity of competition
- The escalating demands of customers
- The onslaught of technology
- The accelerating rate of change
- The explosion of information
- The avalanche of new issues
- Business is global

Challenging Business Problems

- Long lead times
- Large numbers of items
- Complex processes
- Diverse product range
- Multiple sites
- Changing product mix

Future trends

- Organization
- People
- Technology
- Societal Trends
- Environmental Issues
- Regulatory Issues
- Global Issues

Tools for the future

- Advanced Planning & Scheduling (APS) Systems
- Vendor Managed Inventories (VMI)
- E-Commerce
- Real-Time Order Entry
- Direct Distribution of Products
- Multi-plant Master Scheduling
- Integrated/Optimized Supply Chains
- Collaborative Planning, Forecasting, and Replenishment (CPFR)

Principles of Planning for the Future – *Slide 1*

- Customers are empowered and informed
- Quality and cost are order qualifiers
- Service and speed are order winners
- Customers demand quick response
- Information management is essential

Principles of Planning for the Future – *Slide 2*

- Integration of the entire supply chain is enabled by information communication
- Market intelligence is a competitive weapon
- Process flexibility is critical
- Electronic commerce is the way to communicate
- Planning systems must be capable of modeling complex supply chains and business processes

More Information

- Reprint Listing
- APICS - Fundamentals of Materials and Operations Management Course
- The Denmark Group, Inc.
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