

# Strategic Framework to Analyze Supply Chains

郭瑞祥教授



【本著作除另有註明外，採取  
創用CC「姓名標示—非商業性—相同方式分享」  
台灣3.0版  
授權釋出】

# Introduction

# Flowers \_Online

 Microsoft ◦



WEDDING  
DATE



 Nipic.com ◦

- BROWSE**
- Fresh Flowers & Décor**  
[Centerpieces](#)  
[Fresh Cut Flowers](#)  
[Gift Baskets](#)  
[Wreaths](#)  
[Seasonal](#)  
 > [All Fresh Flowers & Décor](#)
- Indoor Plants**  
[Bonsai](#)  
[Flowering Plants](#)  
[Nonflowering Plants](#)  
[Topiary](#)  
[Trees](#)  
[Orchids](#)  
 > [All Indoor Plants](#)
- Decorative Vases**  
[Ceramic Vases](#)  
[Crystal Vases](#)  
[Glass Vases](#)  
[Hand-Painted Vases](#)  
[Porcelain Vases](#)  
[Wooden Vases](#)  
 > [All Decorative Vases](#)
- Dried Plants & Flowers**  
[Dried Flowers](#)  
[Dried Mixed Floral Arrangements](#)  
[Dried Plants](#)  
[Dried Trees](#)  
 > [All Dried Plants & Flowers](#)
- Sellers**  
[ProFlowers](#)  
[FTD](#)  
[Teleflora.com](#)  
[1-800-Flowers](#)

# Fresh Flowers & Indoor Plants

Hello. Sign in to get [personalized recommendations](#). New customer? [Start here](#)

## Give the Gift of Flower Power



Surprise family, friends, and coworkers with fresh flowers. Whatever their tastes, they'll love a cheerful bouquet and the sentiments that come with it. And don't forget to treat yourself--brighten your home or office with a colorful arrangement every day of the week. Shop for:

- [Mixed bouquets](#)
- [Tulips](#)
- [Lilies](#)
- [Roses](#)

> [All fresh cut flowers](#)

## Featured Categories



### Fresh Cut Flowers

- [Roses](#)
  - [Lilies](#)
  - [Mixed Bouquets](#)
  - [Tulips](#)
- > [All Fresh Cut Flowers](#)



### Indoor Plants

- [Flowering Plants](#)
  - [Bonsai](#)
  - [Nonflowering Plants](#)
  - [Orchids](#)
- > [All Indoor Plants](#)



### Decorative Vases

- [Ceramic](#)
  - [Crystal](#)
  - [Hand-Painted](#)
  - [Glass](#)
- > [All Decorative Vases](#)

## Featured Sellers

### Birthday Gifts



Surprise someone special on their birthday with a [sunny bouquet](#) or a [balloon basket](#). They make [perfect gifts](#) for friends, family members, and coworkers.

### Top Sellers in Fresh Cut Flowers



1. [ProFlowers - Two Dozen Assorted Roses](#)  
\$29.99
2. [ProFlowers - Summer Lilies](#)  
\$29.99
3. [Rose Alstro Combo](#)  
\$34.99

> [All Fresh Cut Flowers top sellers](#)

### Top Sellers in Indoor Plants



Search



Fresh Flowers & Indoor Plants

**Fresh Cut Flowers**

Narrow or Expand Results

Showing 1 - 24 of 1574 Results

Sort by

**Expand Your Results**  
Remove Category: Fresh Cut Flowers

**Narrow by Category**

- Carnations (17)
- Daisies (22)
- Irises (14)
- Lilies (58)
- Mixed Bouquets (602)
- Orchids (8)
- Roses (235)
- Sunflowers (18)
- Tulips (37)

**Narrow by Brand**

- Winning Gifts (345)
- teleflora.com (411)
- ProFlowers (274)
- GiftTree.com (103)
- OrganicBouquet.com (53)
- 1-800-Flowers (51)
- FTD (28)
- Falcon Farms (24)
- Proflowers.com (14)
- Flowerbud.com (10)
- Vanderschoot (4)
- PlantShop.com (3)
- [See all brands](#)

**Narrow by Price**

- \$0-\$24 (271)
- \$25-\$49 (613)
- \$50-\$99 (350)
- \$100-\$199 (119)
- \$200-\$499 (39)



ProFlowers - Two Dozen Assorted Roses  
~~\$29.99~~  
1 Used & new from \$29.99  
★★★★☆  
Usually ships in 1-2 business days



1 Doz Red Roses  
~~\$39.99~~ \$19.99  
1 Used & new from \$19.99  
★★★★☆  
Usually ships in 1-2 business days



ProFlowers - Summer Lilies  
~~\$29.99~~  
1 Used & new from \$29.99  
★★★★☆  
Usually ships in 1-2 business days



2 Doz. Assorted Color Roses  
~~\$79.00~~ \$39.99  
1 Used & new from \$39.99  
★★★★☆  
Usually ships in 1-2 business days



ProFlowers - Carnival of Color Bouquet  
~~\$39.99~~  
1 Used & new from \$39.99  
★★★★☆  
Usually ships in 1-2 business days



20 Assorted Tulips  
~~\$29.99~~  
1 Used & new from \$29.99  
★★★★☆  
Usually ships in 1-2 business days





# Flowers\_Online

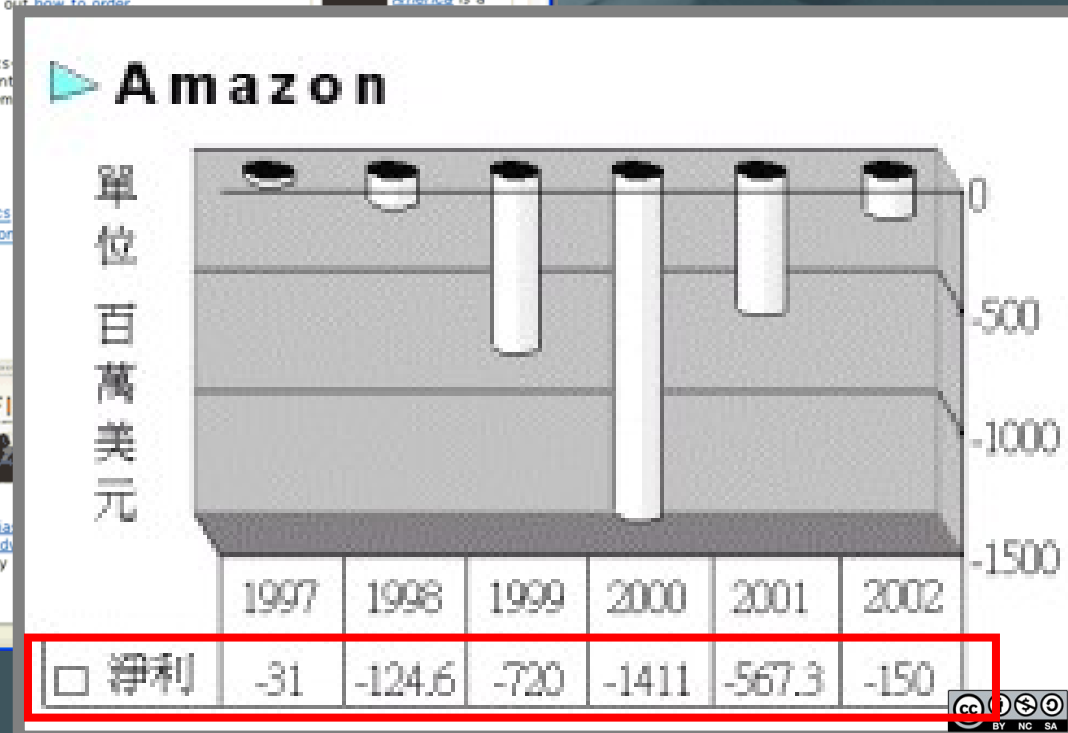


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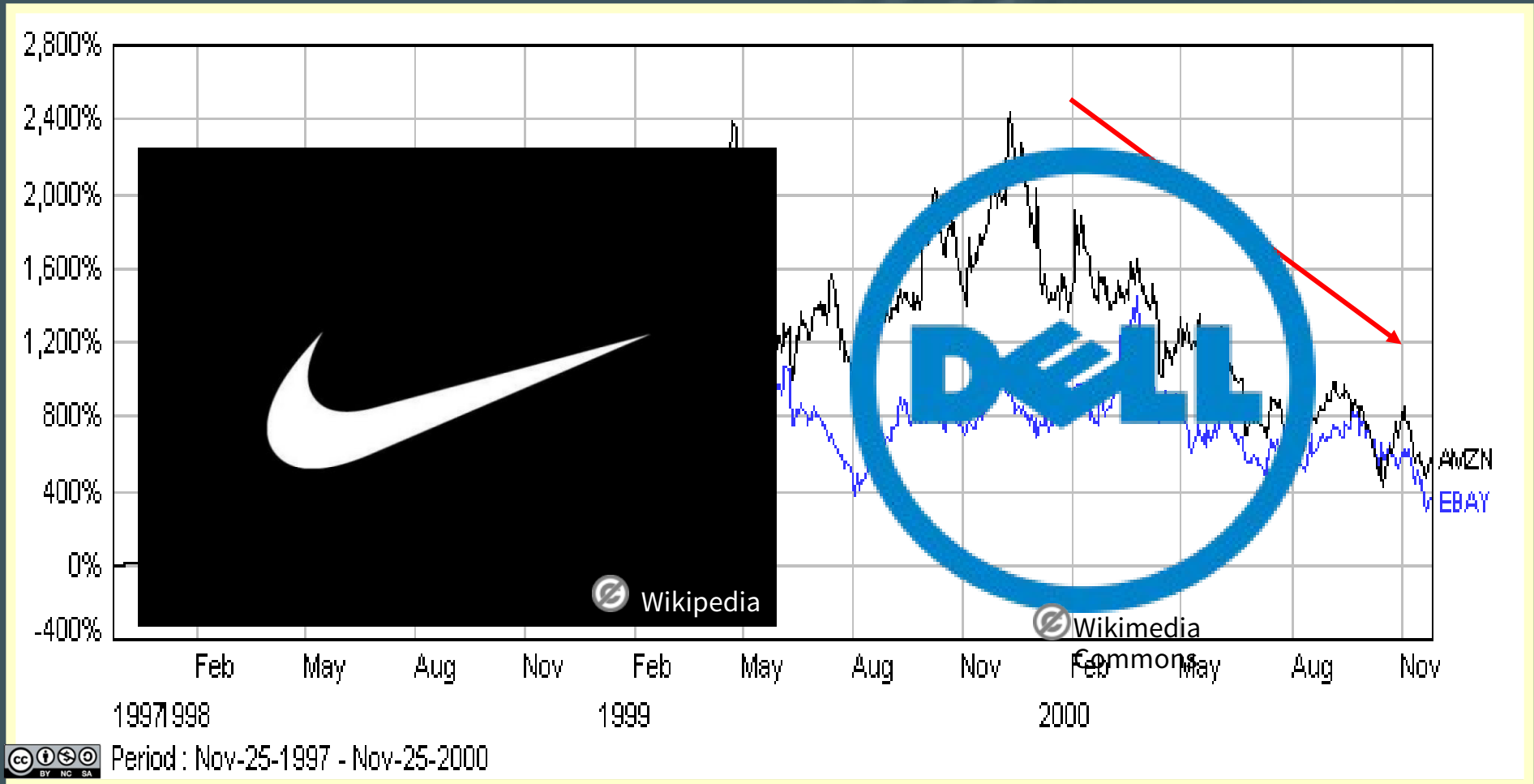
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# Amazon.com



# Amazon stock





# A Strategic Framework for Supply Chain Design, Planning, and Operation

- ▶ Part I: Understand the supply chain
- ▶ Part II: Supply chain performance
- ▶ Part III: Supply chain drivers

# Part I: Outline

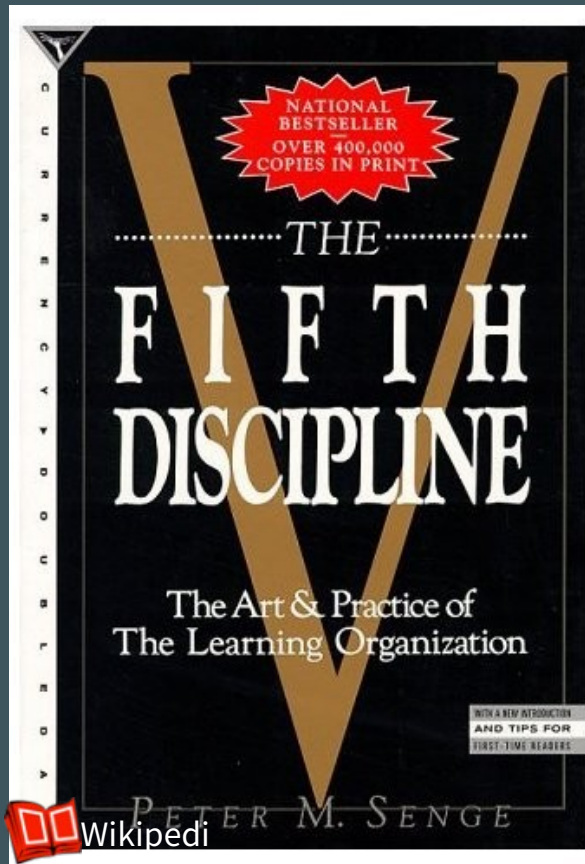
- ▶ What is supply chain?
- ▶ What is supply chain management?
- ▶ Process view of a supply chain

# Definition of Supply Chain Management

*Supply chain management is a set of approaches utilized to efficiently **integrate** suppliers, manufacturers, warehouses and stores, so that merchandise is produced and distributed at the **right quantities**, to the **right locations**, and at the **right time**, in order to **minimize system-wide costs** while satisfying **service level requirements**.*



# The Fifth Discipline & The Beer Game



a

MIT Forum: games: beer - Microsoft Internet Explorer

MIT forum  
FOR SUPPLY CHAIN INNOVATION

the beer game

The Beer Game

RETAILER - Week 0

WHOLESALER - Week 0

DISTRIBUTOR - Week 0

FACTORY - Week 0

inventory delay 1 delay 2

total cost: backorder: recent order:

total cost: backorder: recent order:

total cost: 0 backorder: 0 recent order: 0

total cost: backorder: 0 recent order:



The MIT Forum for Supply Chain Innovation

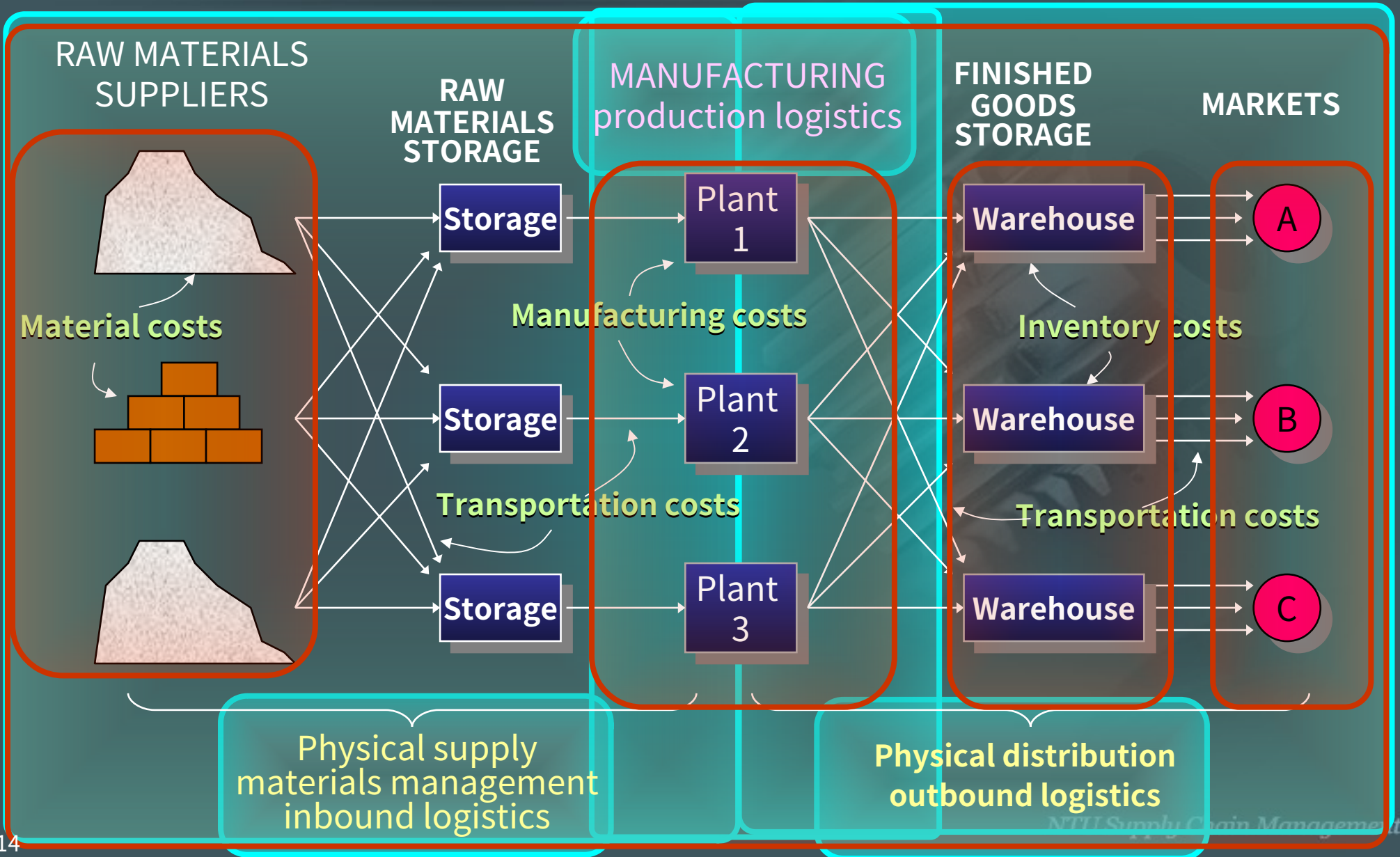
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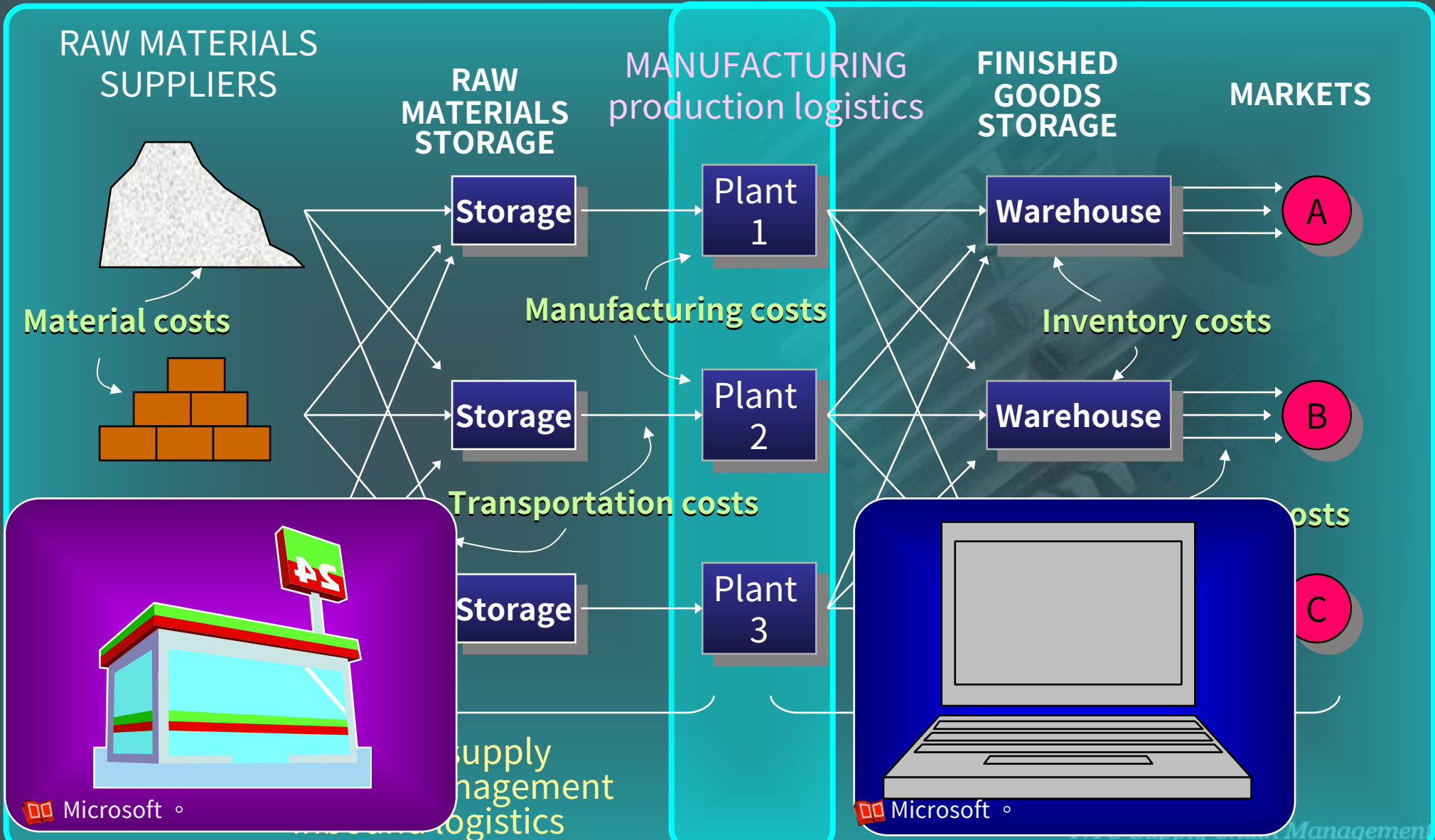




# Supply Chain: Logistics Network



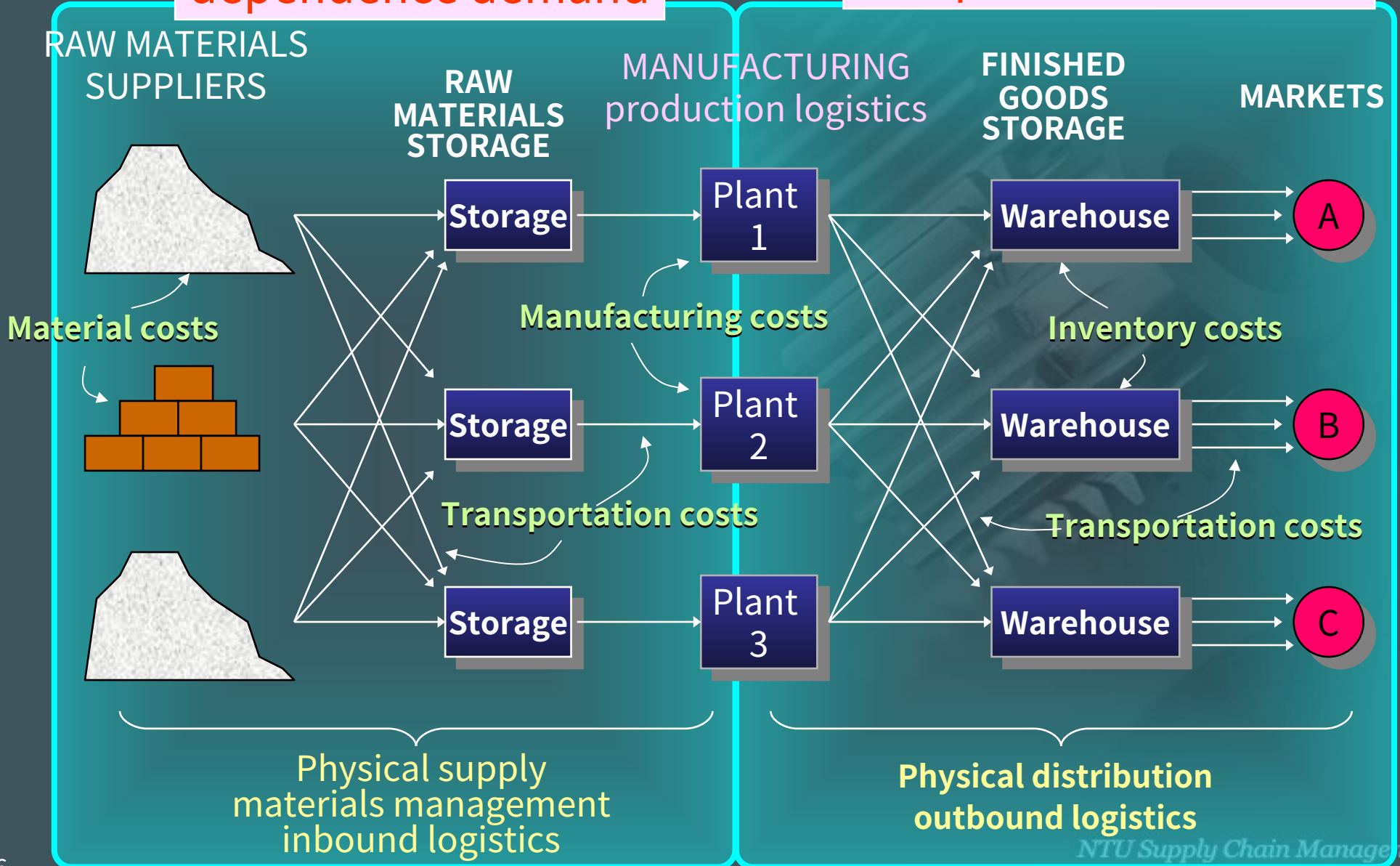
# Supply Chain: Logistics Network



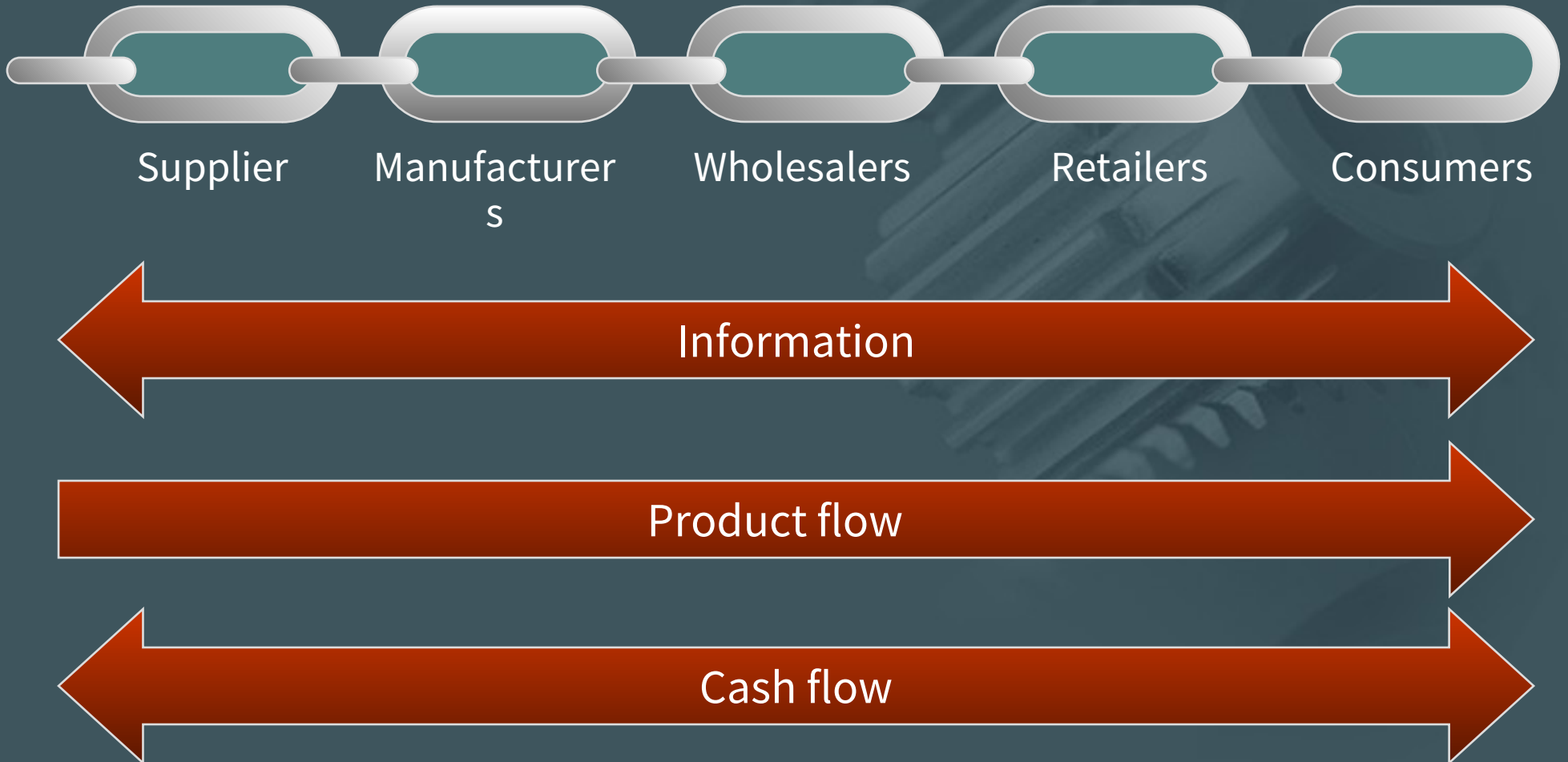
# Supply Chain: Logistics Network

dependence demand

Independence demand



# Integrating Supply Chain Process



# Process View of a Supply Chain

## ▶ Cycle view

- Each cycle performs at the interface between two successive stages of a supply chain
- This view is useful when considering operational decisions, because it specifies the roles of each member and the desired outcome for each process

## ▶ Push/Pull view

- Depend on whether they are executed in response to a customer order(pull) or in anticipation of customer order(push)
- This view is useful when considering strategic decisions relating to supply chain design



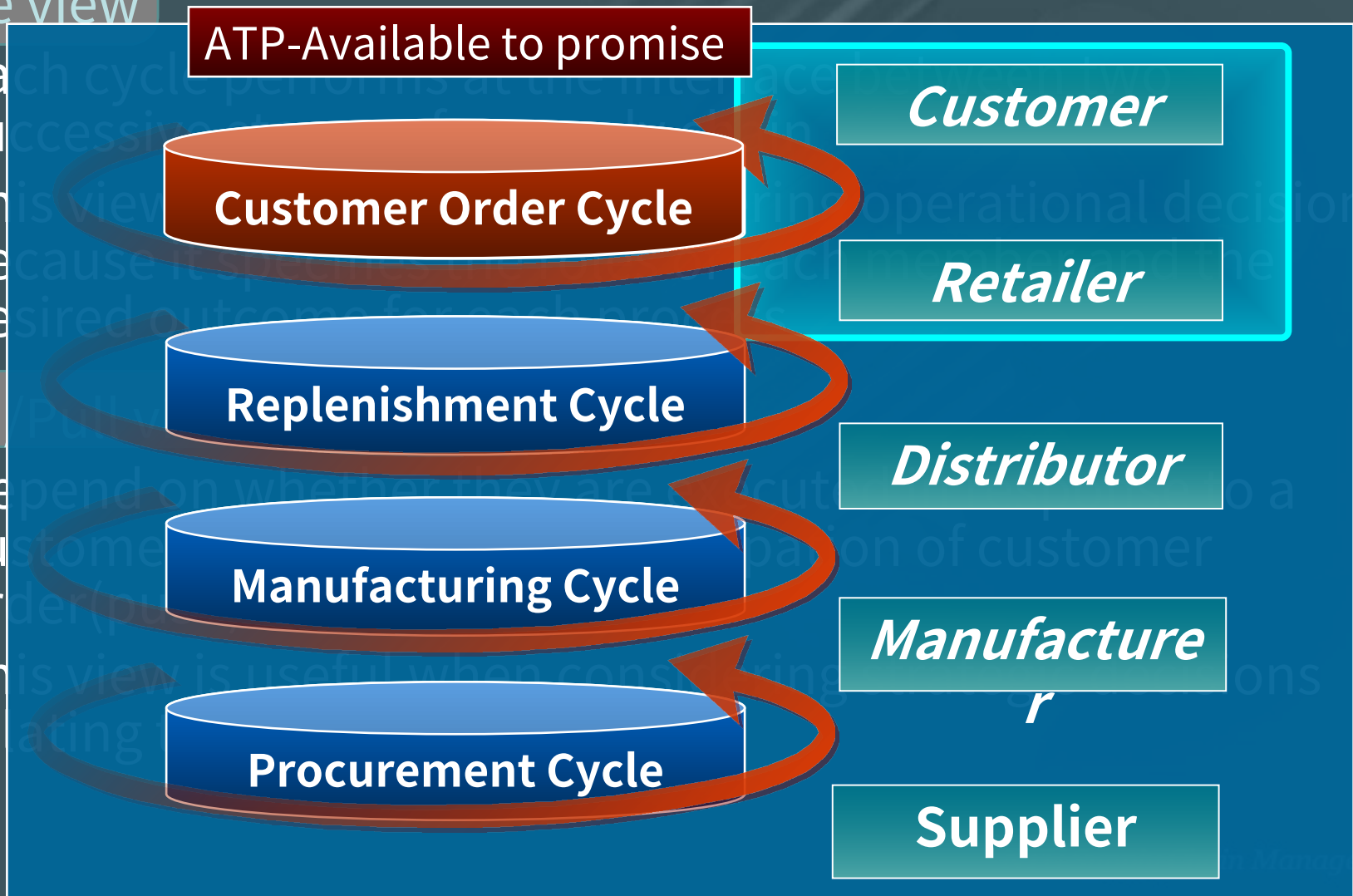
# Cycle View of a Supply Chain

## ▶ Cycle view

- Each cycle performs a different function
- This view is useful for operational decisions, because it shows the time between desired outputs and the time to produce them.

## ▶ Push

- Depend on whether they are customer order (push) or manufacturer order (pull)
- This view is useful when considering the relationship between the customer and the supplier.



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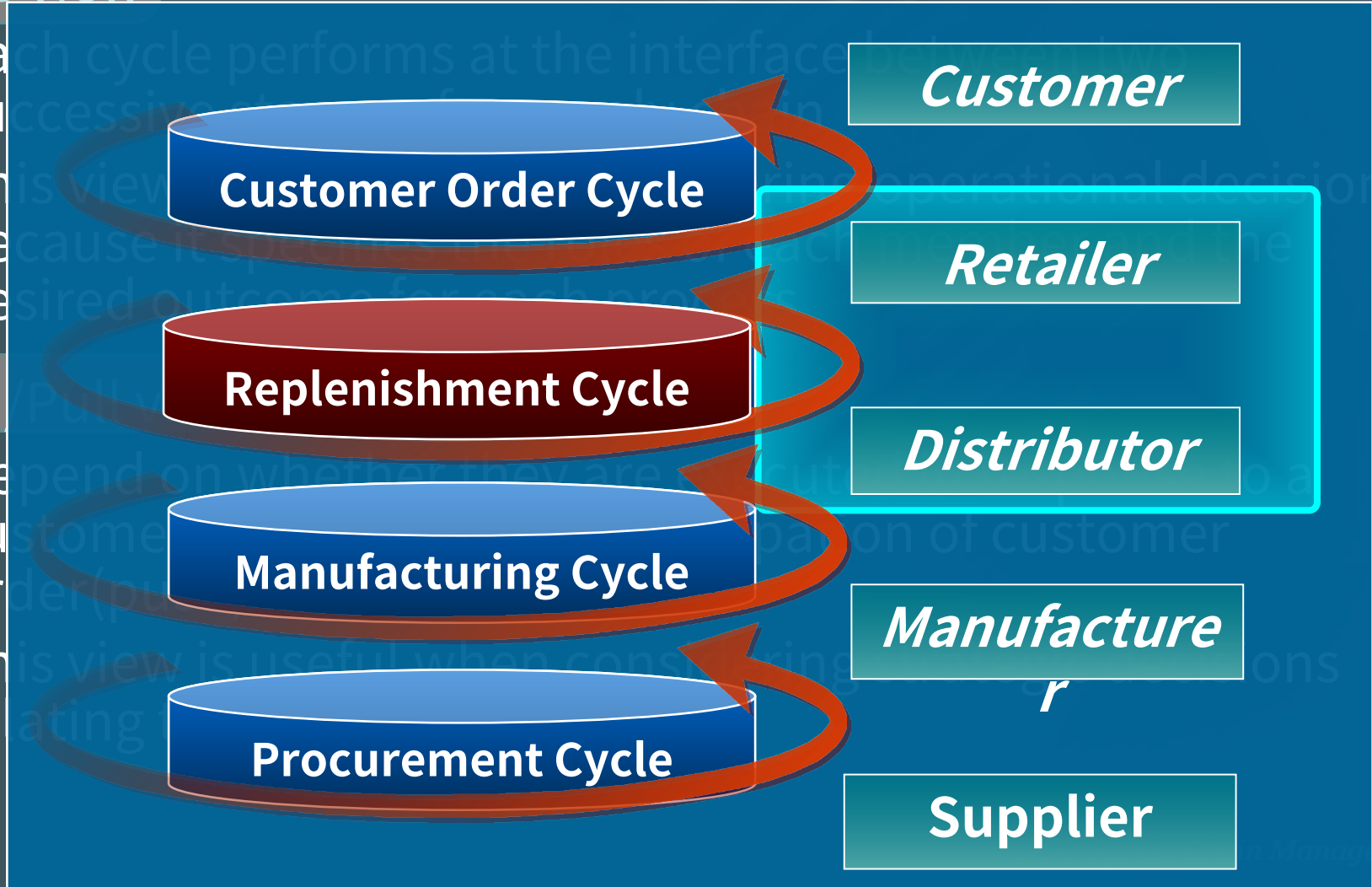
# Cycle View of a Supply Chain

## ▶ Cycle view

- Each cycle performs at the interface between two successive stages of the supply chain
- This view is useful for operational decisions, because it helps to identify the cycle that is responsible for the desired outcome

## ▶ Push

- Depend on whether they are driven by customer order (push) or by production of customer order (pull)
- This view is useful when considering the impact of customer order on the supply chain



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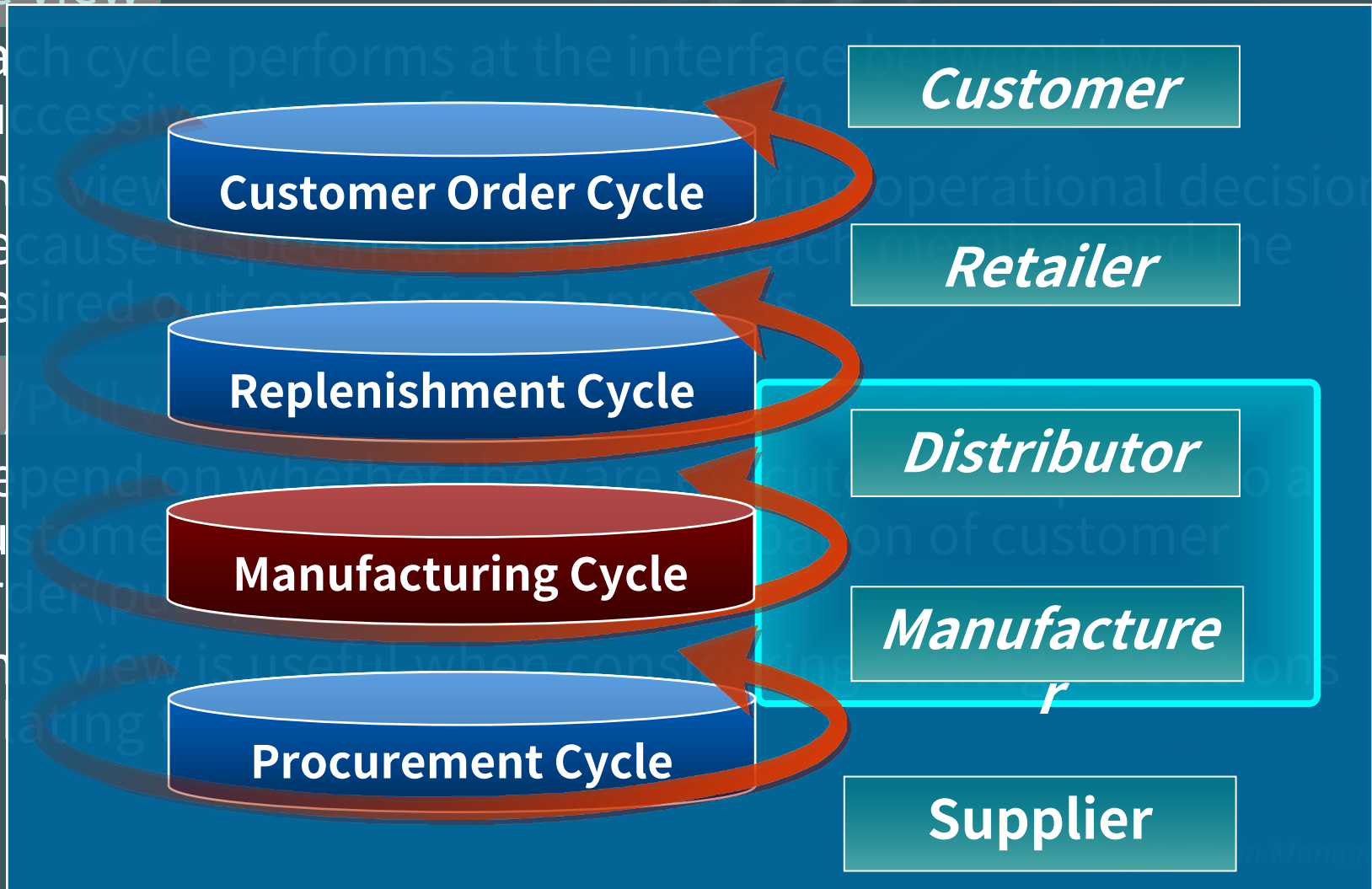
# Cycle View of a Supply Chain

## ▶ Cycle view

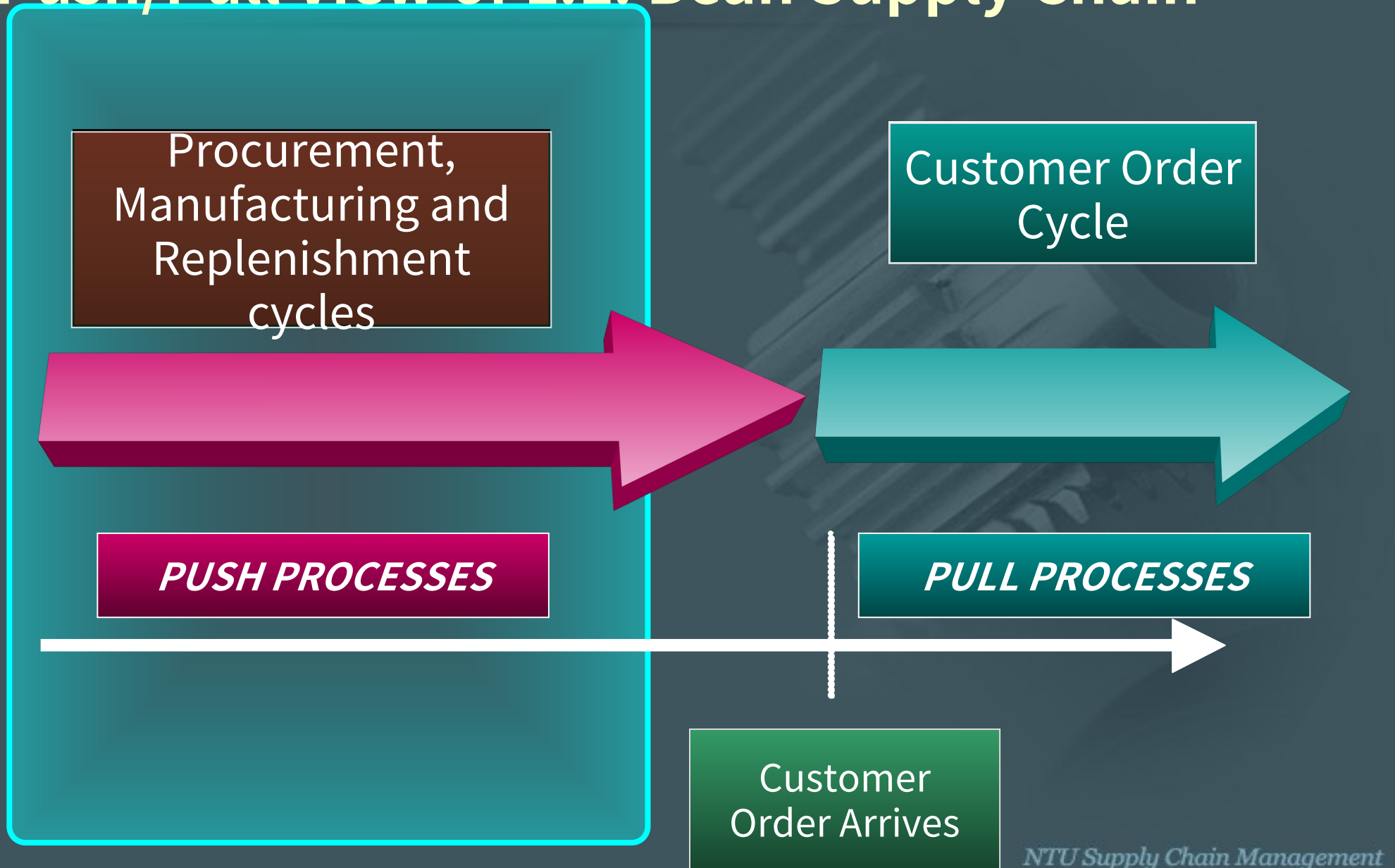
- Each cycle performs at the interface between two successive stages of the supply chain
- This view is useful for operational decisions, because it helps to identify the cycle that is desired outcome for each stage

## ▶ Push

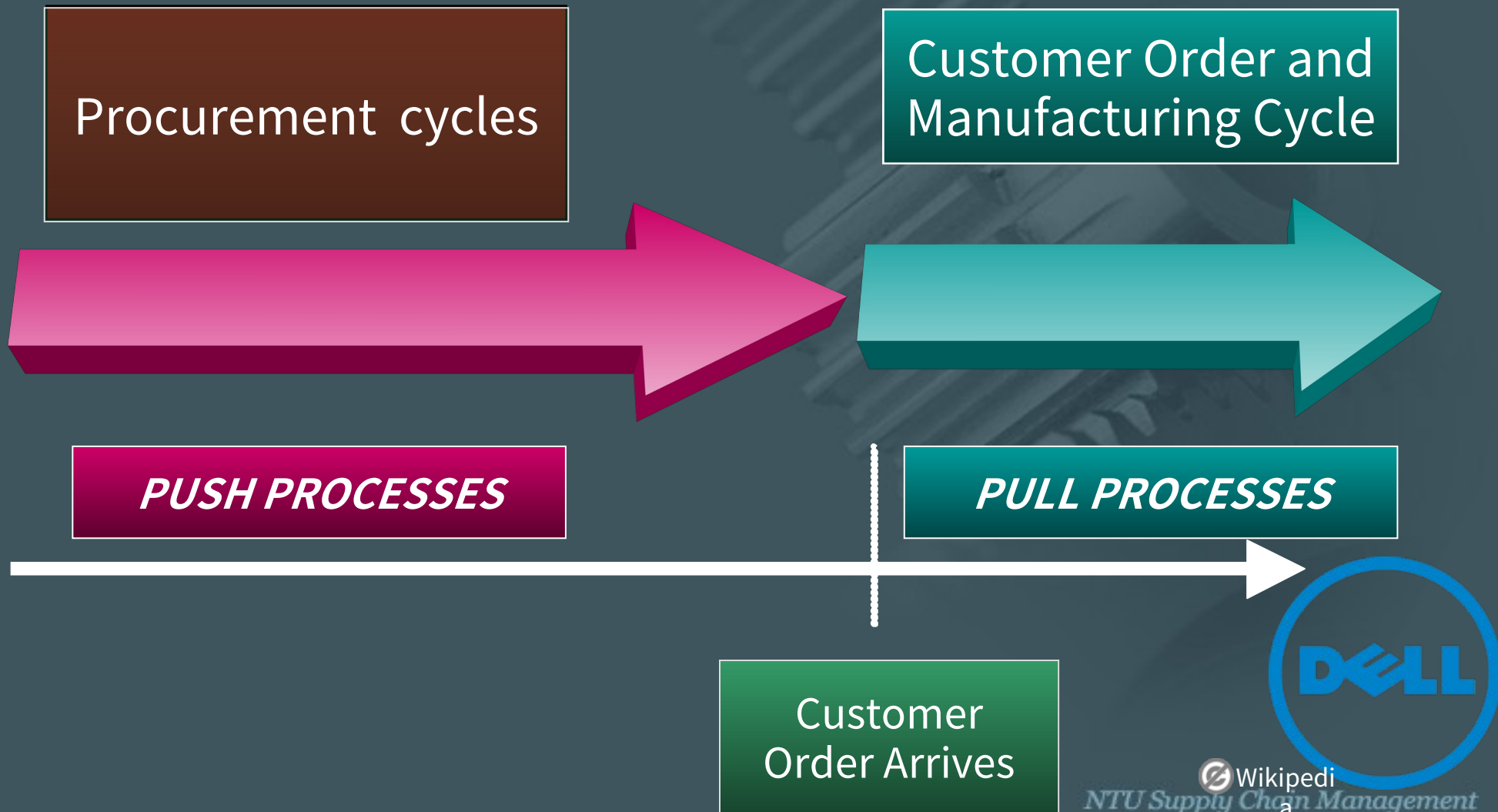
- Depend on whether they are driven by a customer order (push) or by a forecast of customer requirements (pull)
- This view is useful when considering the relationship between the stages of the supply chain



# Push/Pull View of L.L. Bean Supply Chain



# Push/Pull View of L.L. Bean Supply Chain





# Part II: Outline

- ▶ Competitive and supply chain strategies
- ▶ Strategic fit
- ▶ Expand the scope

# The Value Chain: Linking Supply Chain and Business Strategy

*Business Strategy*

*New Product  
Strategy*

*Marketing  
Strategy*

*Supply Chain Strategy*

**New  
Product  
Development**

**Marketing  
and  
Sales**

**Operations**

**Distribution**

**Service**

**Finance, Accounting, Information Technology, Human Resources**

# Achieve Strategic Fit

Strategic fit means both the competitive and supply chain strategies have the same goal.

- ▶ Step 1: Understand the customer
- ▶ Step 2: Understand the supply chain
- ▶ Step 3: Achieve strategic fit

# Step 1: Understand the Customer

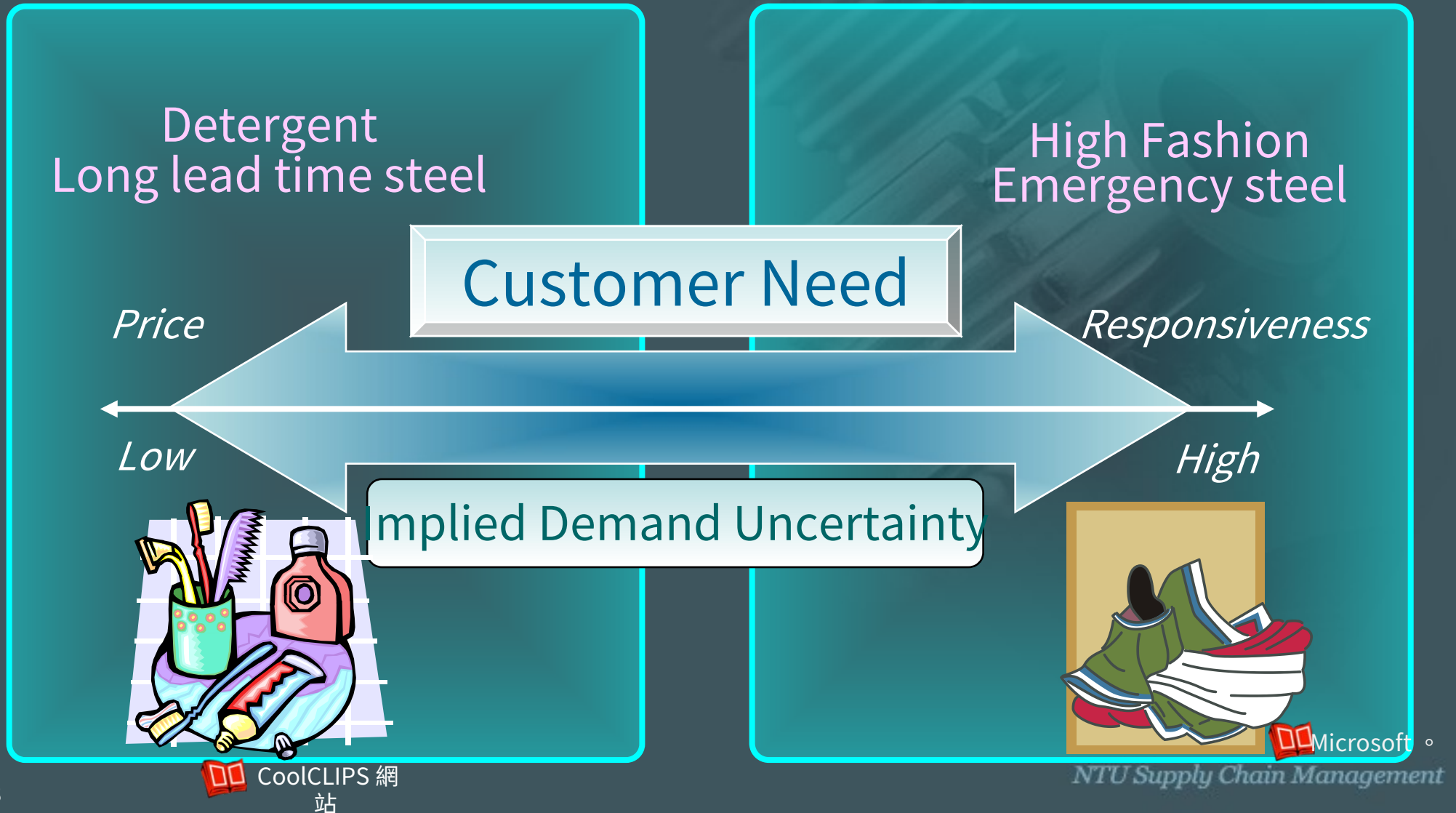
- Implied Demand Uncertainty-

Customer demand attributes



Implied demand uncertainty is the uncertainty that exists due to the portion of demand that the supply chain is required to meet.

# Implied Demand Uncertainty Spectrum



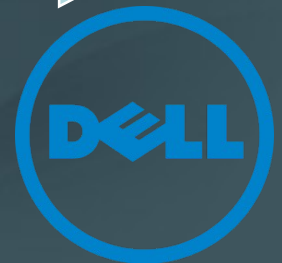
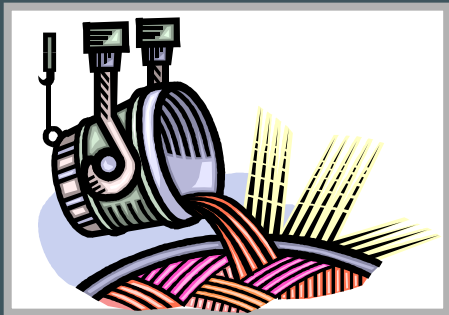
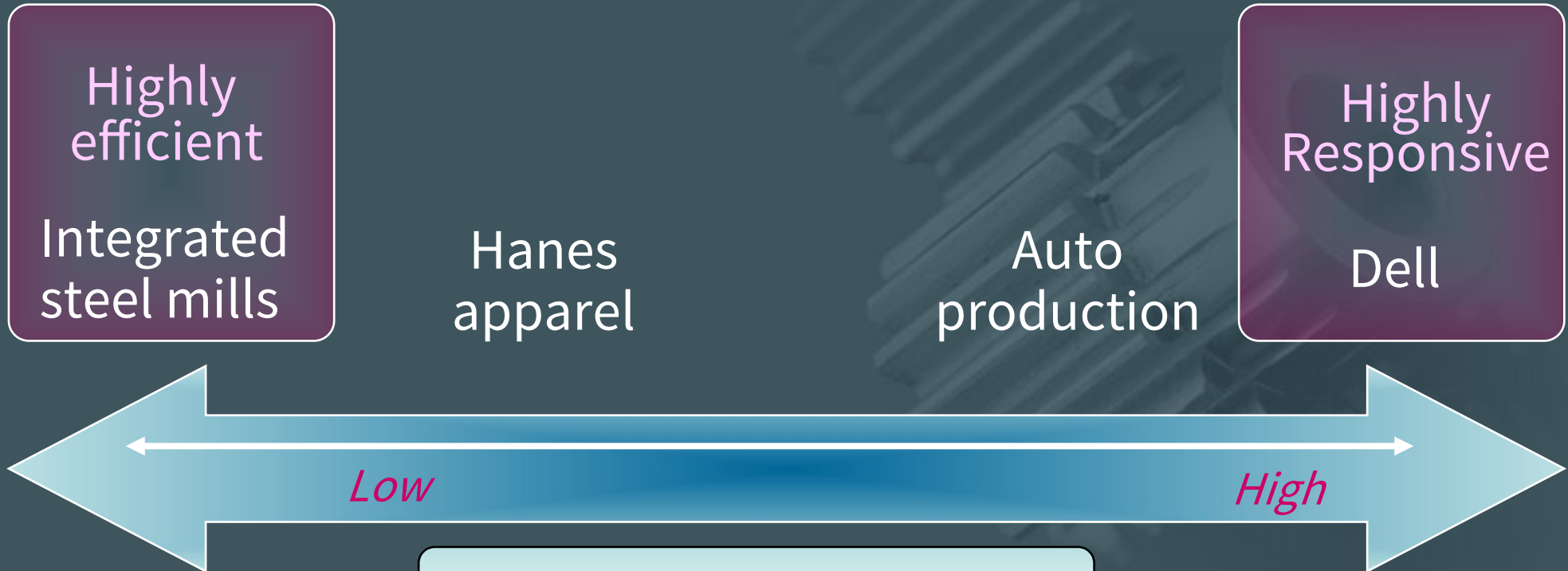


# Step 2: Understand the Supply Chain

## - Supply Chain Responsiveness -

- ▶ Respond to wide range of quantities demanded
- ▶ Meet short lead time
- ▶ Handle a large variety of products
- ▶ Build highly innovative products
- ▶ Meet a very high service level

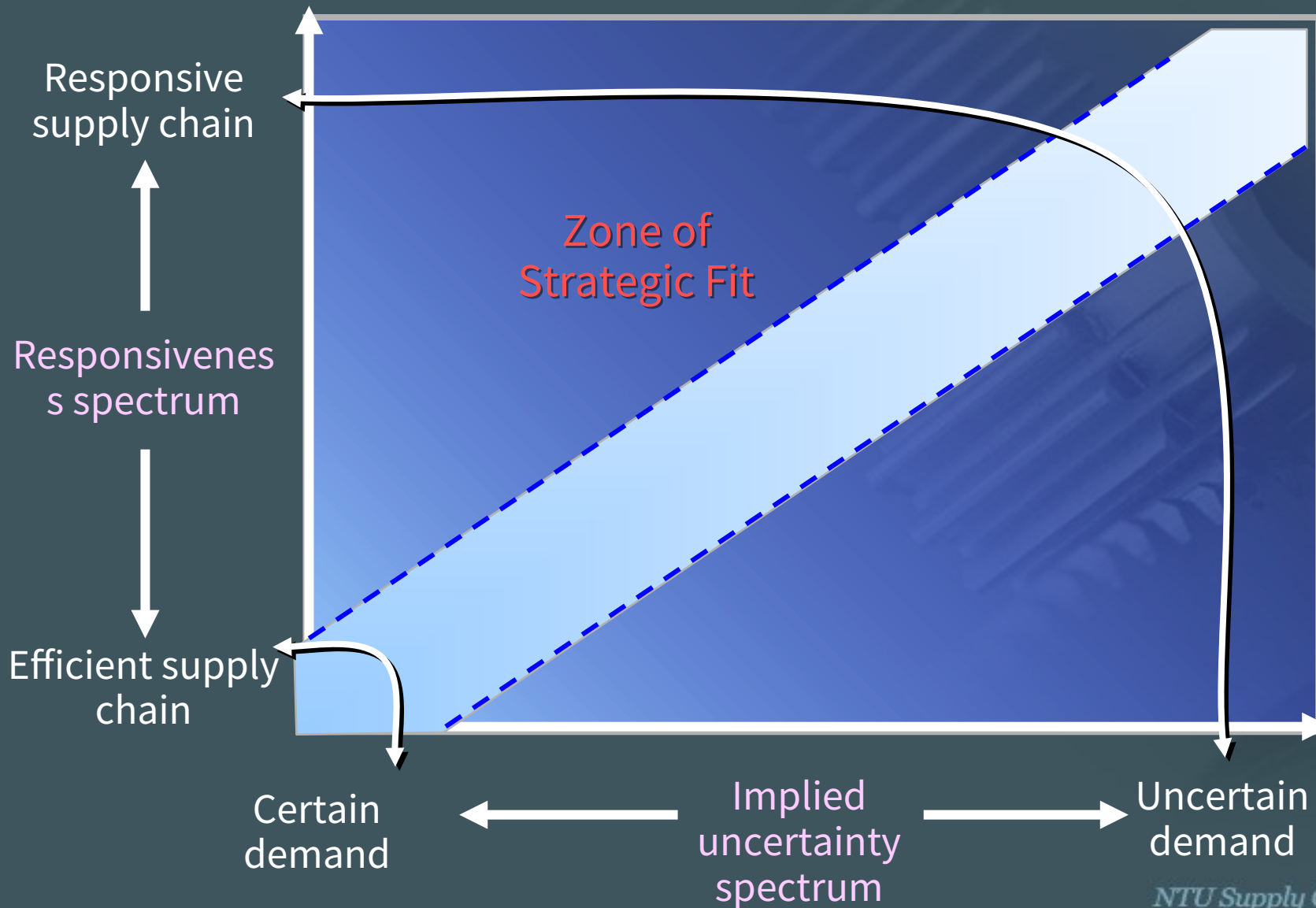
# Responsiveness Spectrum



 Wikipedia

NTU Supply Chain Management

# Step 3: Achieve Strategic Fit



# Comparison of Efficient and Responsive SC

	Efficient SC	Responsive SC
Goal	Lower cost to meet demand	Respond quickly
Product design	Maximize cost efficiency	Modularity to allow customization
Pricing	Low prices	High margin
Manufacturing	Low utilization	Capacity flexibility to meet unexpected demand
Inventory	Minimal inventory	High buffer inventory
Lead time	Reduction in expected lead time	Lead times can be significantly reduced even if the demand is uncertain
Supplier	Based on cost and quality	Based on speed, flexibility, and quality
Transportation	Low cost modes	Responsive modes



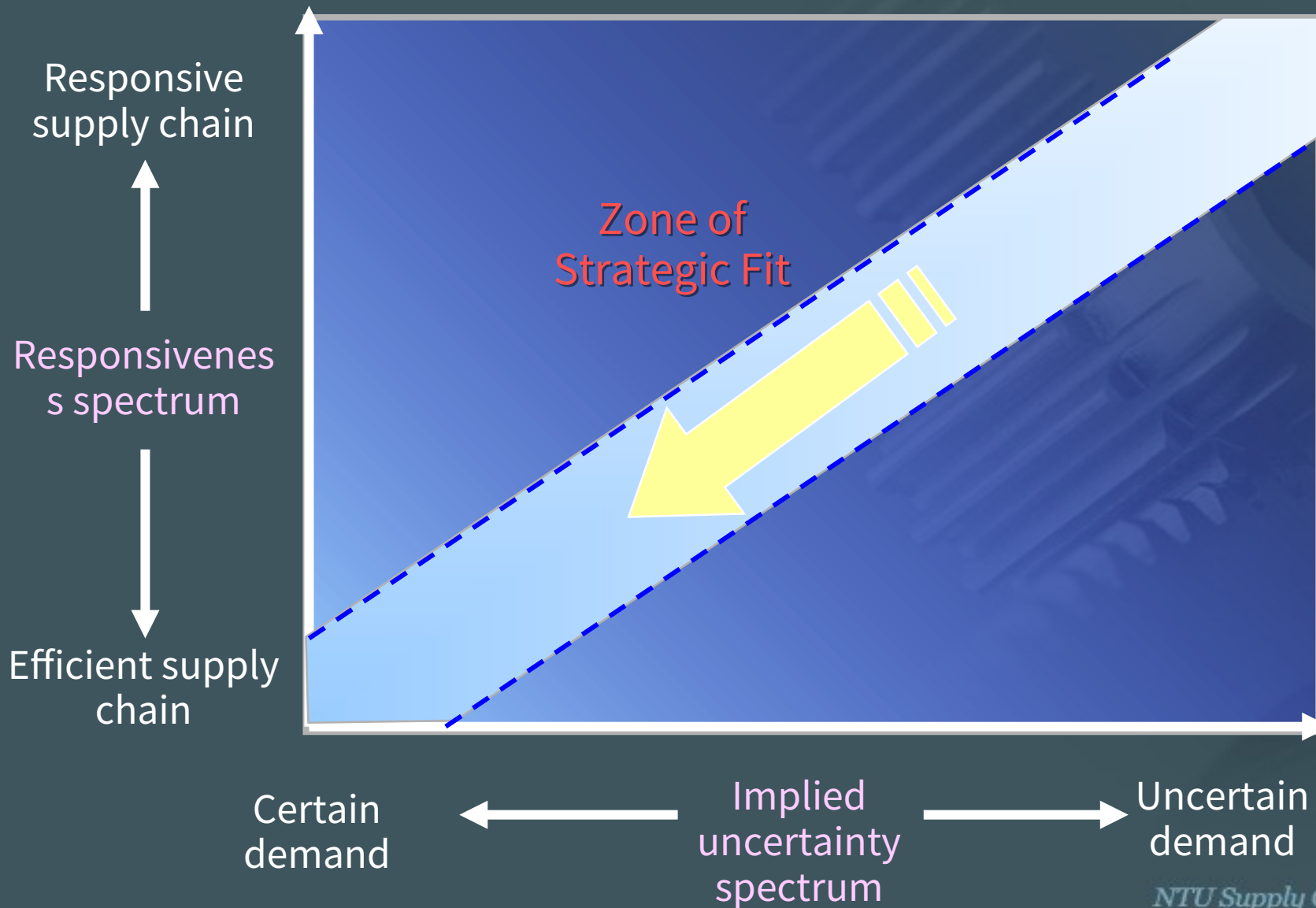
Microsoft

Microsoft

# Other Issues Affecting Strategic Fit

- ▶ Multiple products and customer segments
  - Set up independent SC for each different product or customer
  - Tailor the SC to best meet the needs of each product's demand
- ▶ Product life cycle
  - Use responsive SC in the early stage
  - Use efficient SC when market is matured
- ▶ Competitive changes over time

# Step 3: Achieve Strategic Fit

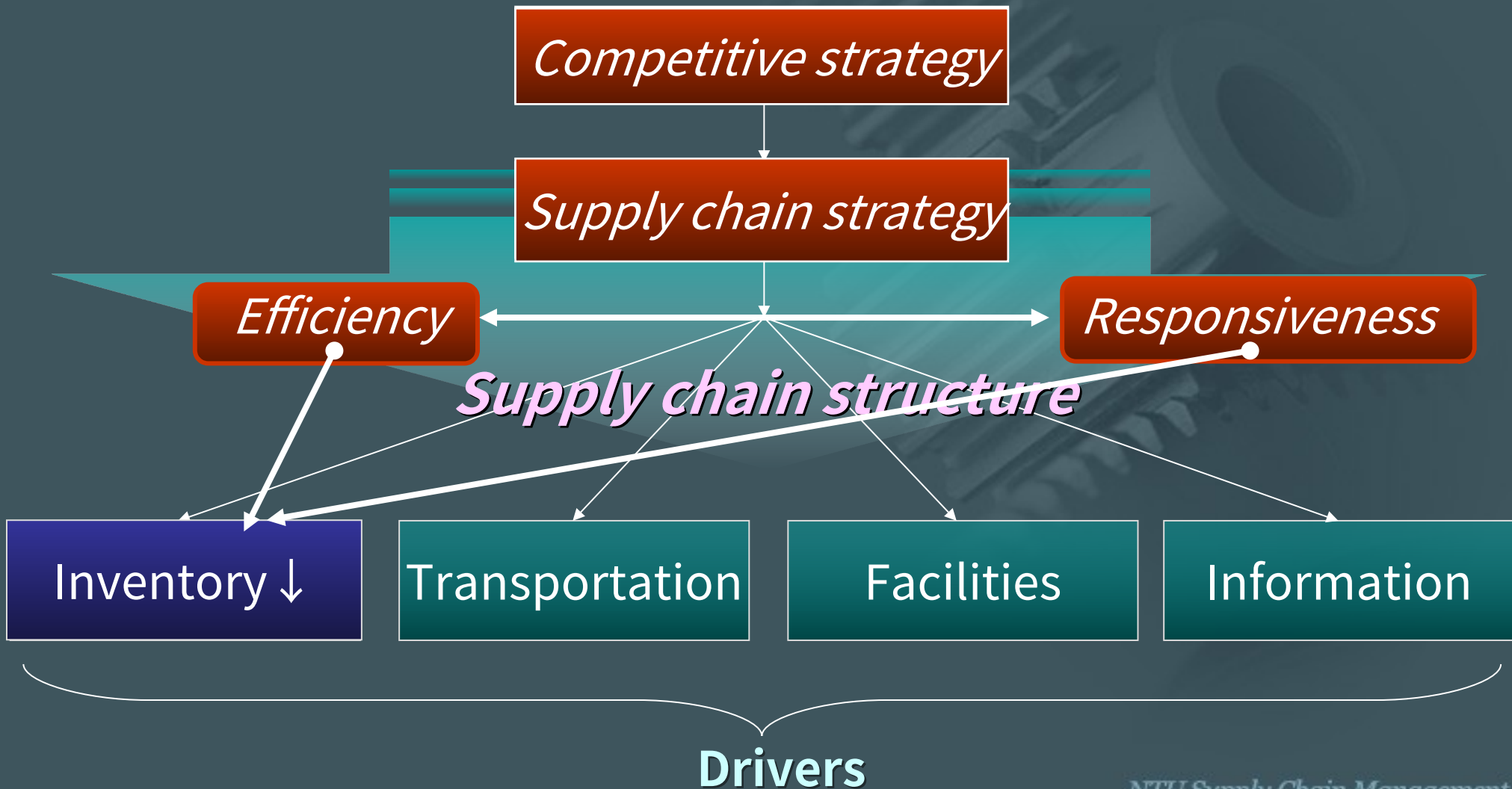


# Part III: Outline

- ▶ Framework for structuring drivers
  - Inventory
  - Transportation
  - Facilities
  - Information



# Supply Chain Decision-Making Framework



## ▶ Little's law

- $\text{Inventory} = \text{Flow time} \times \text{Throughput}$
- Message for SCM: lower flow time  $\rightarrow$  lower inventory

## ▶ Responsive v.s. efficient

- Ex: Nordstorm

## ▶ Components of inventory decision:

- Safety inventory: inventory held to counter uncertainty in demand
- Seasonal inventory: inventory held to counter predictable variability
- Cycle inventory: inventory to satisfy demand between receipts of shipments



Inventory

Transportation

Facilities

Information

Drivers

► Efficient v.s. responsive

– Ex : Laura Ashley with Fedex for next day delivery

► Components of transportation decision

– Mode of transportation

» Air, truck, rail, ship, pipeline, electronic

– Route and network selection

– In-house or outsource



CoolCLIPS 網站

Inventory

Transportation

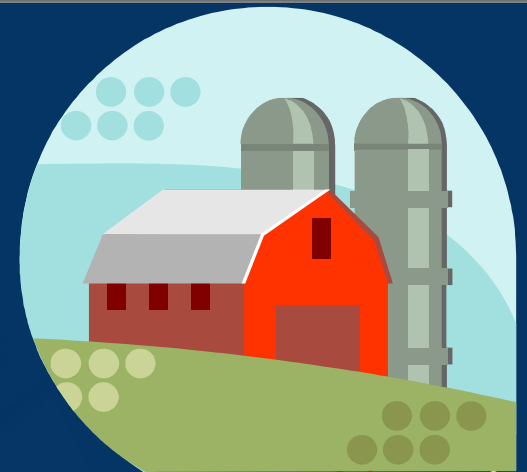
Facilities

Information

Drivers

F

- ▶ Efficient v.s. responsive
  - Ex: Toyota and Honda
- ▶ Components of facilities decision
  - Location
  - Capacity (flexibility v.s. efficiency)
  - Manufacturing methodology (product-focus v.s. process-focus)
  - Warehousing methodology
    - » SKU storage
    - » job lot storage

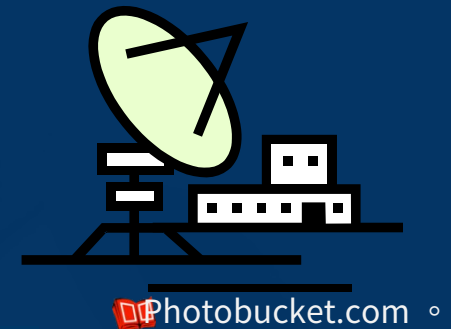


Microsoft



Drivers

- ▶ Connect various stages in SC
- ▶ Crucial to daily operations in each stage
  - Ex: Dell
- ▶ Components of information decision:
  - Push (MRP) v.s. pull
  - Coordination and information sharing
  - Forecasting and aggregate planning
  - Enabling technology: EDI, Internet, ERP, SCM



Inventory

Transportation

Facilities

Information

Drivers

# Considerations for Supply Chain Drivers

<i>Driver</i>	<i>Efficiency</i>	<i>Responsiveness</i>
Inventory	Cost of holding	Availability
Transportation	Consolidation	Speed
Facilities	Consolidation / Dedicated	Proximity / Flexibility
Information	What information is best suited for each objective	

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