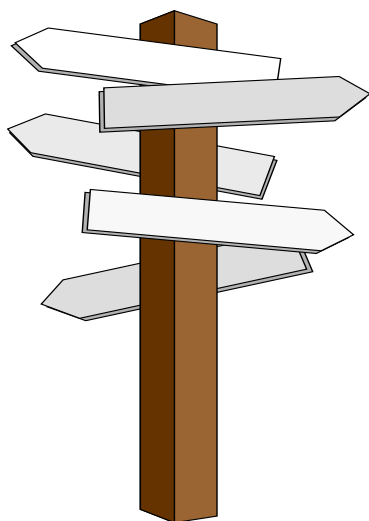


对外经济贸易大学 国际经贸学院

## 第九章 分拨管理

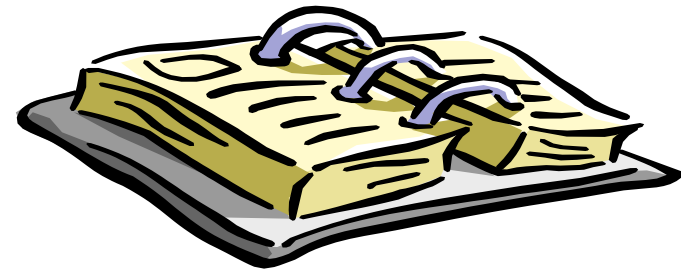
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# 主要内容

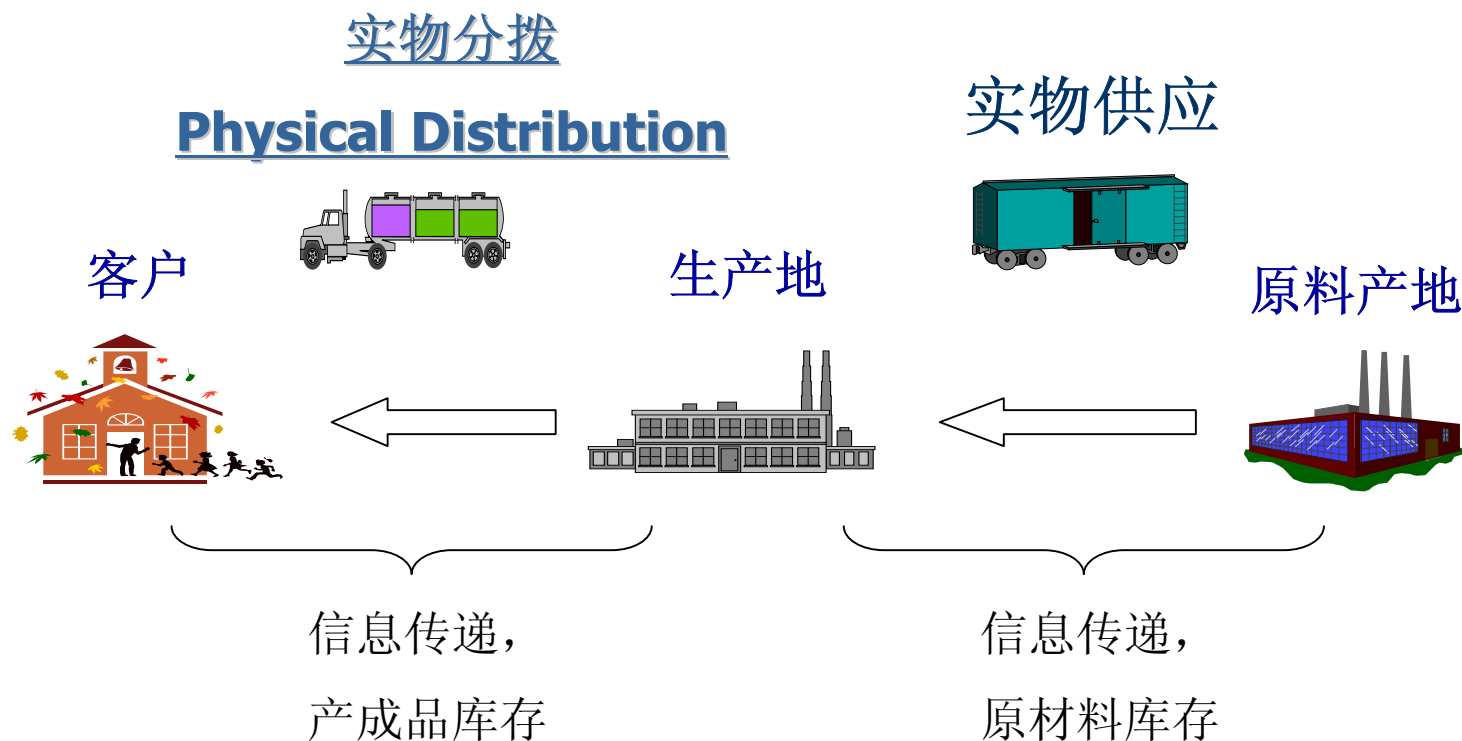
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- 9.1 实物分拨的基本概念
- 9.2 实物分拨运作模式
- 9.3 实物配送网络构建
- 9.4 分拨设施数量决策
- 9.5 分拨设施选址决策

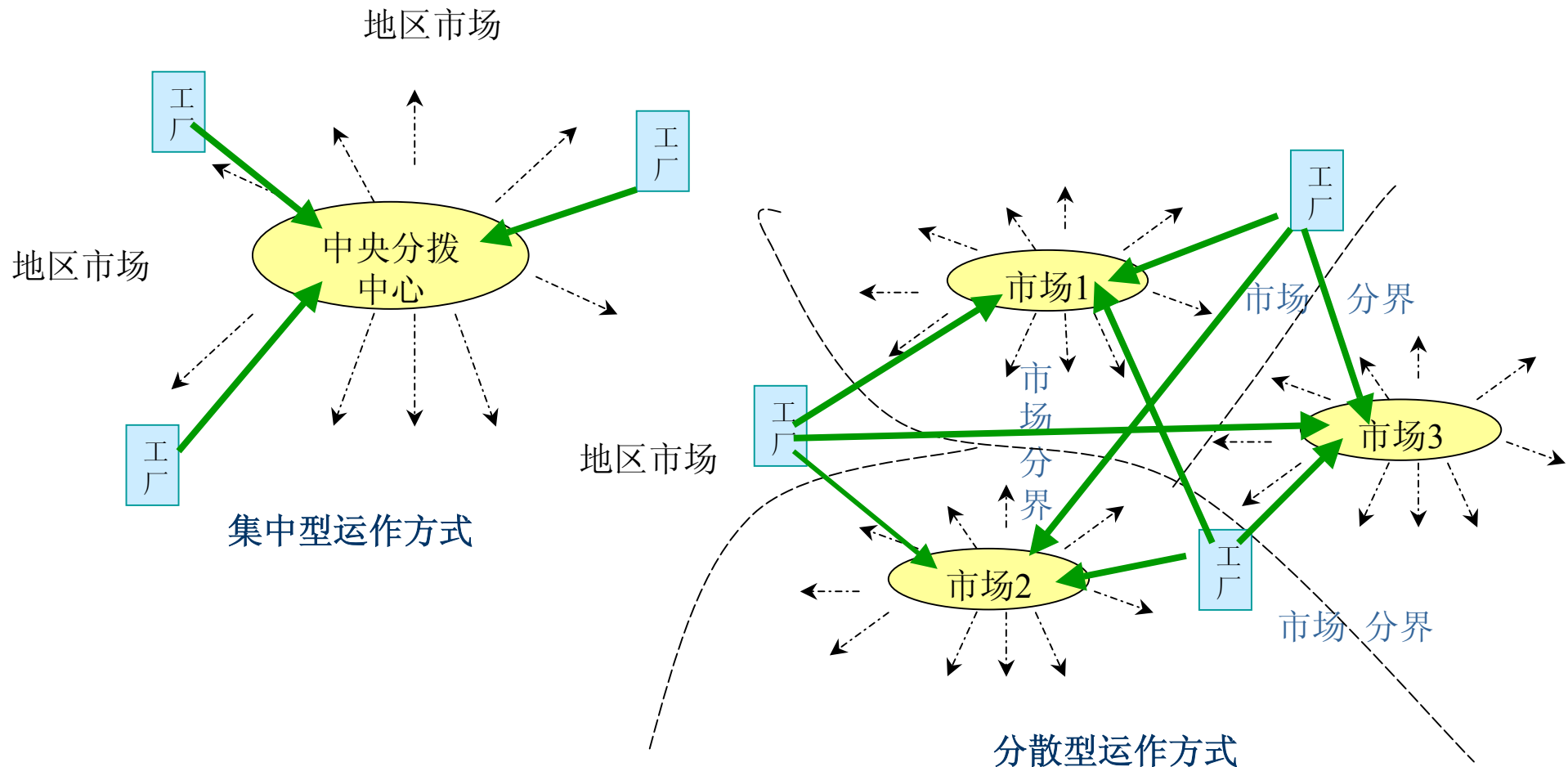


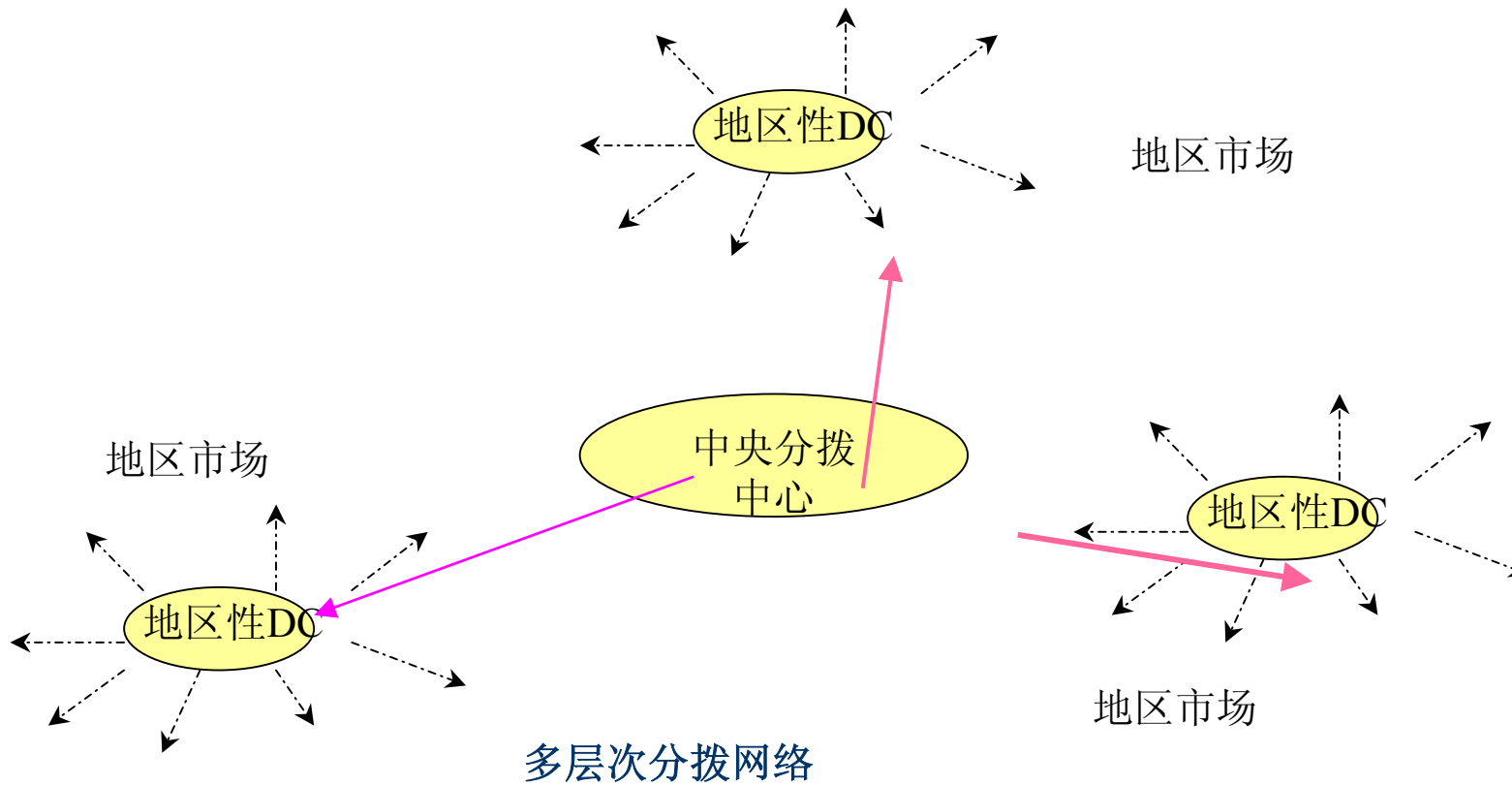
## 9.1 实物分拨的基本概念

- 实物分拨是最终产品从生产线的末端开始，到达最终用户之前产品在各中间环节的移动和存储的过程。

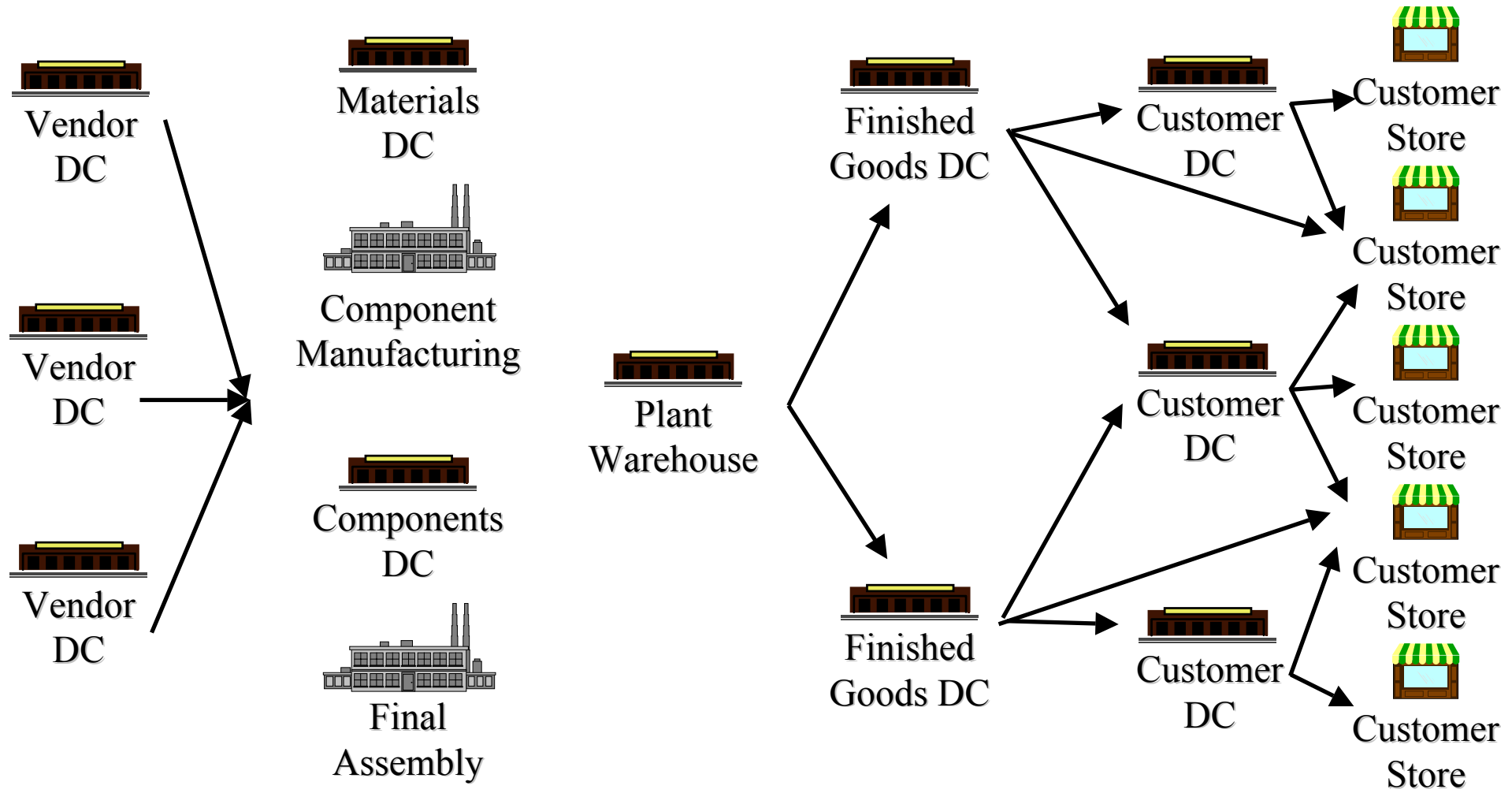


# 9.2 分拨系统运作模式

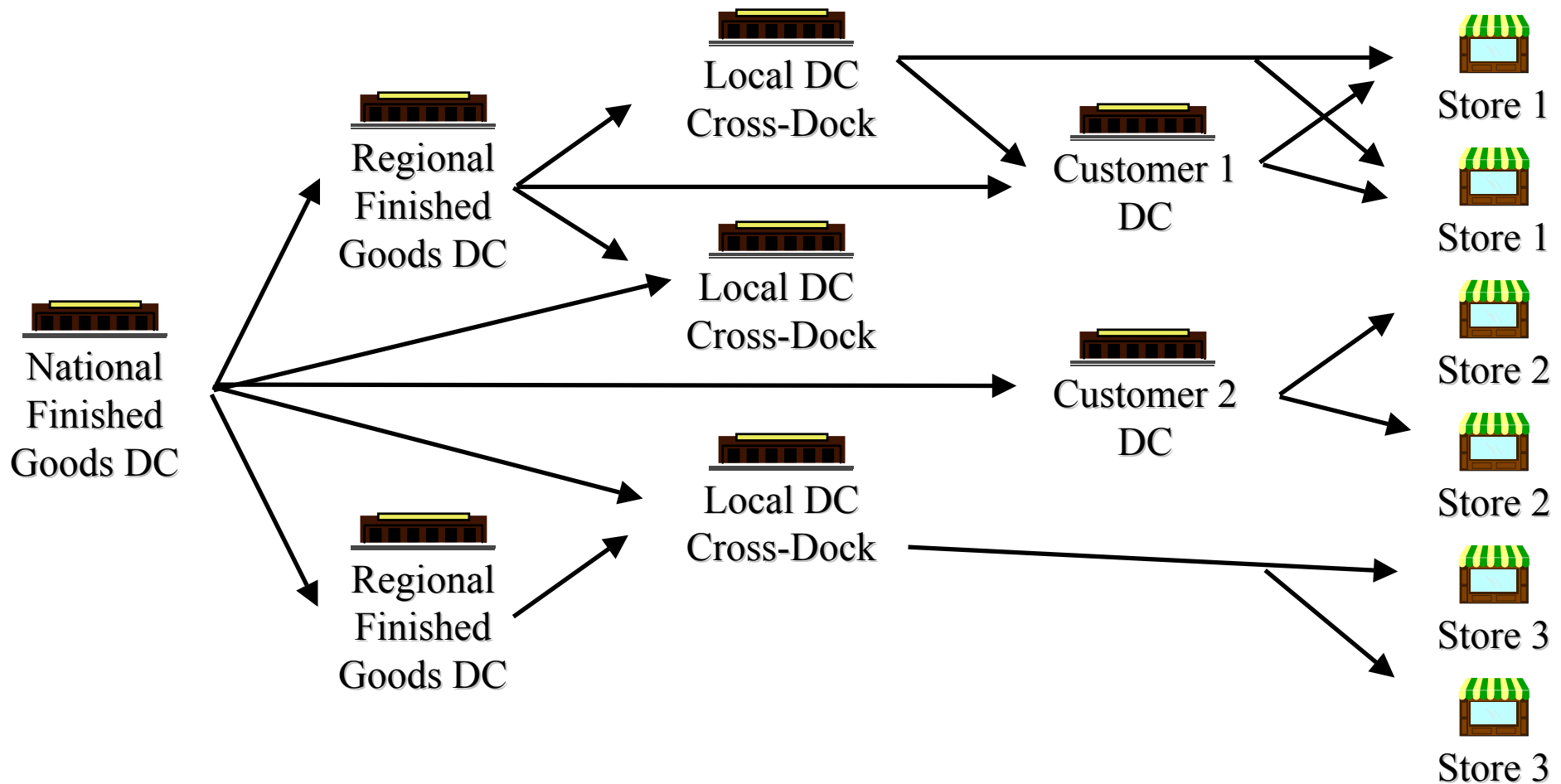




# 传统的分拨网络

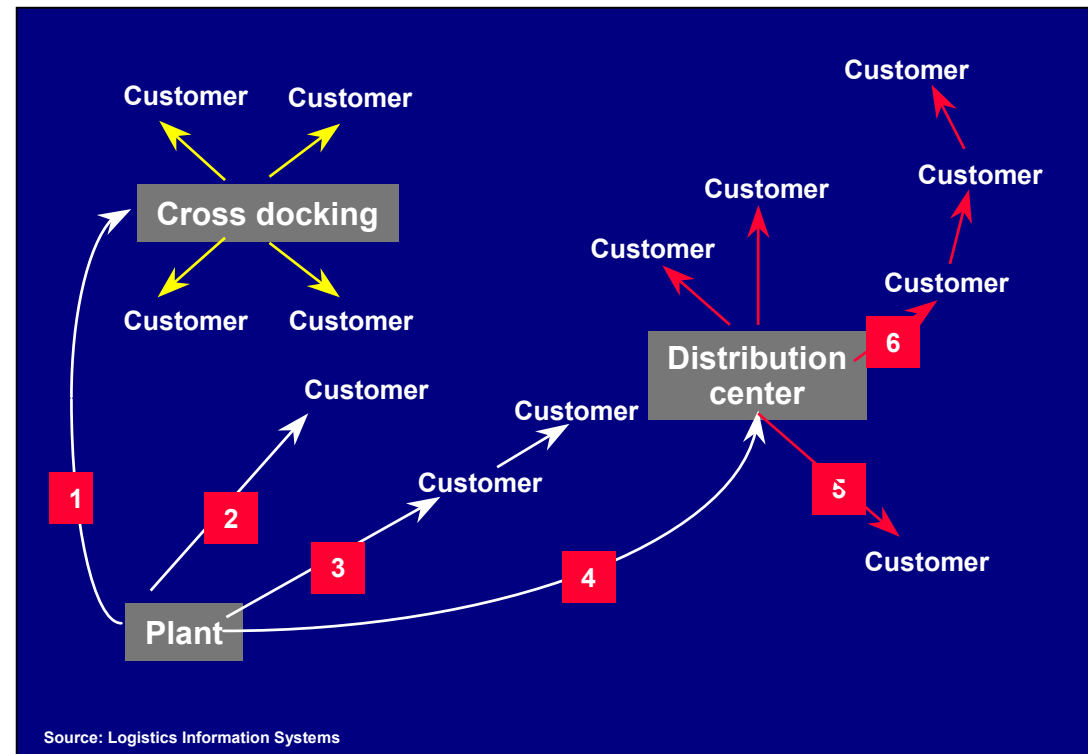


# 定制化分拨网络：多级最终产品分拨网络



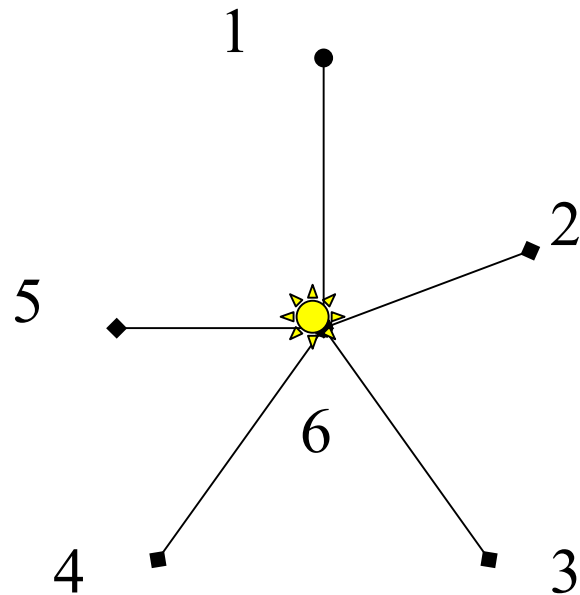
## 9.3 分拨运作网络构建

- 1 网络构建的模式
- 2 网络构建案例
- 3 网络构建中的成本悖反

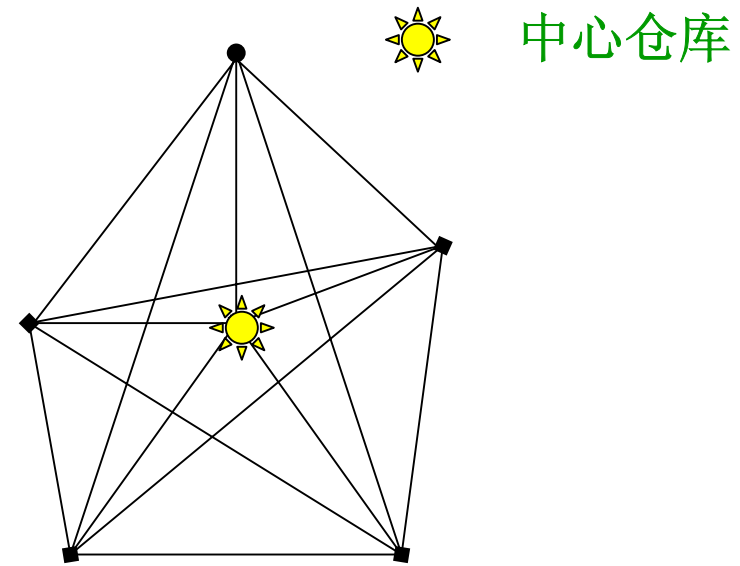




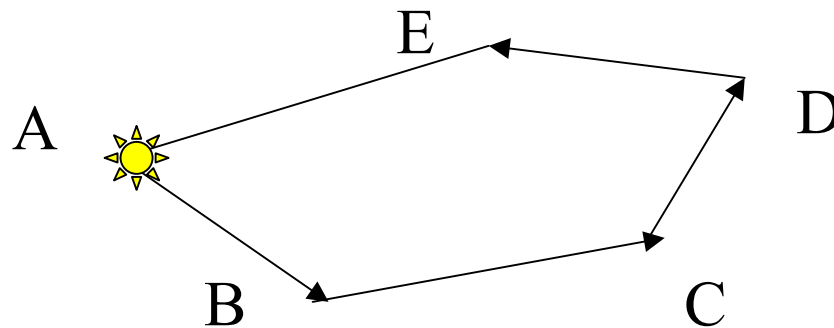
## 9.3.1 运作网络构建模式



中心辐射 (hub-and-spoke)



点到点直达 (direct) 系统



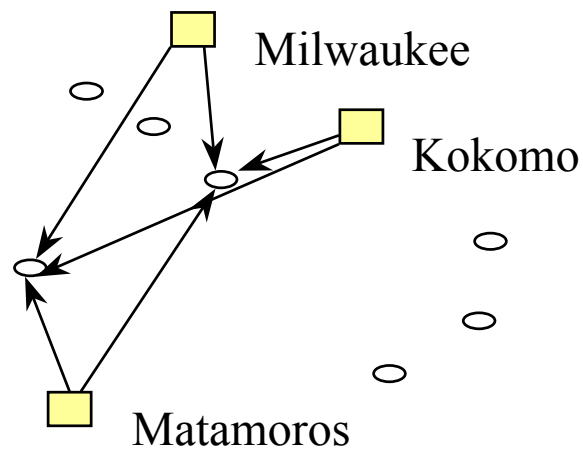
水滴型 (teardrop) 系统

## 9.3.2 : 运作网络构建案例

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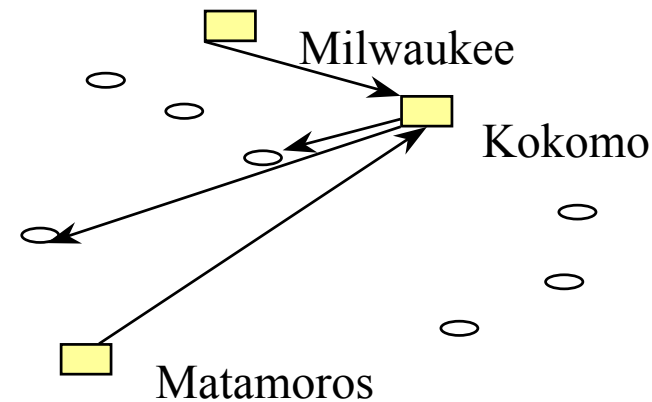
- ❑ **AC Delco:**
  - **Very high value low volume parts**
  - **Three plants: Milwaukee, Kokomo, Matamoros**
  - **21 assembly plants (customers for above plants)**
- ❑ **What are the distribution options?**
- ❑ **Which one to select?**
- ❑ **On what basis?**

方案一：直运系统  
( **All Shipments Direct** )



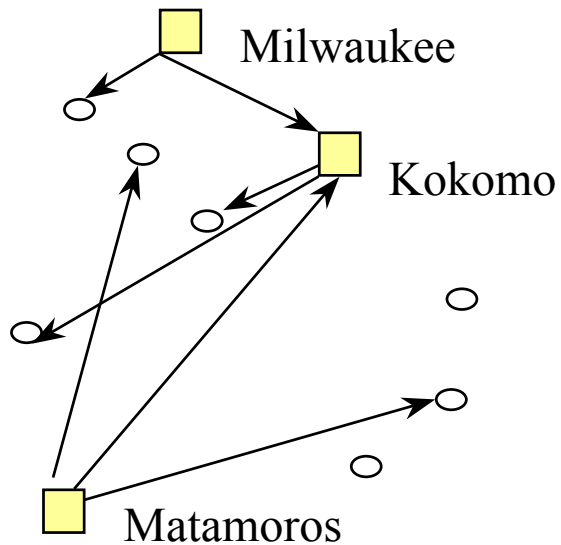
	Transport	Inventory
Optimal	\$4.0 Million	\$5.6 Million

方案二：以Kokomo为中枢的辐射系统  
( **All Shipments Via Kokomo** )



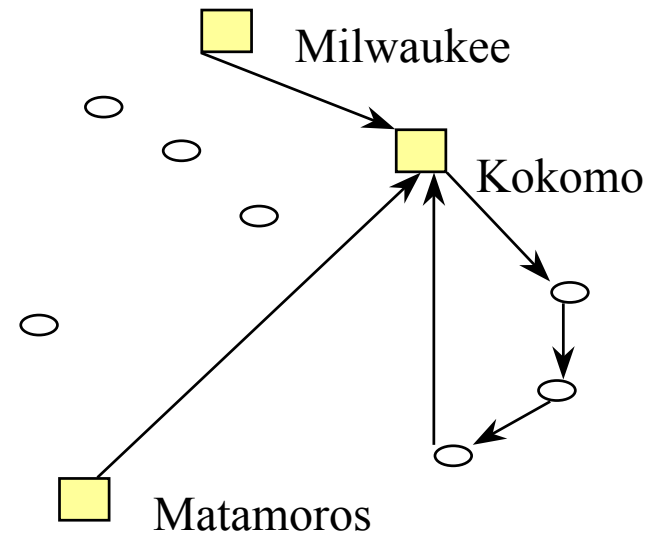
	Transport	Inventory
Optimal	\$3.0 Million	\$7.2 Million

方案三：部分直达，  
其他以Kokomo为中心的辐射系统  
( **Some Shipments Direct,  
Others Via Kokomo** )



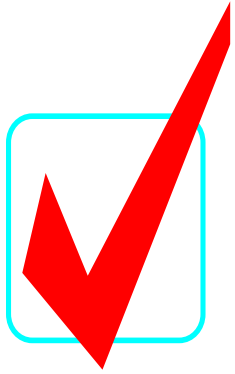
	Transport	Inventory
Optimal	\$3.7 Million	\$5.8 Million

方案四：  
从Kokomo出发的水滴型配送系统  
( **Milk Runs From Kokomo** )

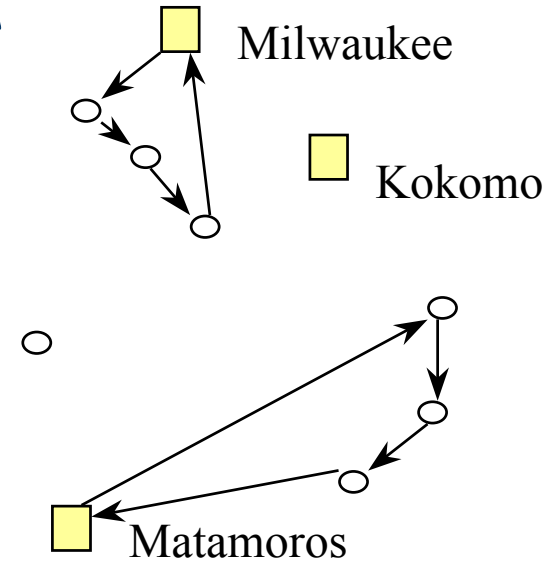


	Transport	Inventory
Optimal	\$2.4 Million	\$7.2 Million

王晓东, 胡瑞娟



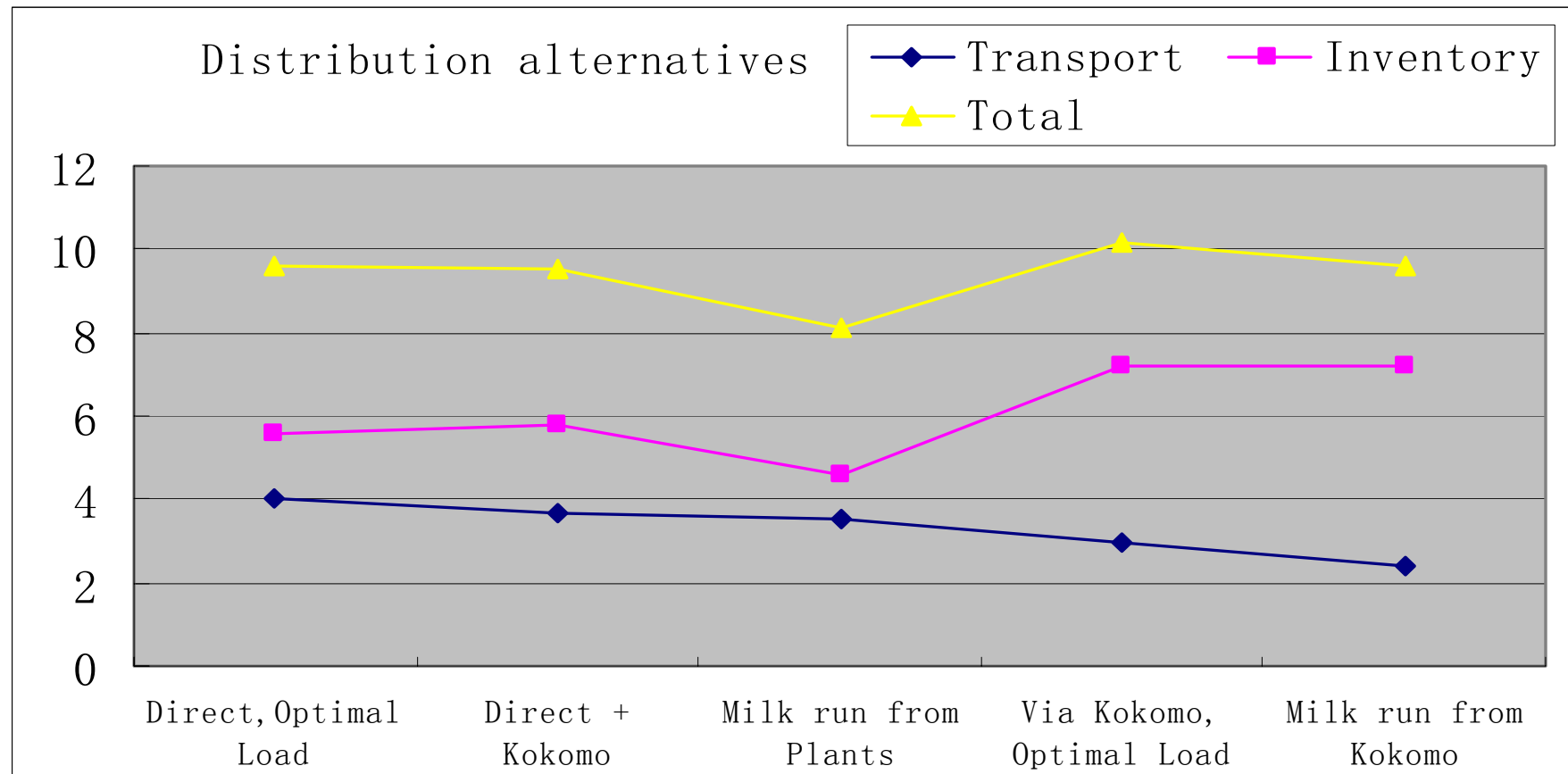
方案五：从各工厂出发水滴型配送系统  
( **Milk Runs From Plants** )



	<b>Transport</b>	<b>Inventory</b>
Optimal	\$3.5 Million	\$4.6 Million

<i>alternatives</i>	<i>Transport</i>	<i>Inventory</i>	<i>Total</i>
Direct, Optimal Load	4	5.6	9.6
Direct + Kokomo	3.7	5.8	9.5
<b>Milk run from Plants</b>	<b>3.5</b>	<b>4.6</b>	<b>8.1</b>
Via Kokomo, Optimal Load	3	7.2	10.2
Milk run from Kokomo	2.4	7.2	9.6

## 9.3.3 运作网络构建中的成本悖反



- **Transportation, facility, and inventory cost**
- **Transportation cost and responsiveness**

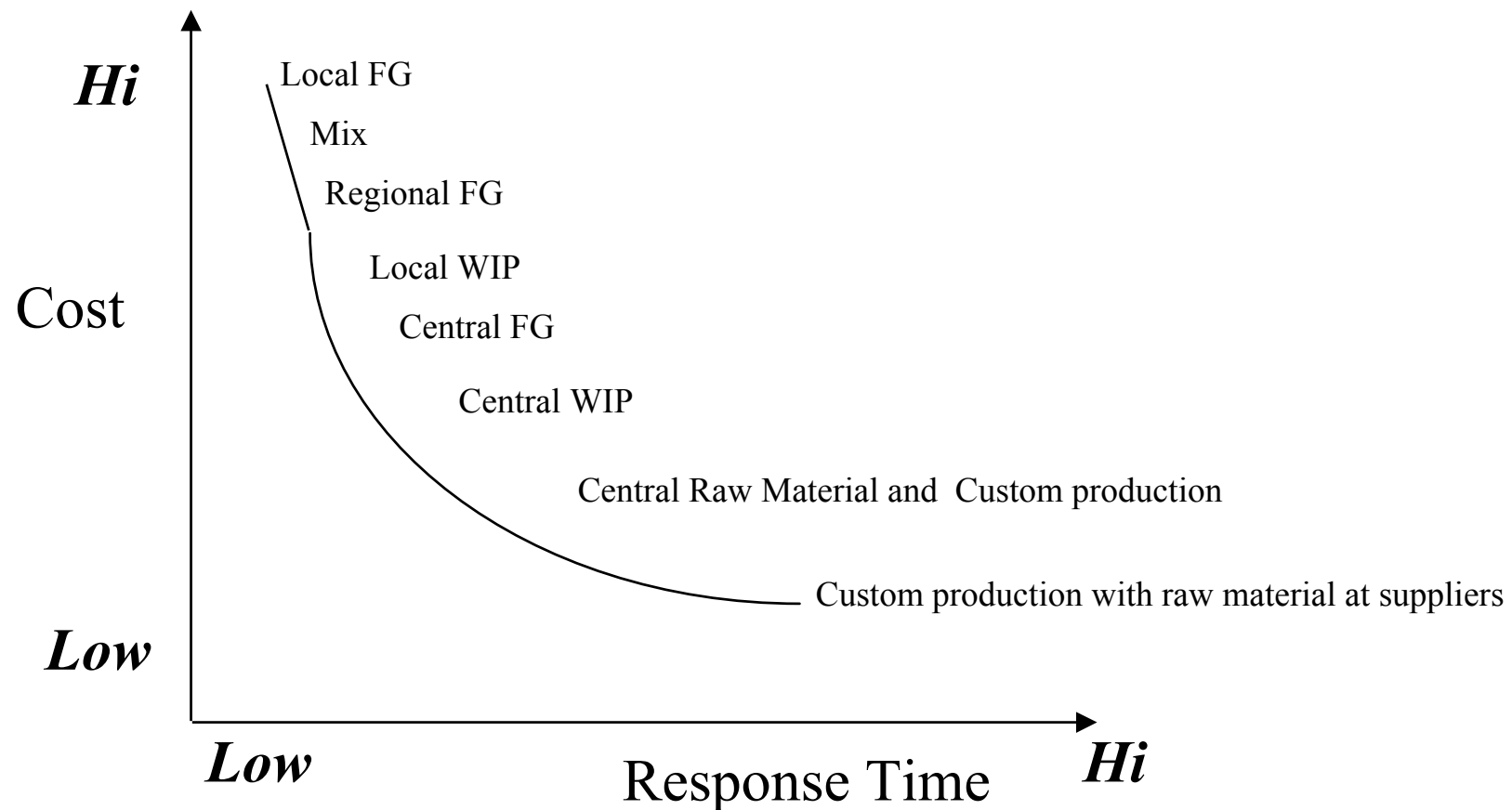
## 9.4 分拨设施数量决策

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- 成本-反应时间曲线
- 服务水平与分拨设施数量
- 成本与分拨设施数量
- 分拨设施数量决策的原则

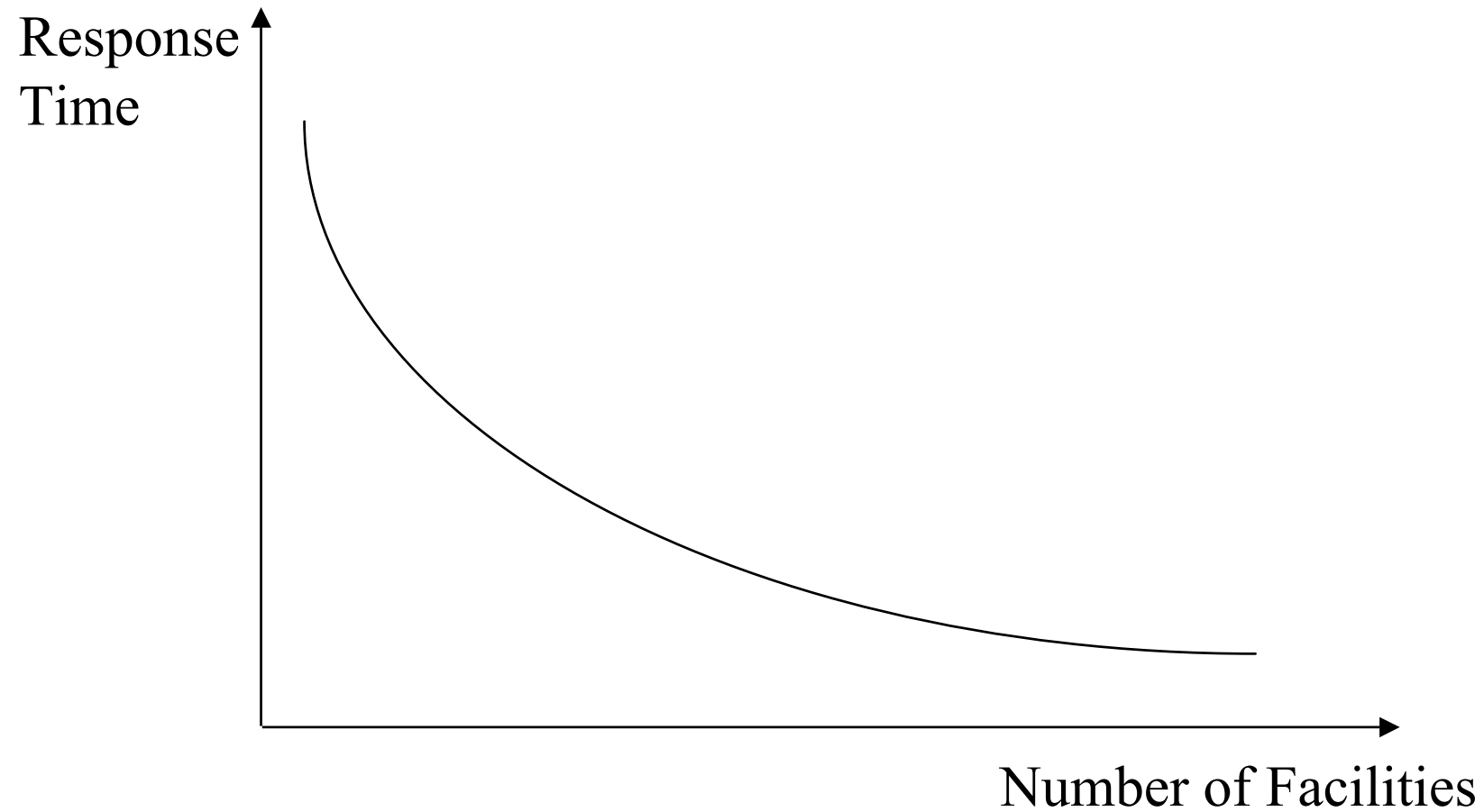
## 9.4.1 成本-反应时间曲线

( *The Cost-Response Time Frontier* )

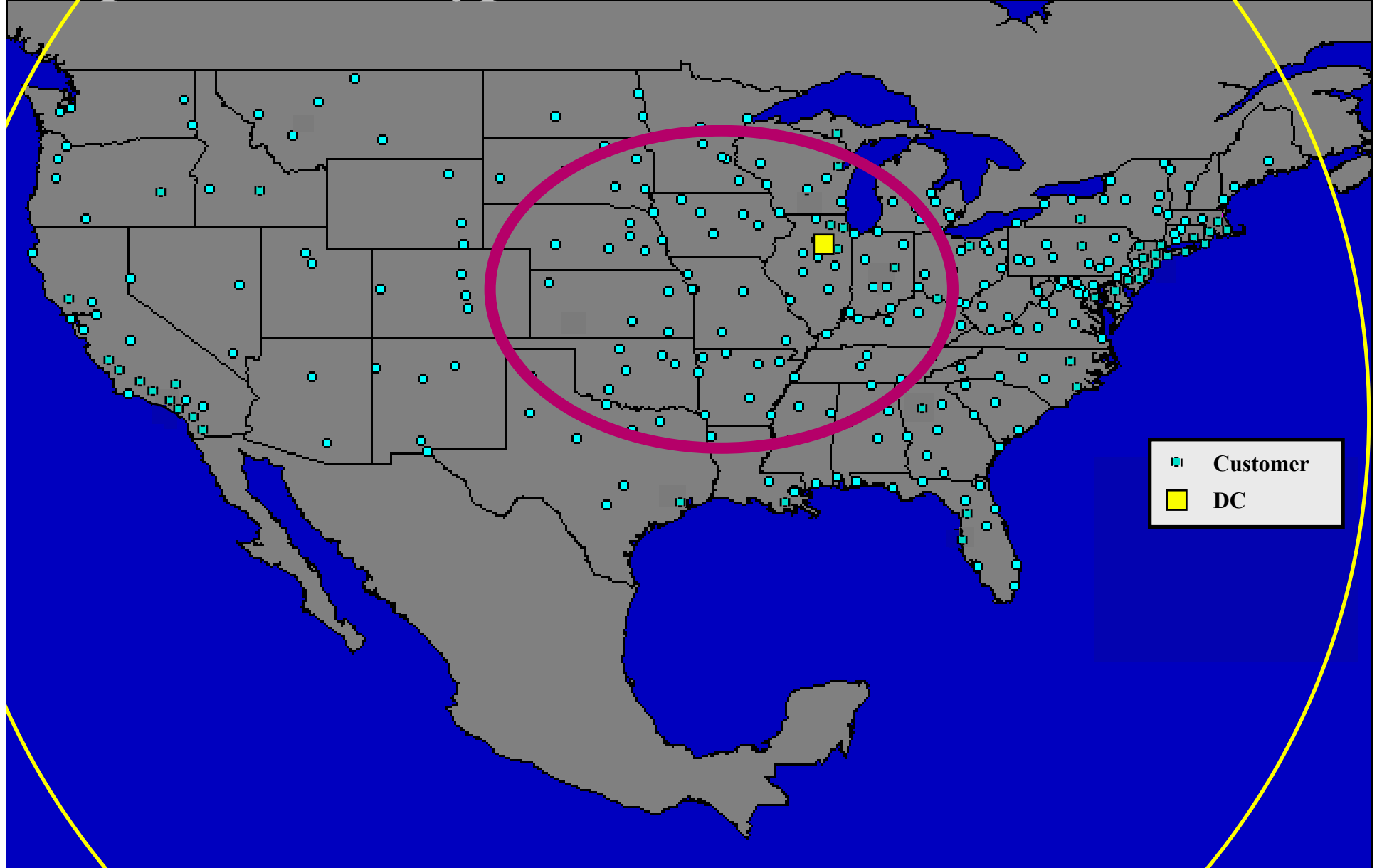




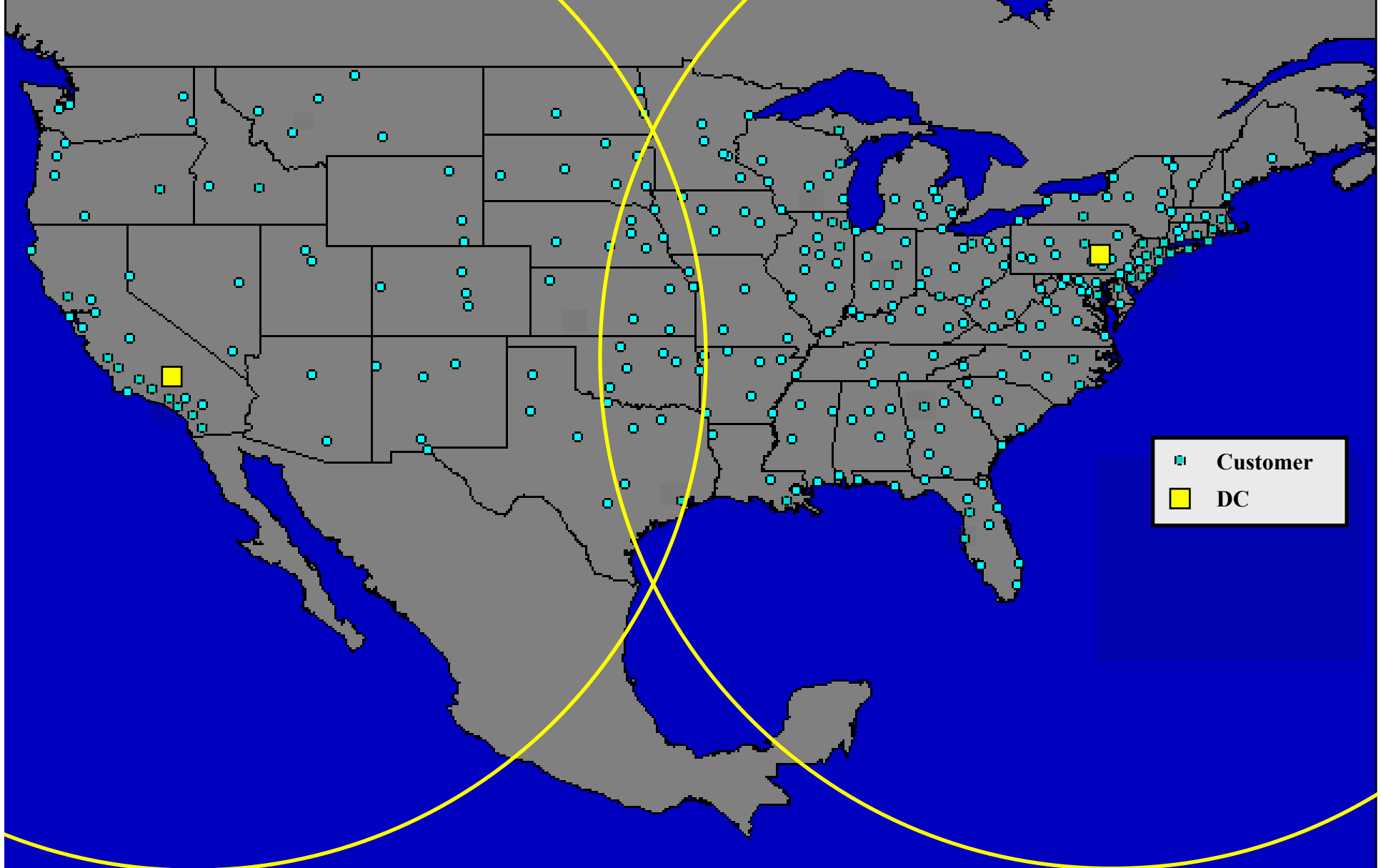
## 9.4.2 服务与分拨设施数量



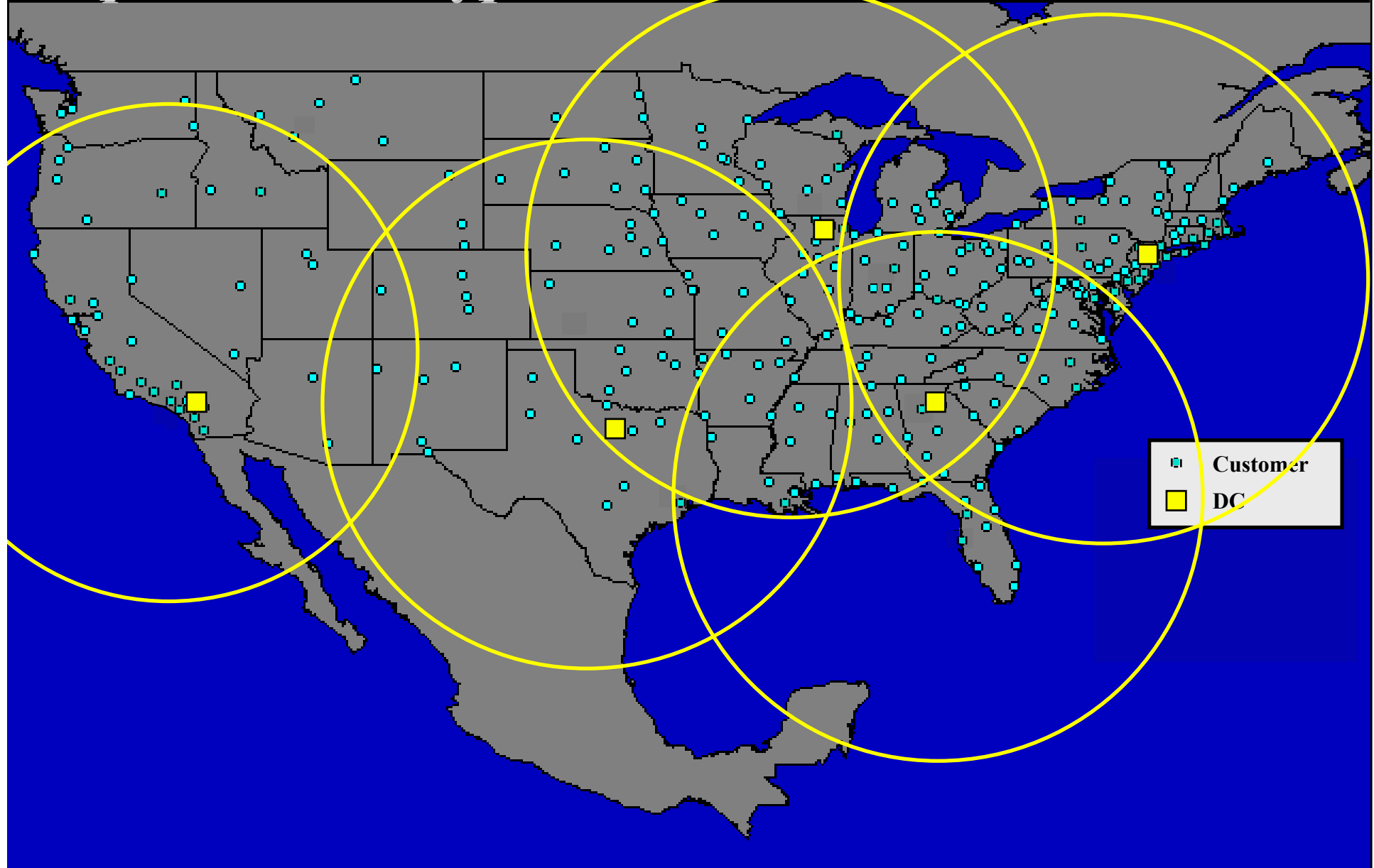
# Where inventory needs to be for a one week order response time - typical results --> 1 DC



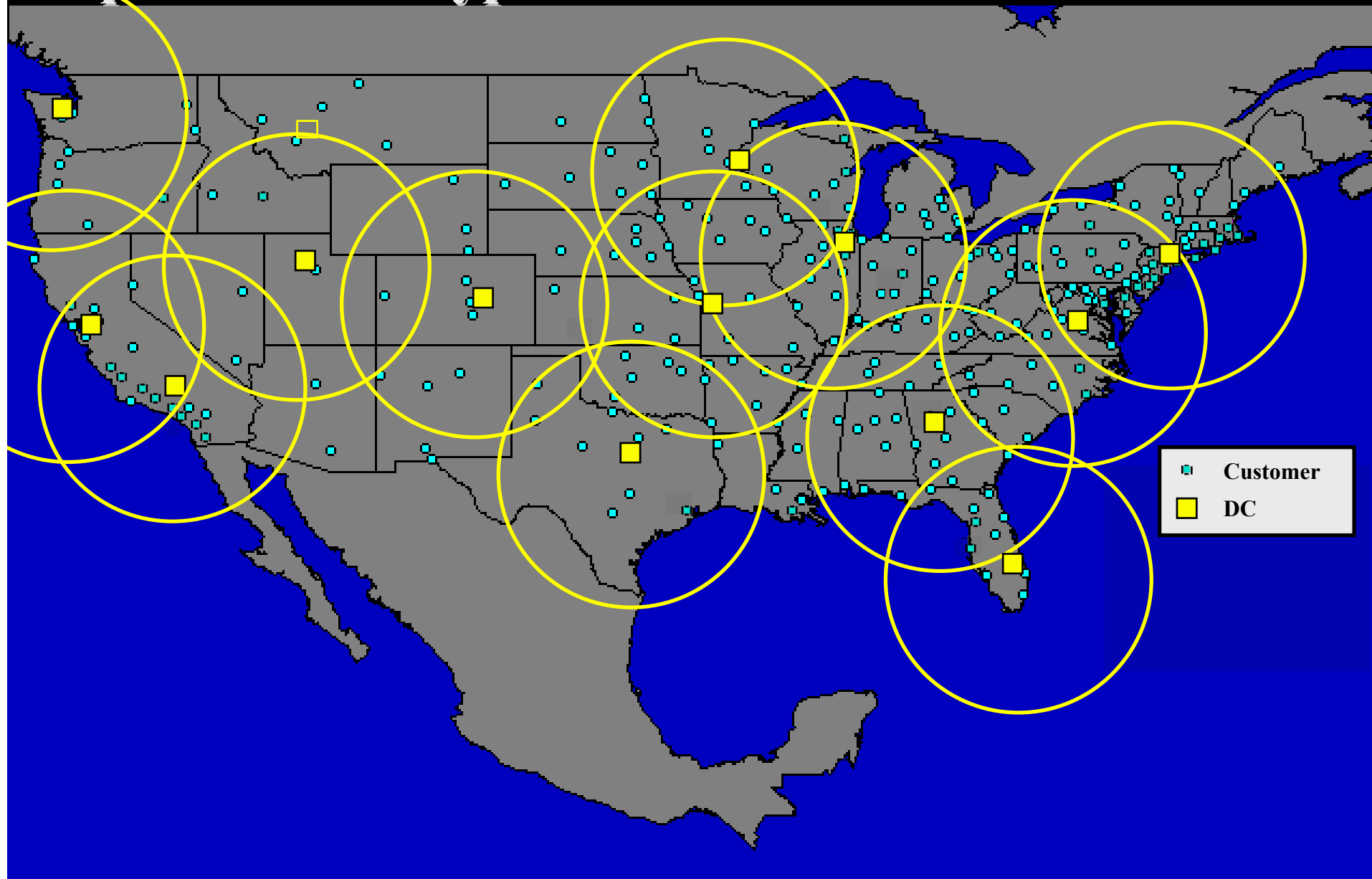
# Where inventory needs to be for a 5 day order response time - typical results --> 2 DCs



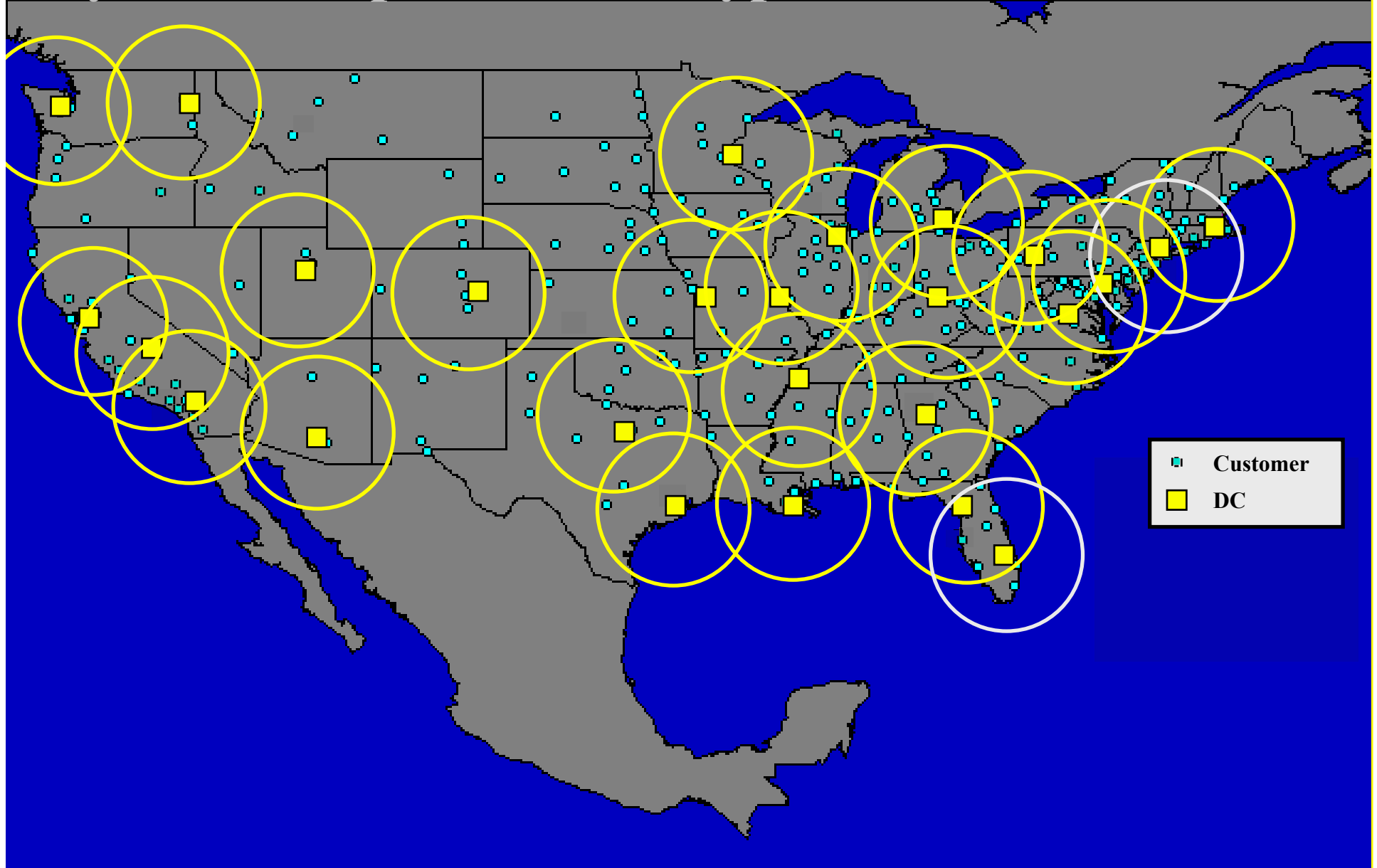
# Where inventory needs to be for a 3 day order response time - typical results --> 5 DCs



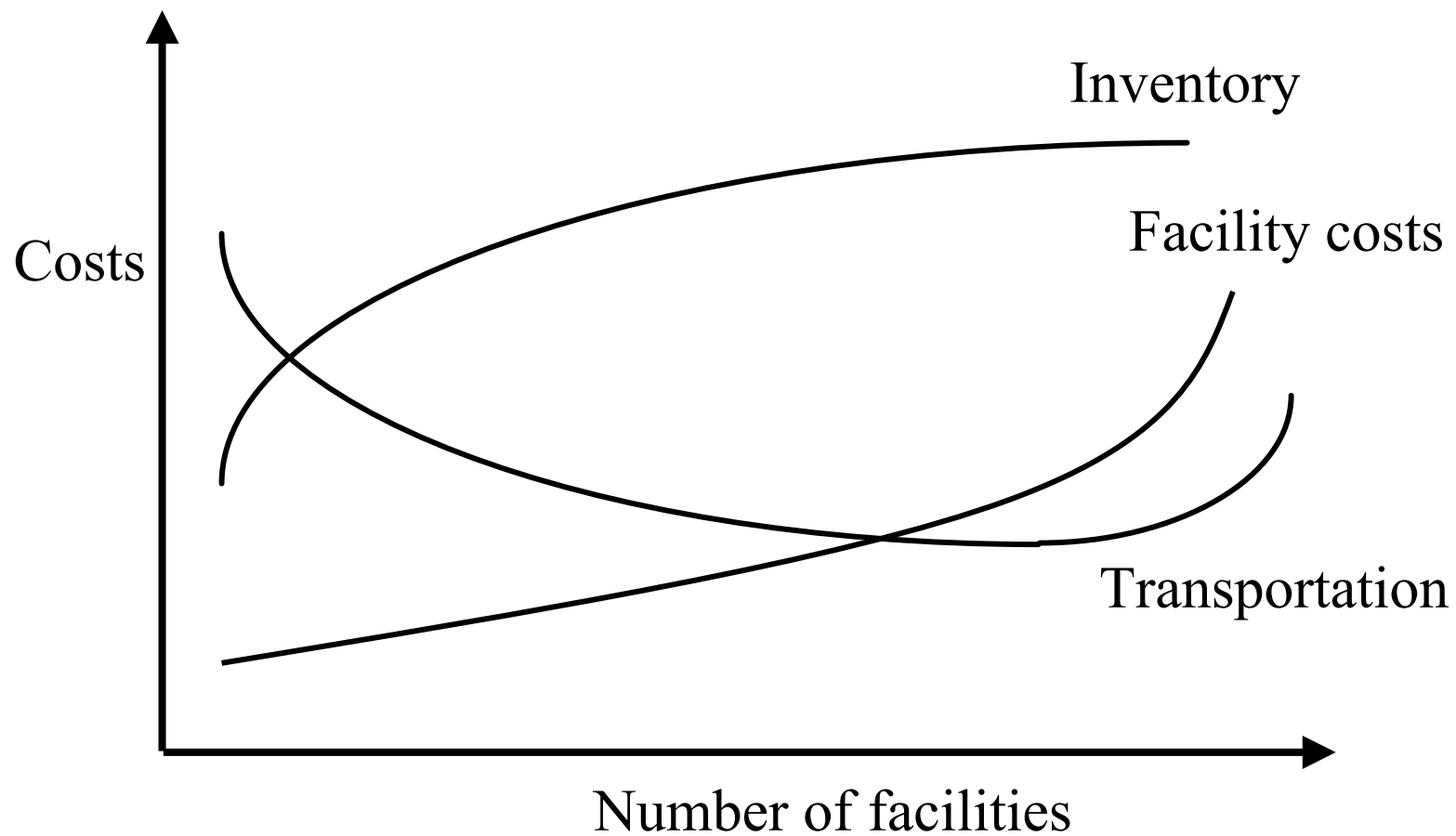
# Where inventory needs to be for a next day order response time - typical results --> 13 DCs



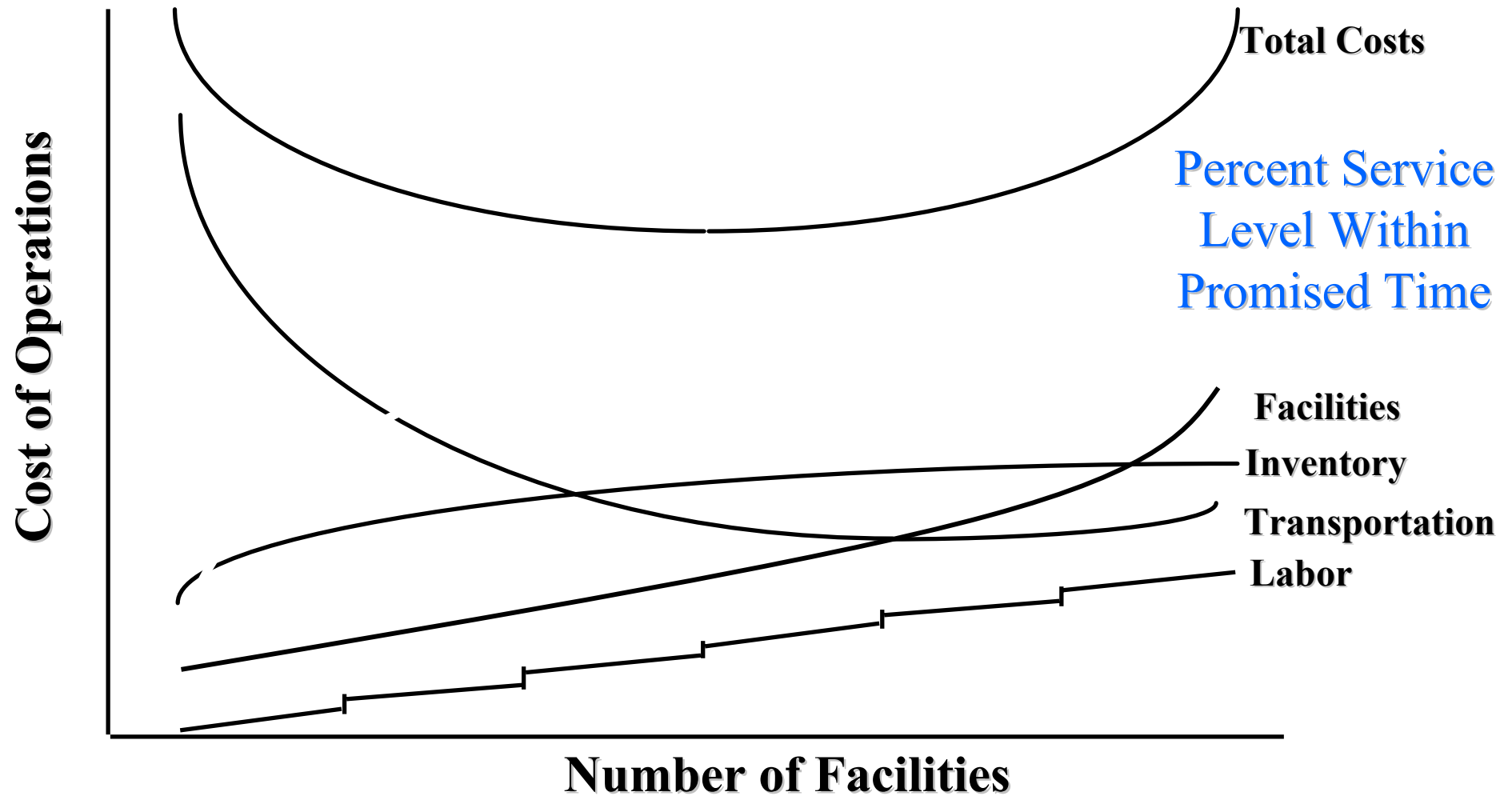
# Where inventory needs to be for a same day / next day order response time - typical results --> 26 DCs



## 9.4.3 成本与分拨设施数量

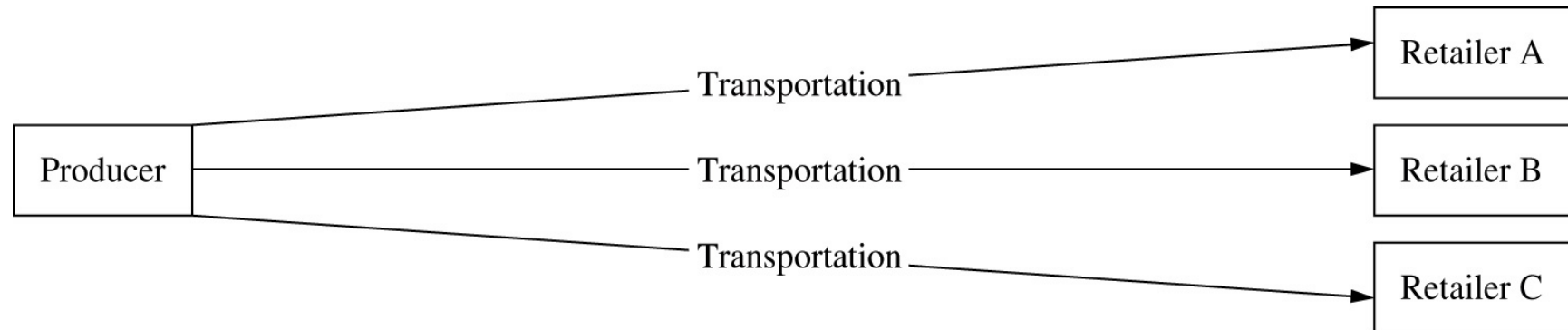


# 各项成本与分拨设施数量的关系

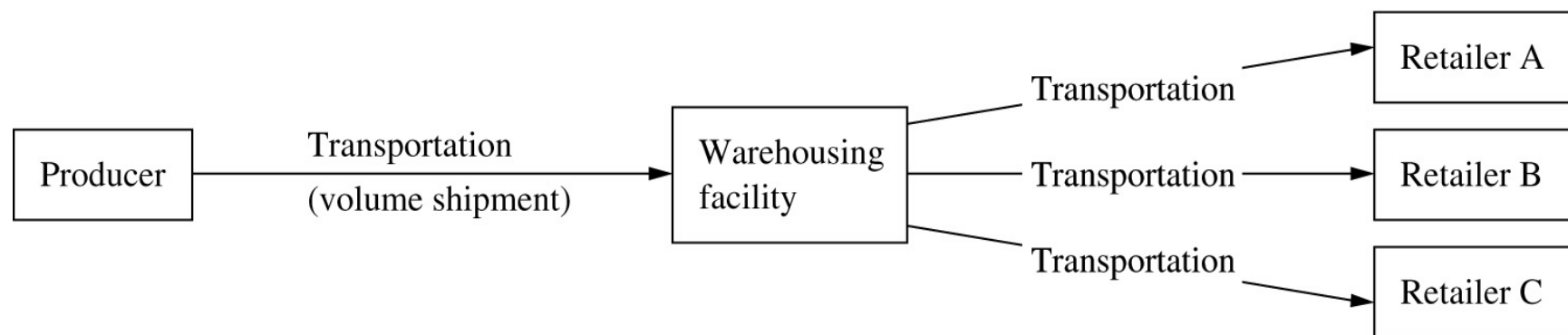




## 分拨设施数量增加---运输成本下降



Direct from producer to retailer: longer-haul transportation



## 9.4.4 分拨设施数量决策原则

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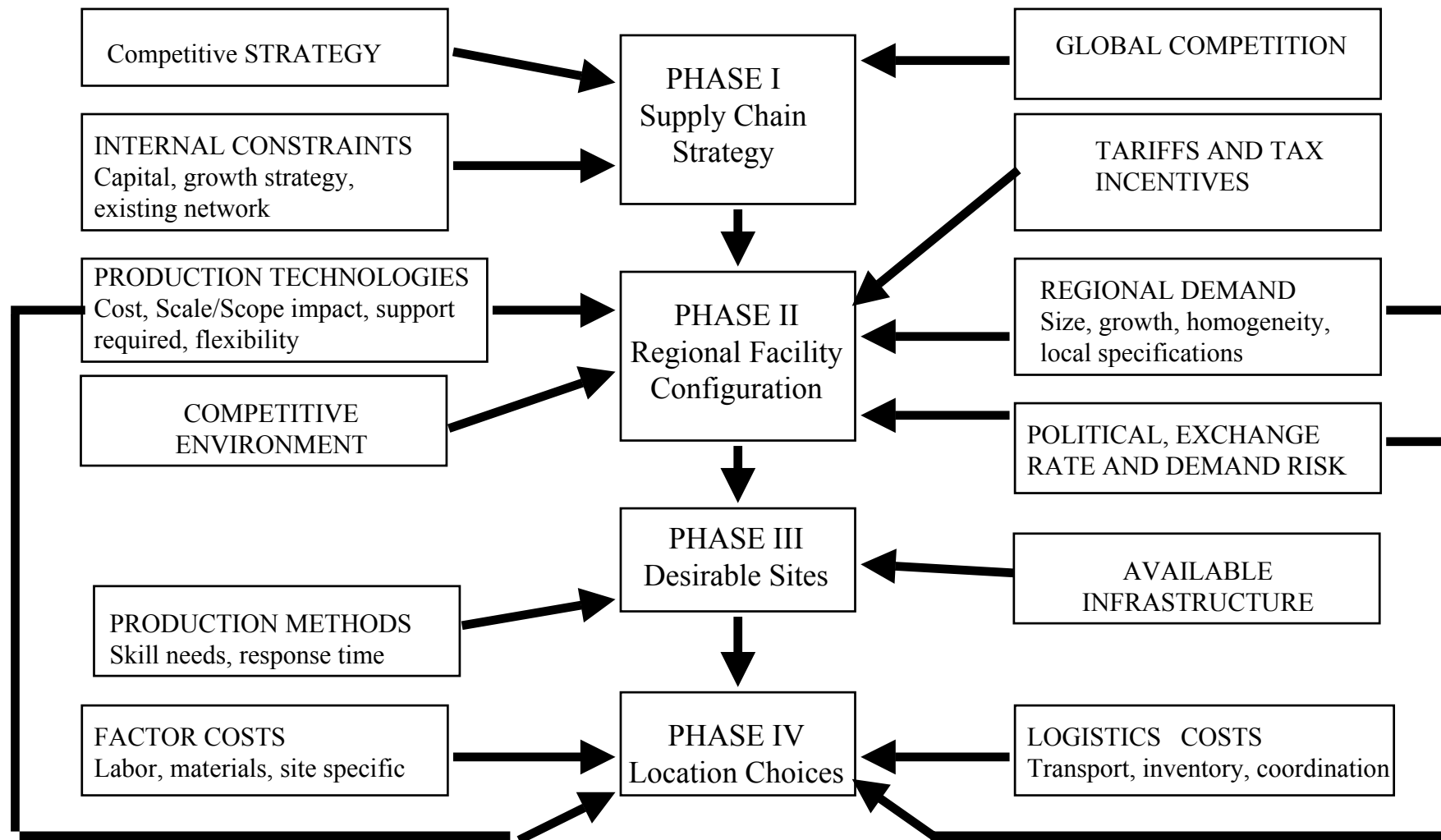
- 当服务水平无法满足要求时,一般需要增加  
分拨设施数量
- 可以用计算机软件来帮助求解最优数量

## 9.5 分拨设施选址决策

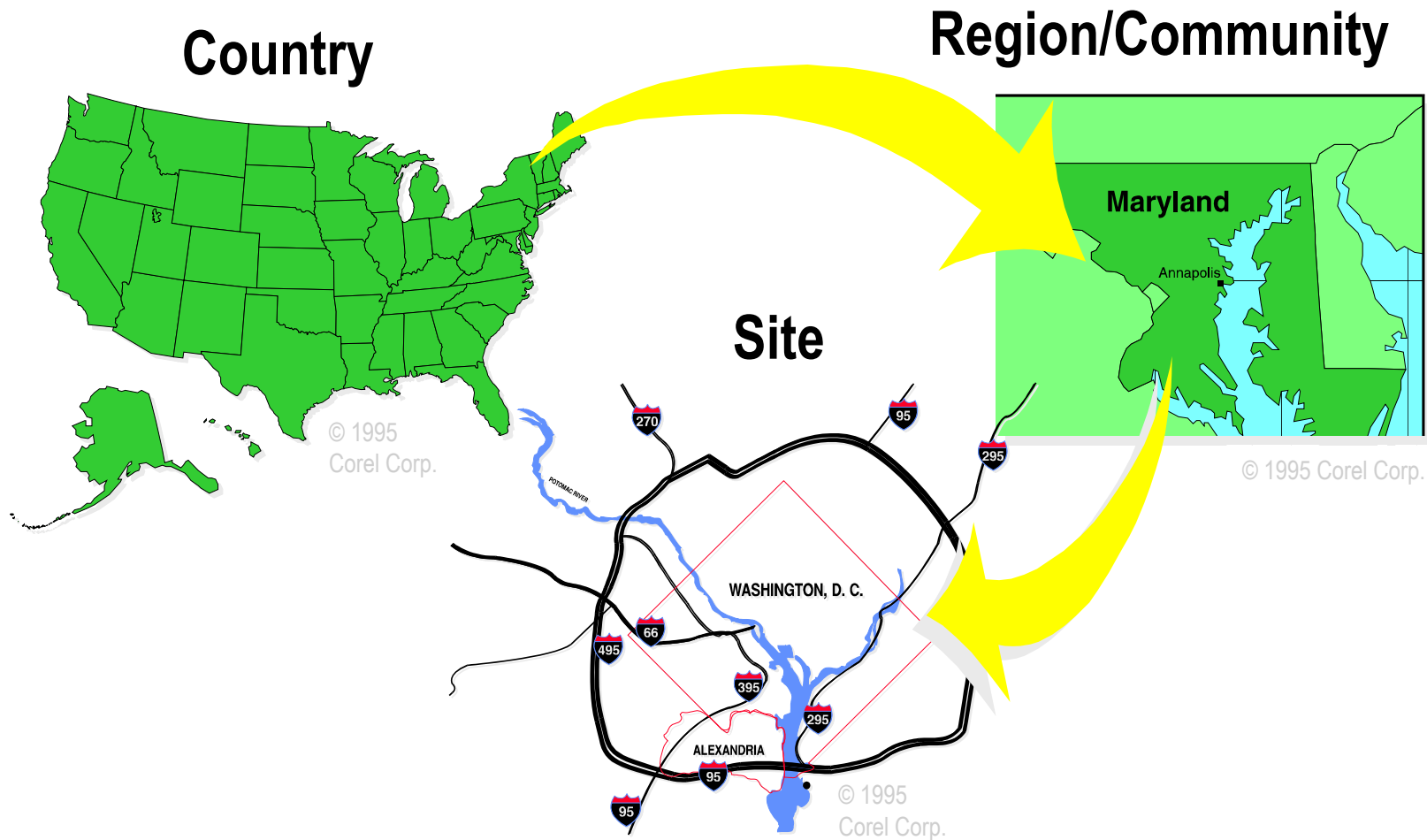
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- 1 全球化设施选址决策框架
- 2 选址决策影响因素
- 3 选址求解方法

## 9.5.1 全球化设施选址决策框架



# 9.5.1 分拨设施选址决策序列



## 9.5.2 选址决策影响因素

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- 影响所选国家的因素
- 影响区域选择的因素
- 影响地点选择的因素

## 影响所选国家的因素

---

- ❑ **Government rules, attitudes, stability, incentives**
- ❑ **Culture & economy**
- ❑ **Market location**
- ❑ **Labor availability, attitudes, productivity, and cost**
- ❑ **Availability of supplies, communications, energy**
- ❑ **Exchange rate**

# 影响区域选择的因素

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- ❑ **Corporate desires**
- ❑ **Attractiveness of region (culture, taxes, climate, etc.)**
- ❑ **Labor, availability, costs, attitudes towards unions**
- ❑ **Costs and availability of utilities**
- ❑ **Environmental regulations of state and town**
- ❑ **Government incentives**
- ❑ **Proximity to customers & suppliers**



# 影响地点选择的因素

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- Site size and cost
- Air, rail, highway, and waterway systems
- Zoning restrictions
- Nearness of services/supplies needed
- Environmental impact issues

## 9.5.3 选址求解方法

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- 加权因素分析法 ( **Weighted factor analysis** )
- 重心法 ( **Center-of-gravity approach** )

## 加權因素分析法

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( *Weighted factor analysis* )

- **Most widely used location technique**
- **Useful for service & industrial locations**
- **Rates locations using factors**
  - **Intangible (qualitative) factors**
    - **Example: Education quality, labor skills**
  - **Tangible (quantitative) factors**
    - **Example: Short-run & long-run costs**

# 步骤

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- ❑ **1. Identify the factors that are considered important to the facility location decision.**
- ❑ **2. Assign weights to each factor in terms of their relative importance. Typically, the weights sum to 1.**
- ❑ **3. Determine a score for each factor and for each location considered. Typically, the score varies 1 to 100, although other scoring schemes can be used.**
- ❑ **4. Multiply the factor score by the weight associated with each factor and sum the weighted score across all factors**
- ❑ **5. The location with the highest score is the recommended location.**

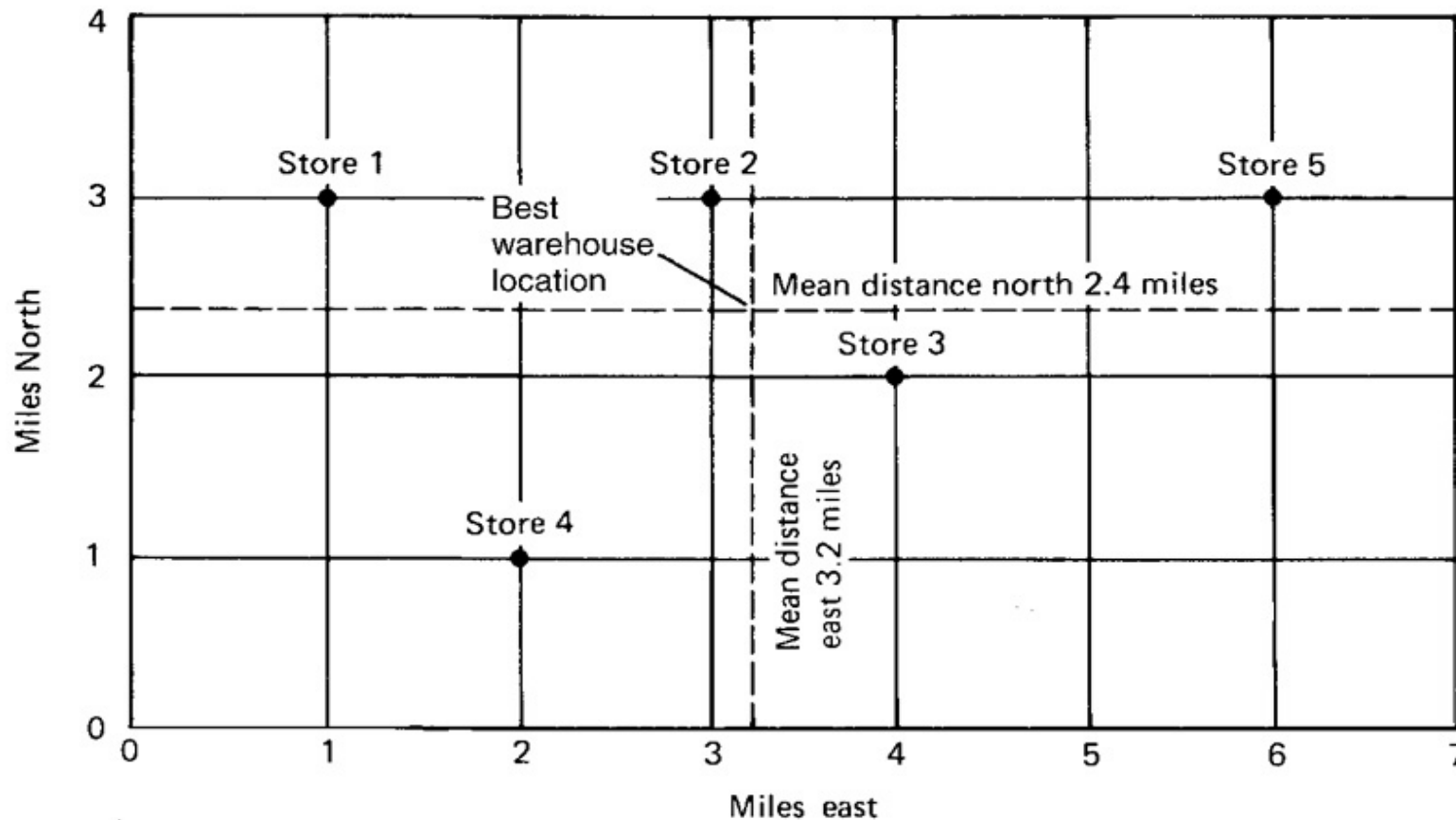
# 重心法

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- 以单项成本为决策变量（通常是运输成本），来确定设施选址。
- 简单易算，在大范围内选址时能快速定位。
- 最大的缺陷在于单项成本最小的点往往不是系统最优化的点。
- 忽略了很多其他影响选址的因素，如地形、人口需求分布等重要因素，得出的选址往往不切合实际。

# 重心法 (Center-of-Gravity)

## 供应五家零售店的仓库选址



## 思考題

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- 什么是实物分拨？
- 请列举几种典型的实物分拨运作模式，并指出各自的利弊。
- 分拨设施的数量决策中主要的悖反关系有哪些？对设施数量决策有何影响？
- 全球性分拨设施选址主要分为哪几步？各有哪些影响因素？
- 加权因素分析法和重心法在确定选址过程中各有何优缺点？