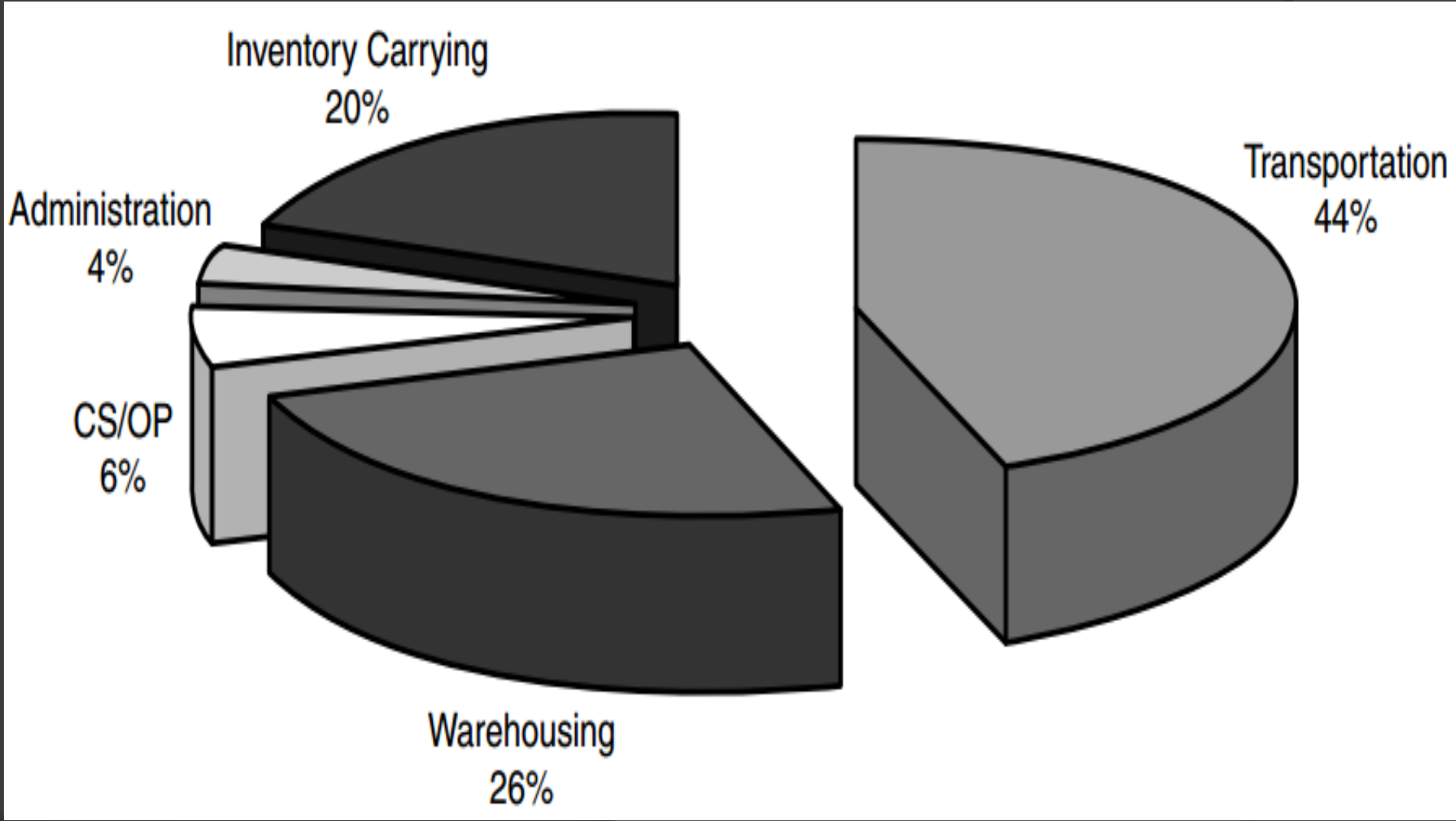
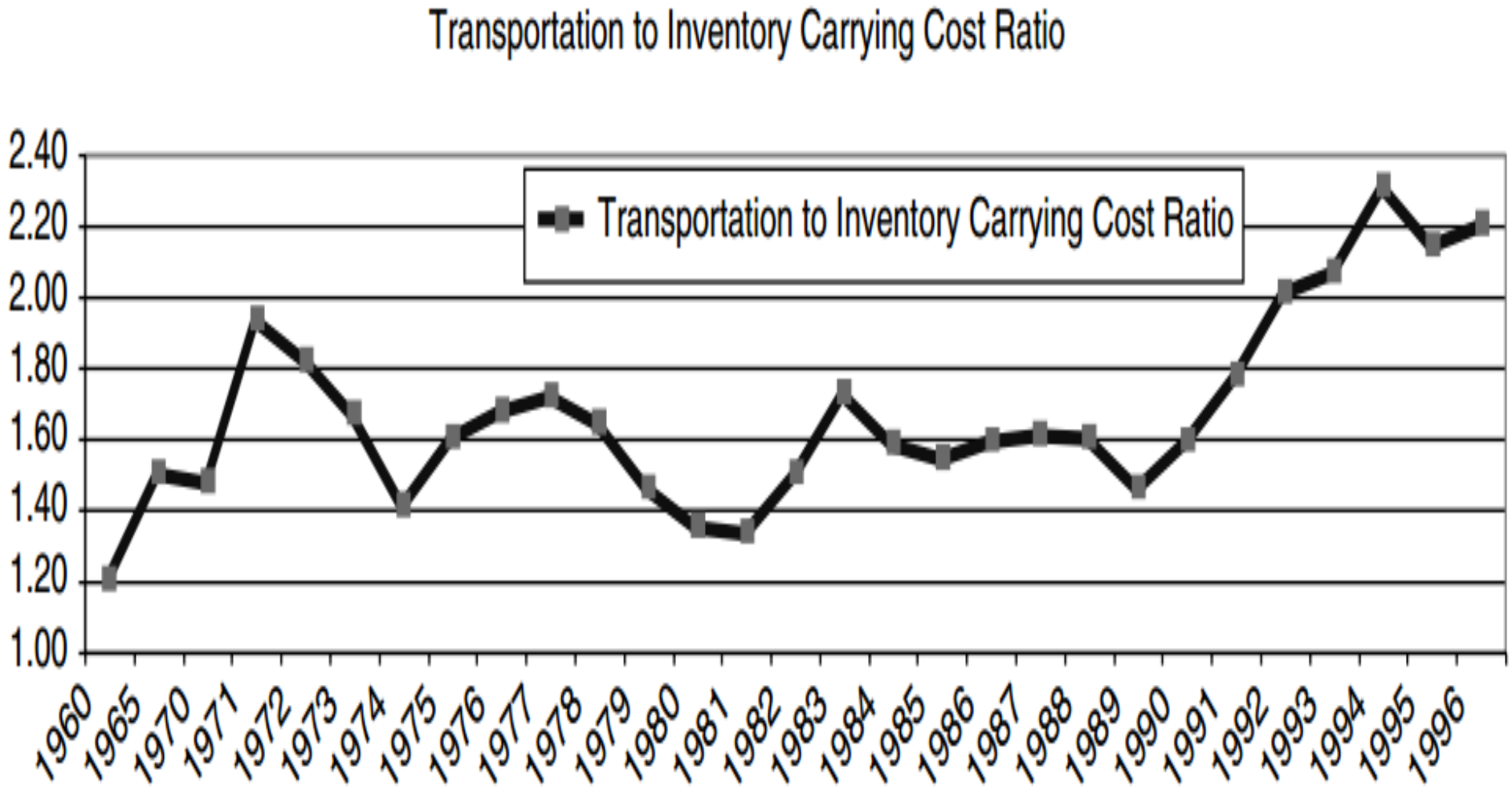
SUPPLY CHAIN MANAGEMENT

Transportation Expenses as a percentage of total



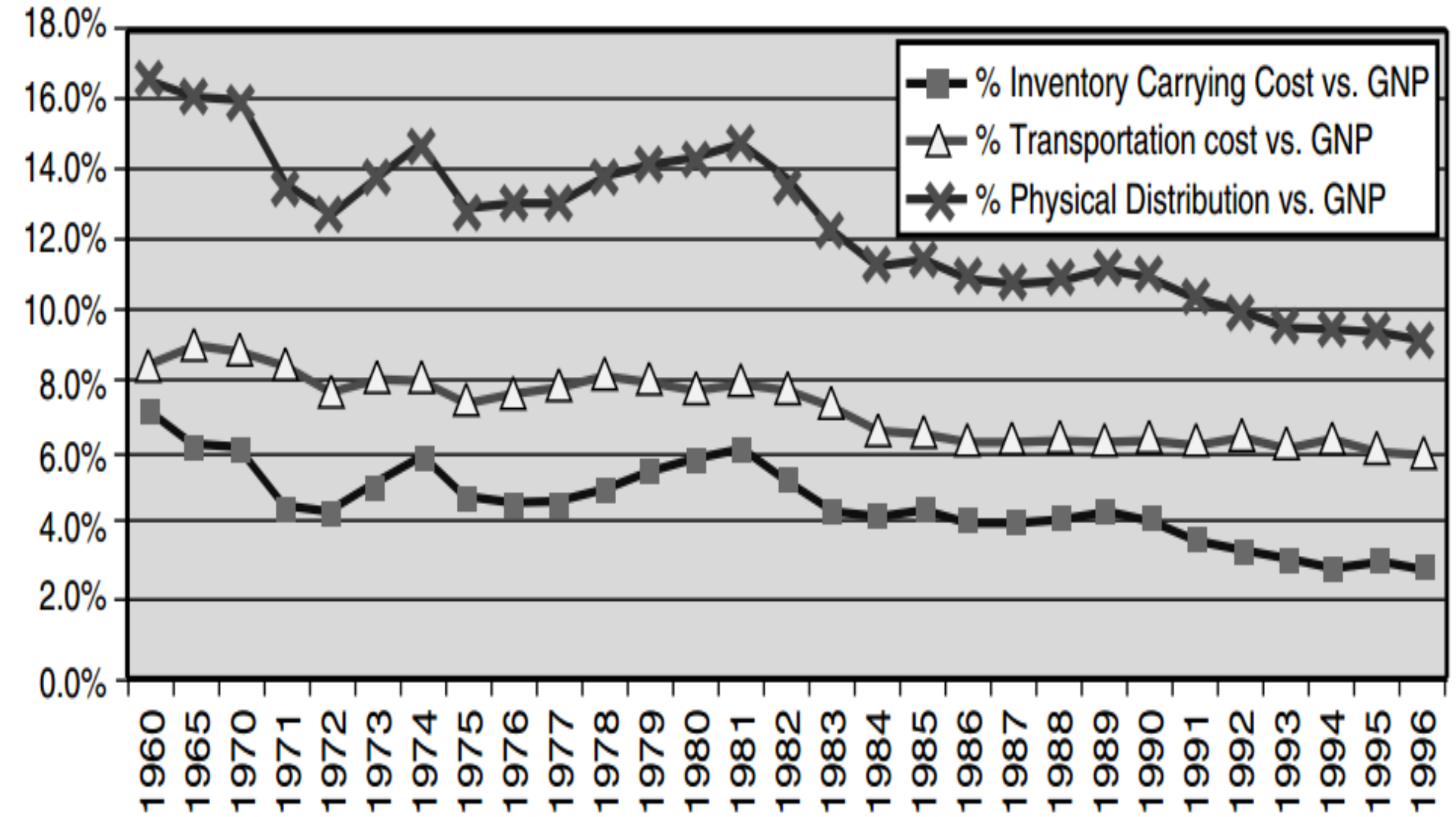
Source: Bob Delaney, Cass Logistics

Transportation costs versus inventory carrying cost ratios, 1960 to 1996



Source: Bob Delaney, Cass Logistics

Total supply chain costs versus GNP, 1960 to 1996



Source: Bob Delaney, Cass Logistics

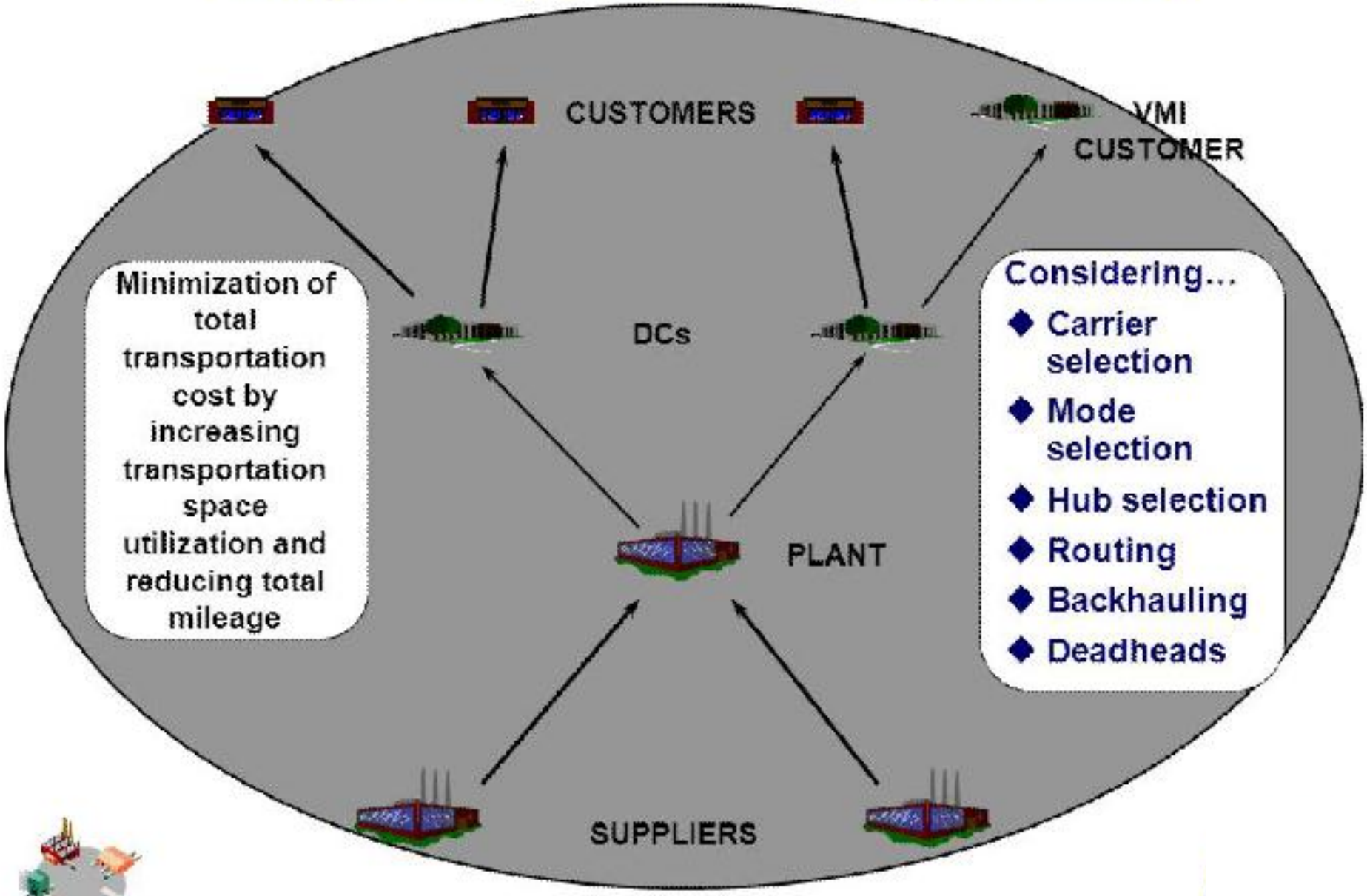
TRANSPORTATION OPTIMIZATION

Transportation Optimization is the process of determining the most efficient means of moving product to the customer while maintaining a desired service level, given a static supply chain network. The customer can be an internal component of the company or the traditional, external consumer.

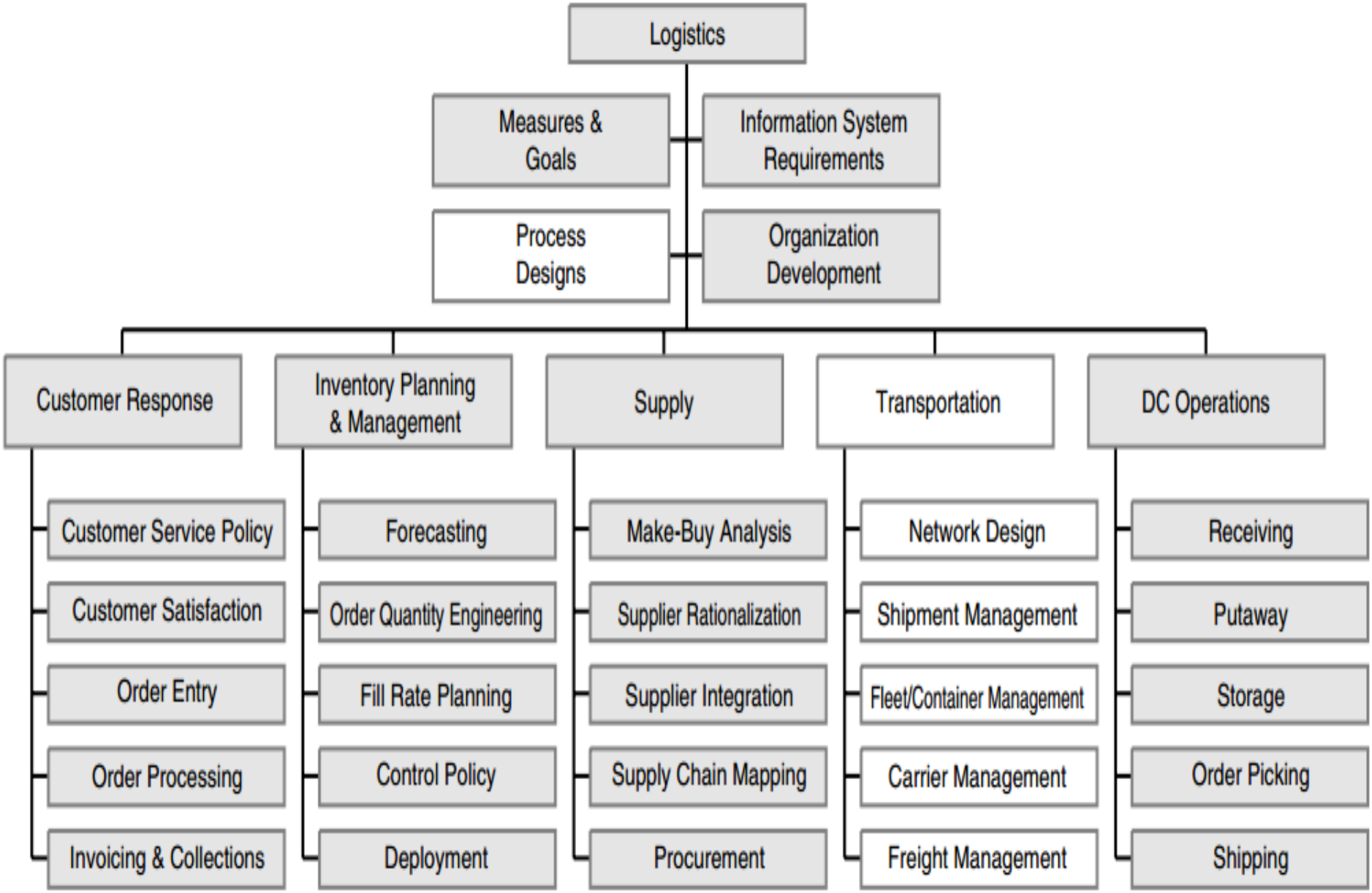
Transportation Management Optimization illustrates through Strategic Freight Shipping with 5 Best stages.

- Straight Pooling
- Shipment Aggregation
- Shipment Consolidation
- Continuous Moves
- Cross-dock/Pooling

Transportation Scheduling Optimization



Transportation in the Logistics Framework



The highest level transportation optimization equation can be expressed as follows:

Minimize: Total Transportation Costs (TTC)
Subject to: Customer Service Policy (CSP) Requirements

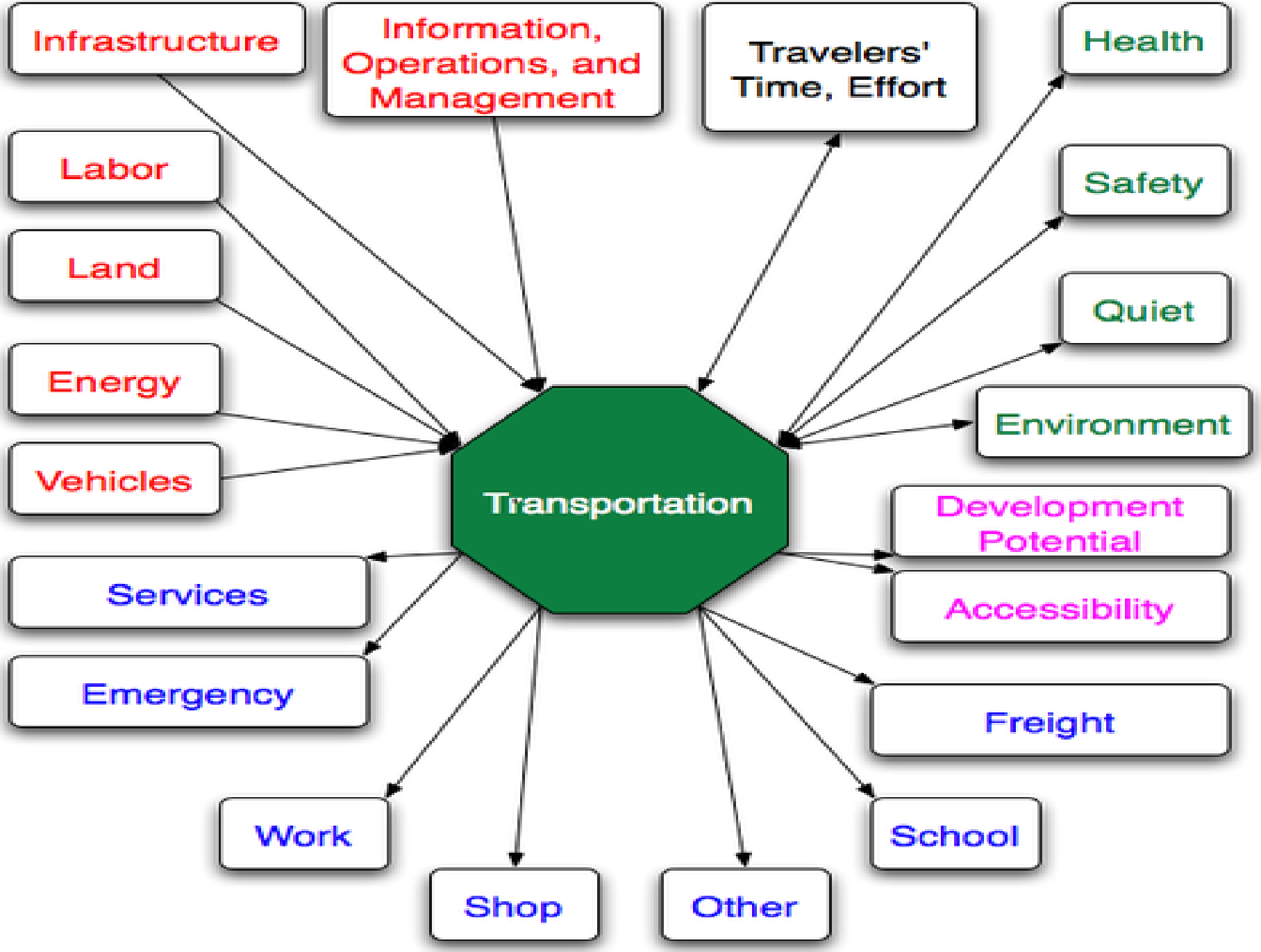
The total transportation costs include:

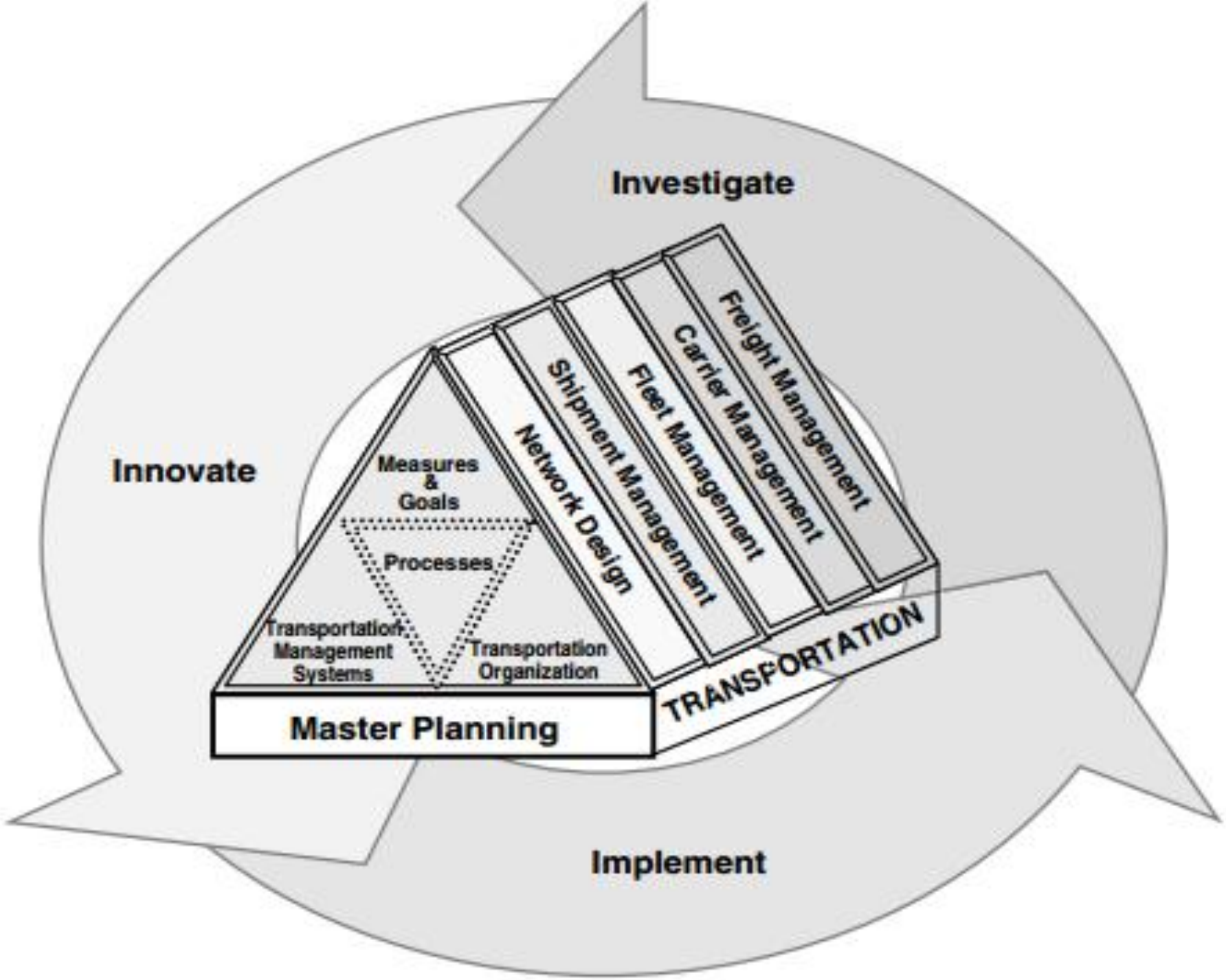
- Freight
- Fleet
- Fuel
- Maintenance
- Labor
- Insurance
- Loading/unloading
- Demurrage/detention
- Taxes/tolls
- International fees

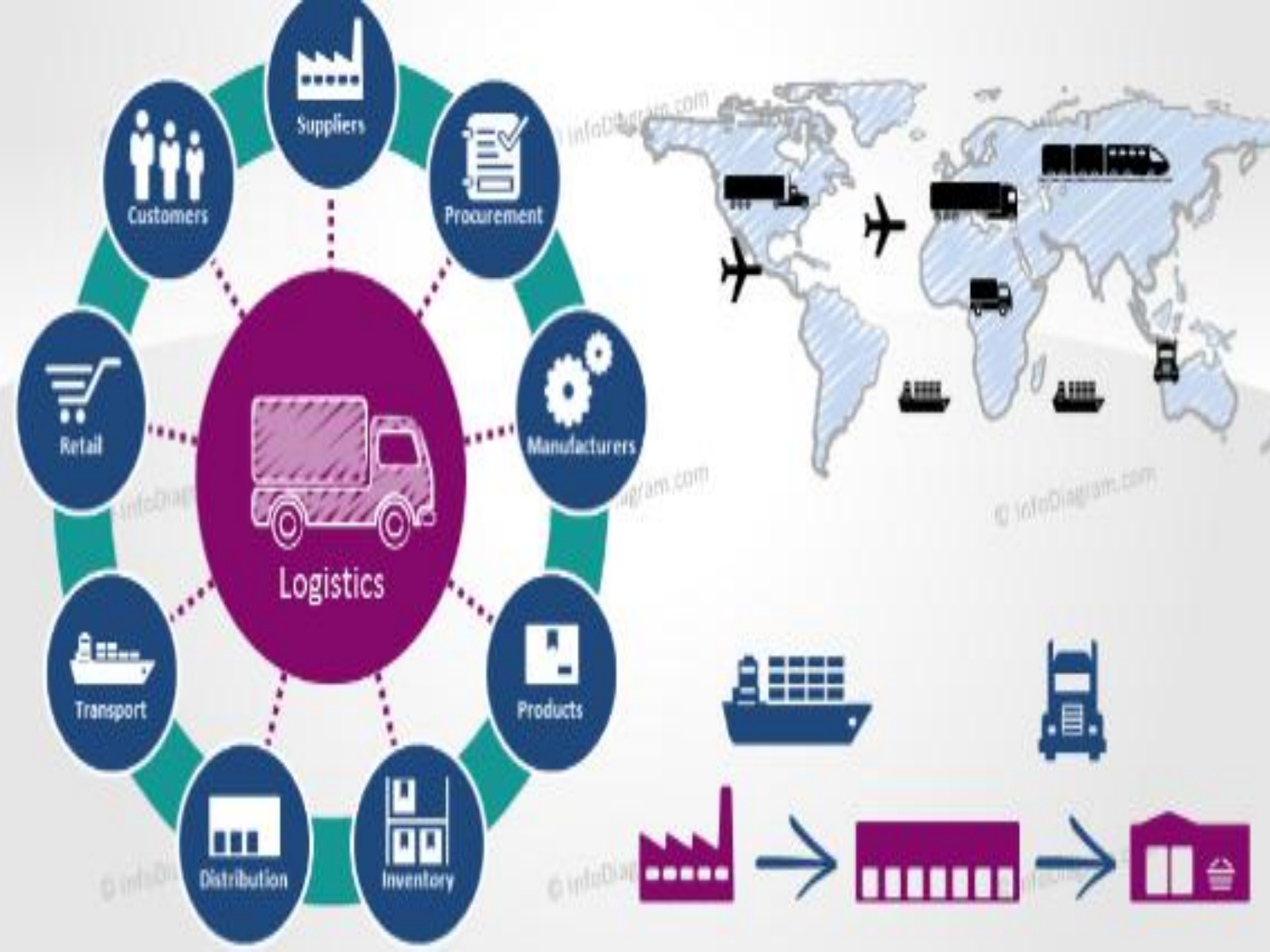
The optimal transportation solution must also satisfy the requirements set forth in the CSP, including:

- Response time requirements
- Time windows
- Volume requirements
- Frequency requirements
- Minimal damage in route

- Lane capacities
- Vehicle capacities
- Container capacities
- Workforce capacities
- Workload imbalances


Infrastructure
Information, Operations, and Management
Travelers' Time, Effort
Health
Labor
Safety
Land
Quiet
Energy
Environment
Vehicles
Transportation
Development Potential
Services
Accessibility
Emergency
Freight
Work
School
Shop
Other

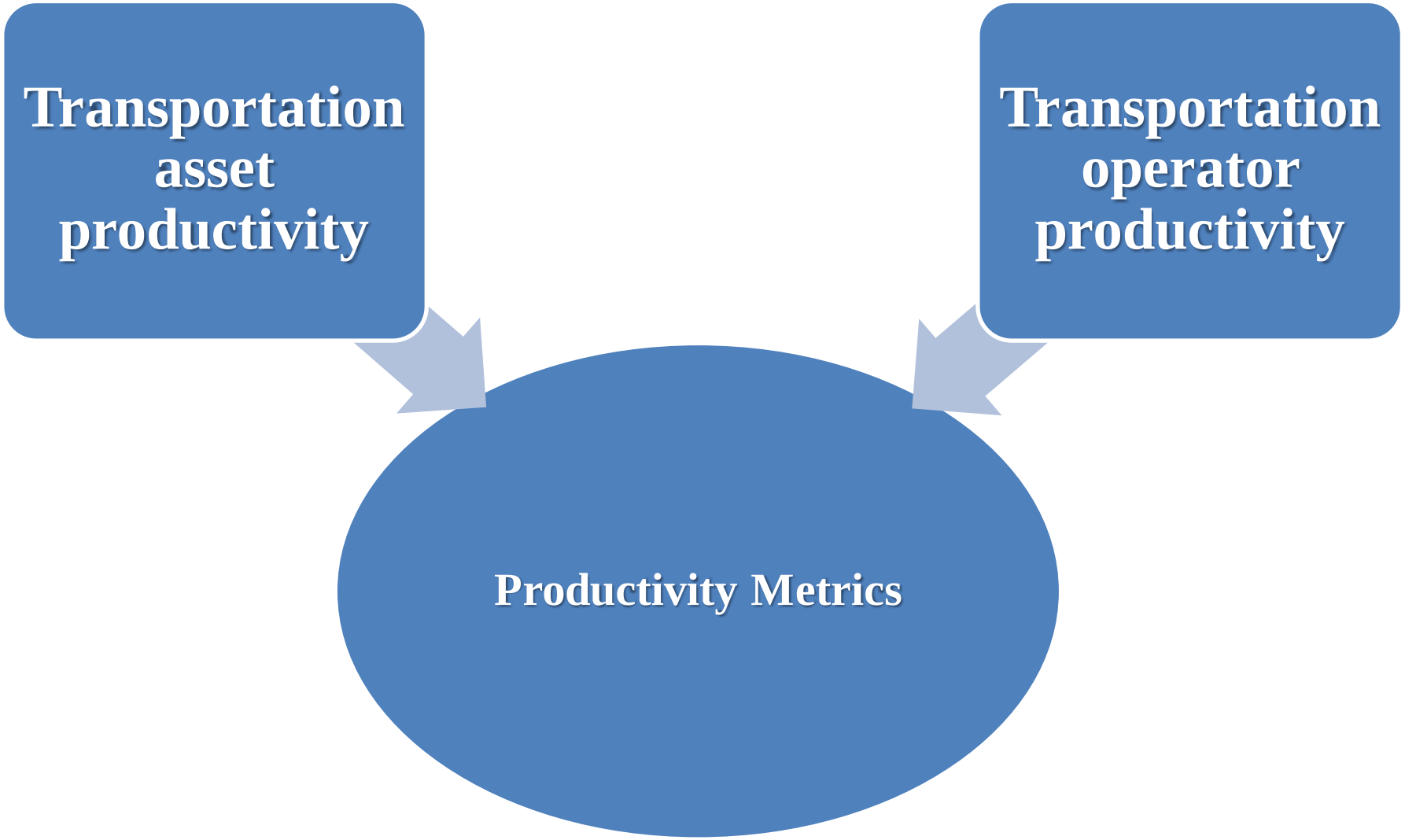

Investigate
Innovate
Implement
Measures & Goals
Processes
Transportation Management Systems
Transportation Organization
Network Design
Shipment Management
Fleet Management
Carrier Management
Freight Management
Master Planning
TRANSPORTATION


Suppliers
Customers
Procurement
Retail
Manufacturers
Logistics
Transport
Products
Distribution
Inventory

Financial Metrics

Total Transportation Costs and Cost Ratios

Expense	Capital
• Freight, inbound and outbound • Driver/operator wages and benefits • Planner/manager wages and benefits • Fleet leasing • Terminal leasing • Office lease and utilities • EDI/VAN and telecommunications fees • Maintenance • Third-party transportation fees • Fuel • Customs brokerage and freight forwarding fees • Security • Packaging materials	• Fleet ownership costs • Terminal ownership costs • Officespace ownership costs • Maintenance facility ownership costs • Transportation management systems software ownership costs • Transportation computing infrastructure ownership costs • Transportation infrastructure ownership costs (ports, bridges, and so on)

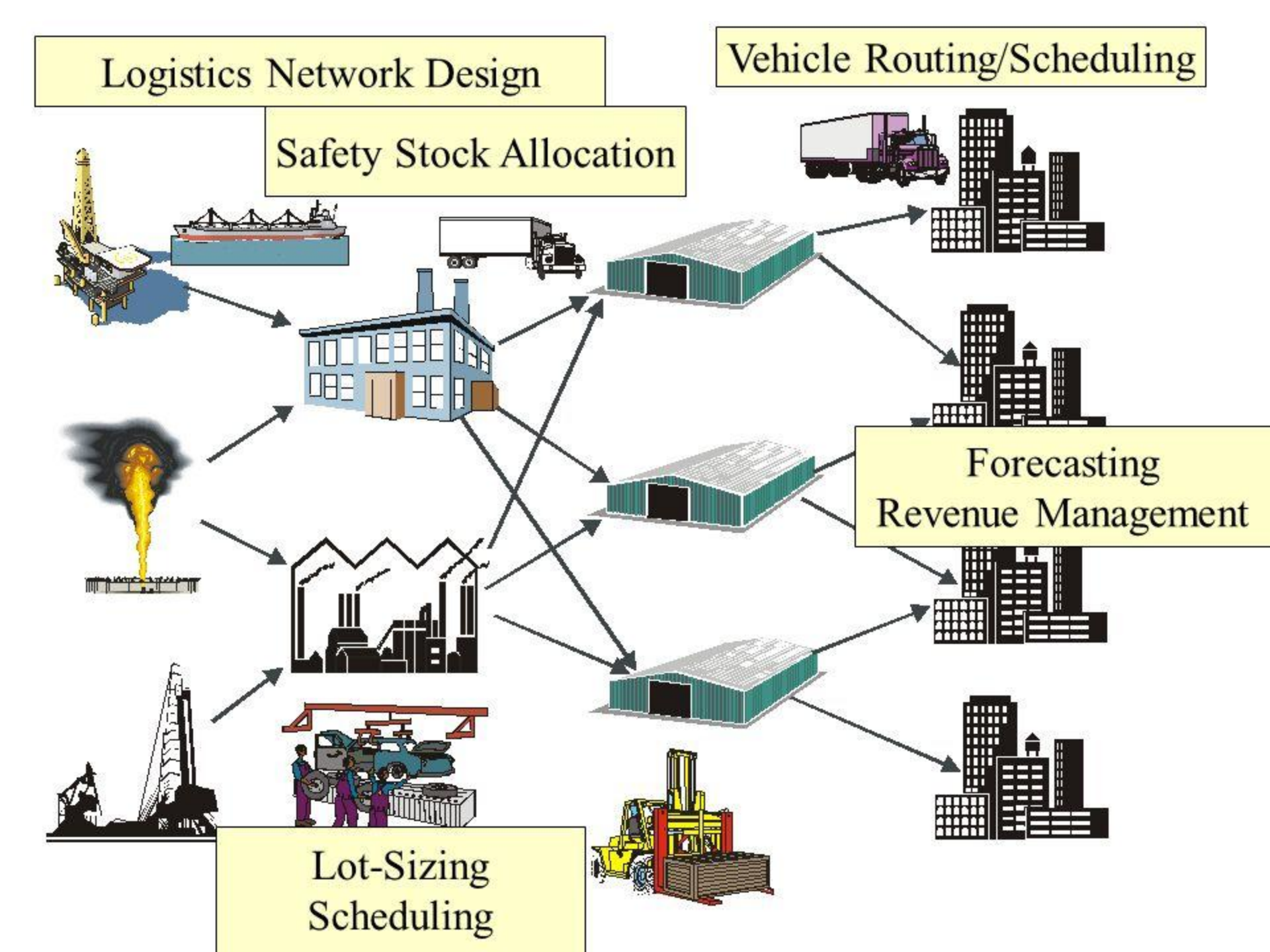

Transportation asset productivity
Transportation operator productivity
Productivity Metrics

Quality Metrics

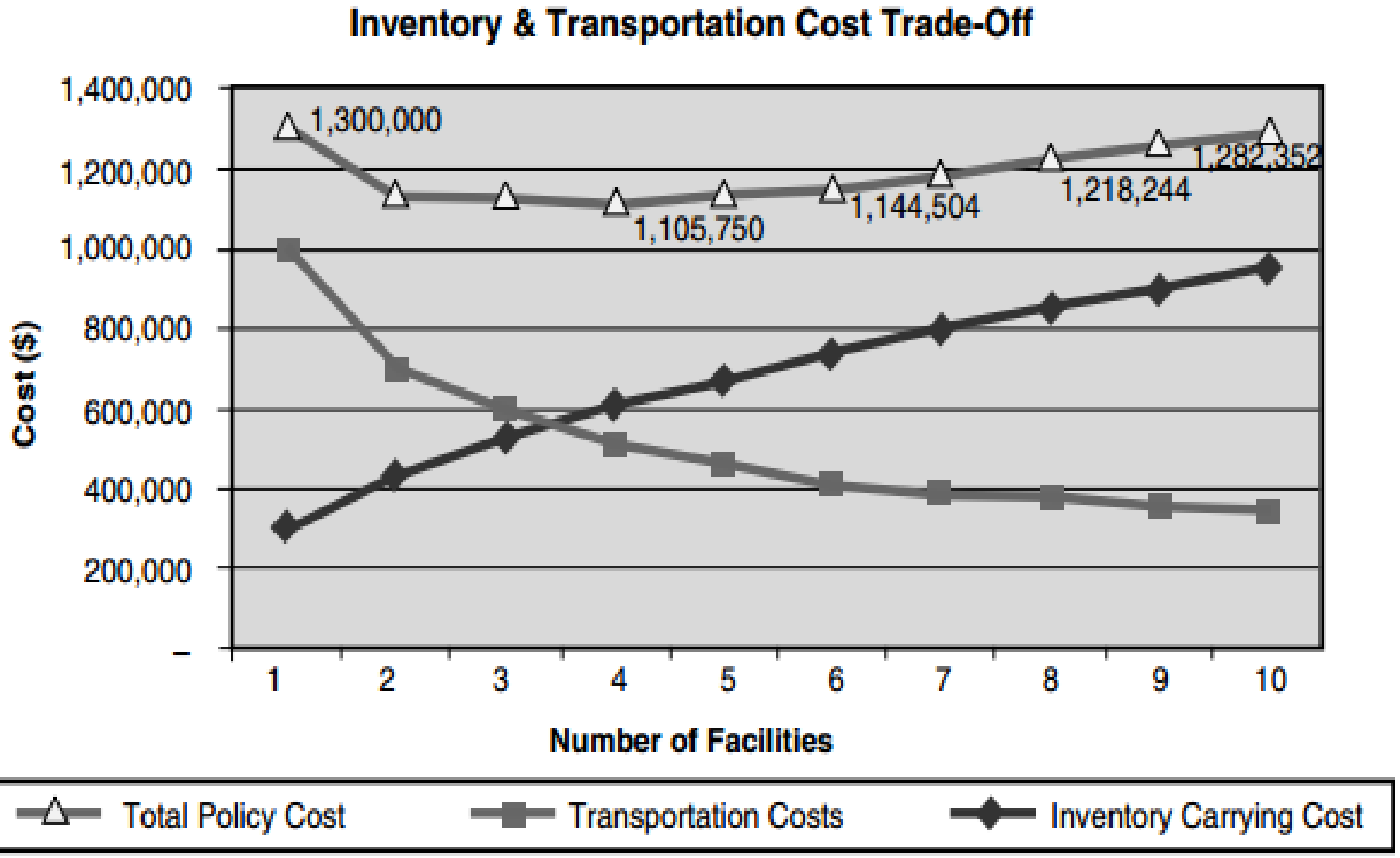
- *Claims-free shipment percentage*
- *Damage-free shipment percentage*
- *Distance between accidents*
- *On-time arrival percentage (OTAP)*
- *On-time departure percentage*
- *Perfect delivery percentage* (PDP)
- *Perfect Route Percentage* (PRP)

Cycle Time Metrics

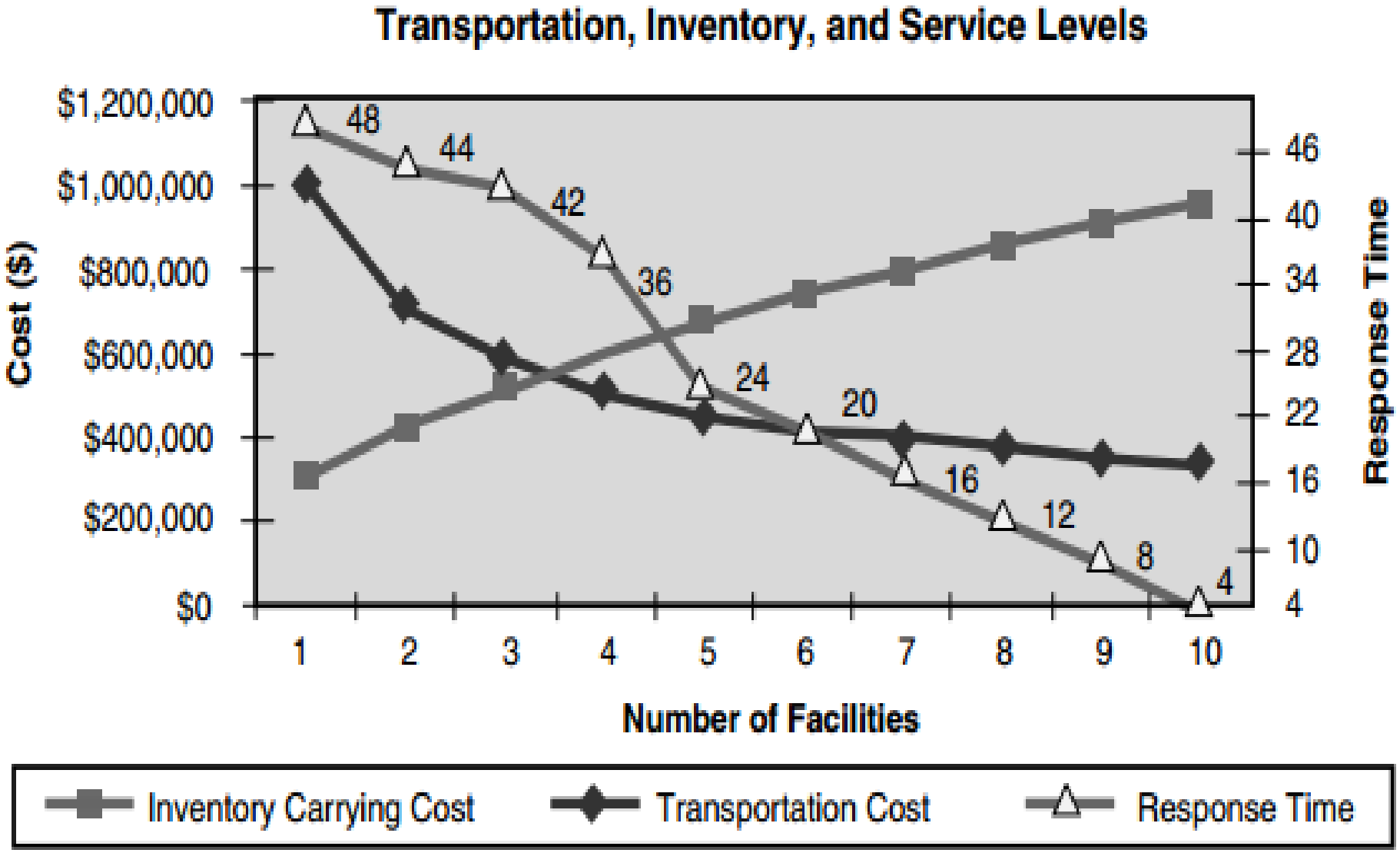
- In-transit time (ITT)
- In-transit time variability
- Detention time
- Vehicle load/unload time
- Delayed in traffic time


Logistics Network Design
Vehicle Routing/Scheduling
Safety Stock Allocation
Forecasting
Revenue Management
Lot-Sizing
Scheduling

Distribution network cost tradeoff analysis



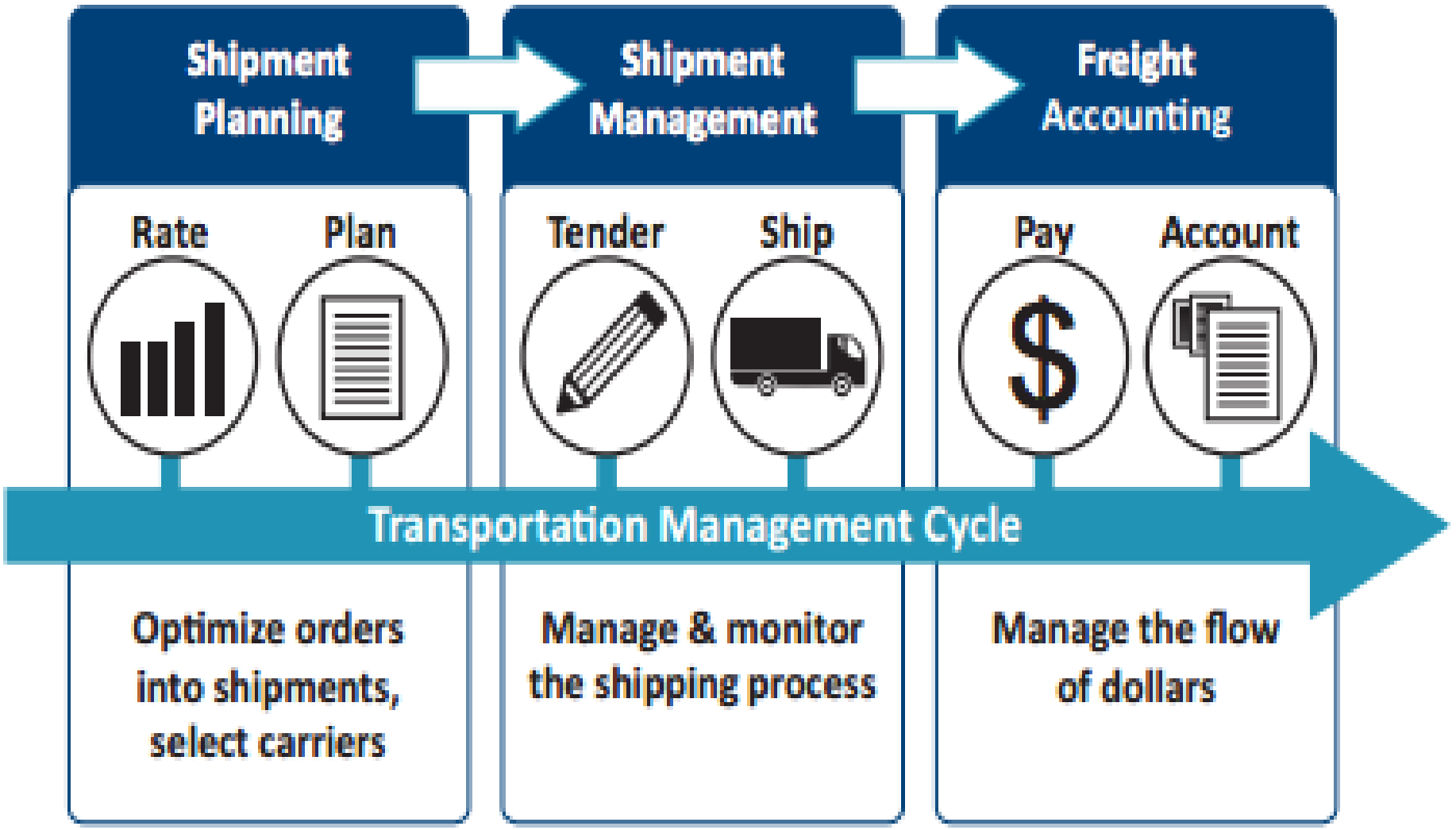
Cost-service tradeoff curves in logistics network analysis

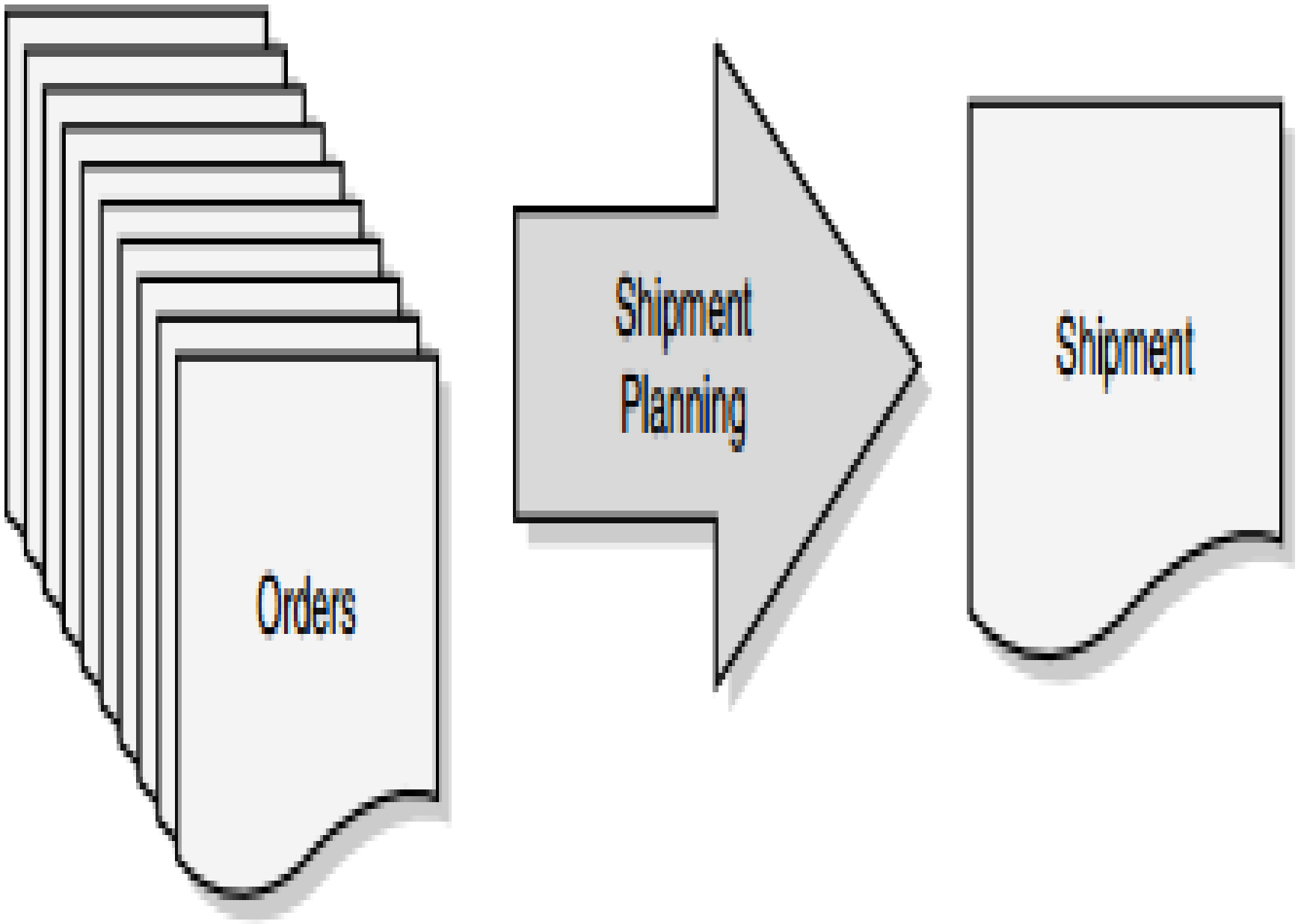


- Assess and evaluate the current network performance
- Design and populate the network optimization database
- Create network design alternatives
- Develop network optimization model
- Select a network optimization tool

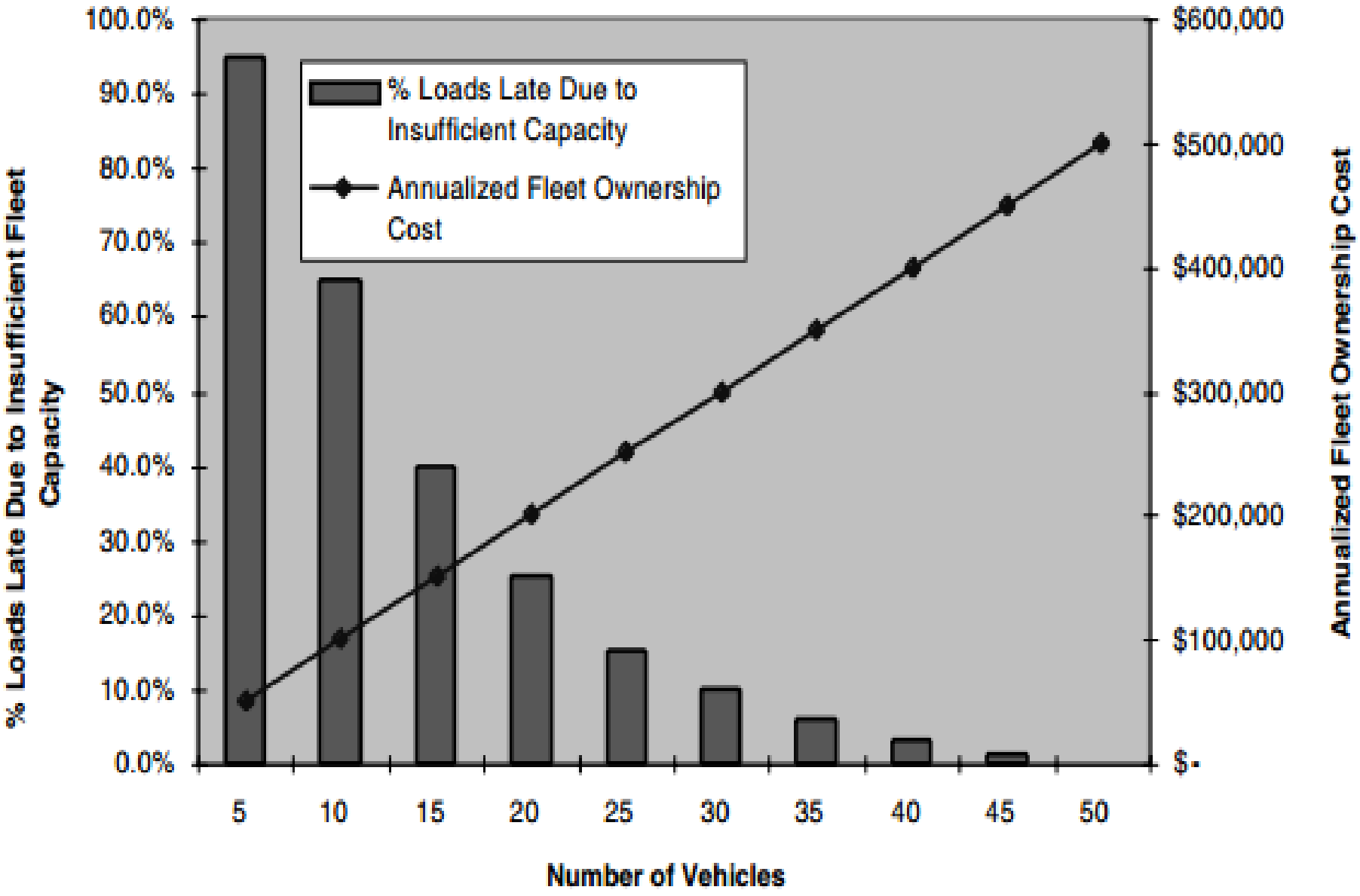
- Implement network model in selected tool
- Evaluate alternative network designs
- “Practicalize” recommended network structure
- Compute reconfiguration cost-benefit
- Make go/no-go decision

SHIPMENT PLANNING AND MANAGEMENT



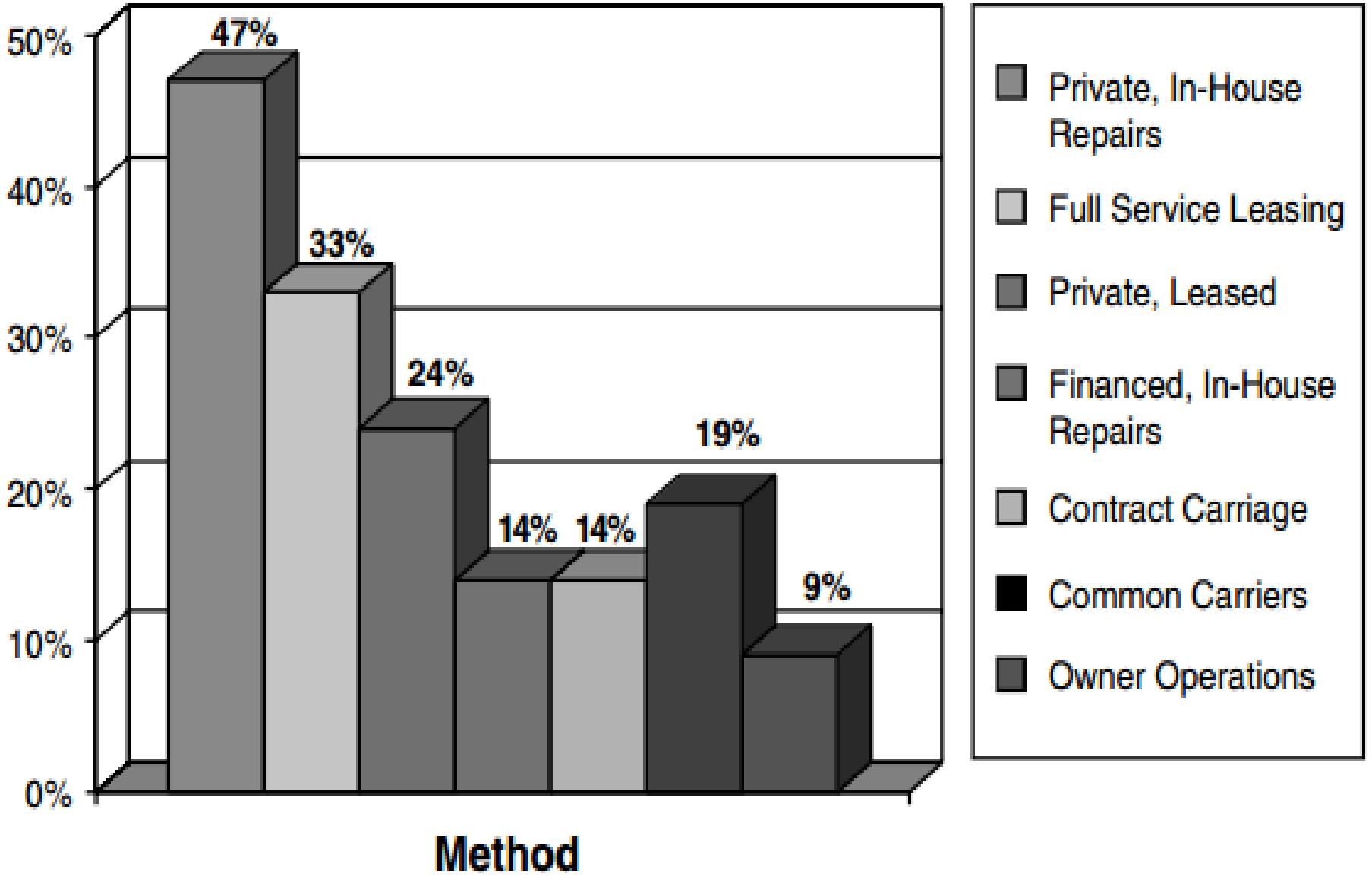

Orders
Shipment Planning
Shipment

Fleet sizing analysis

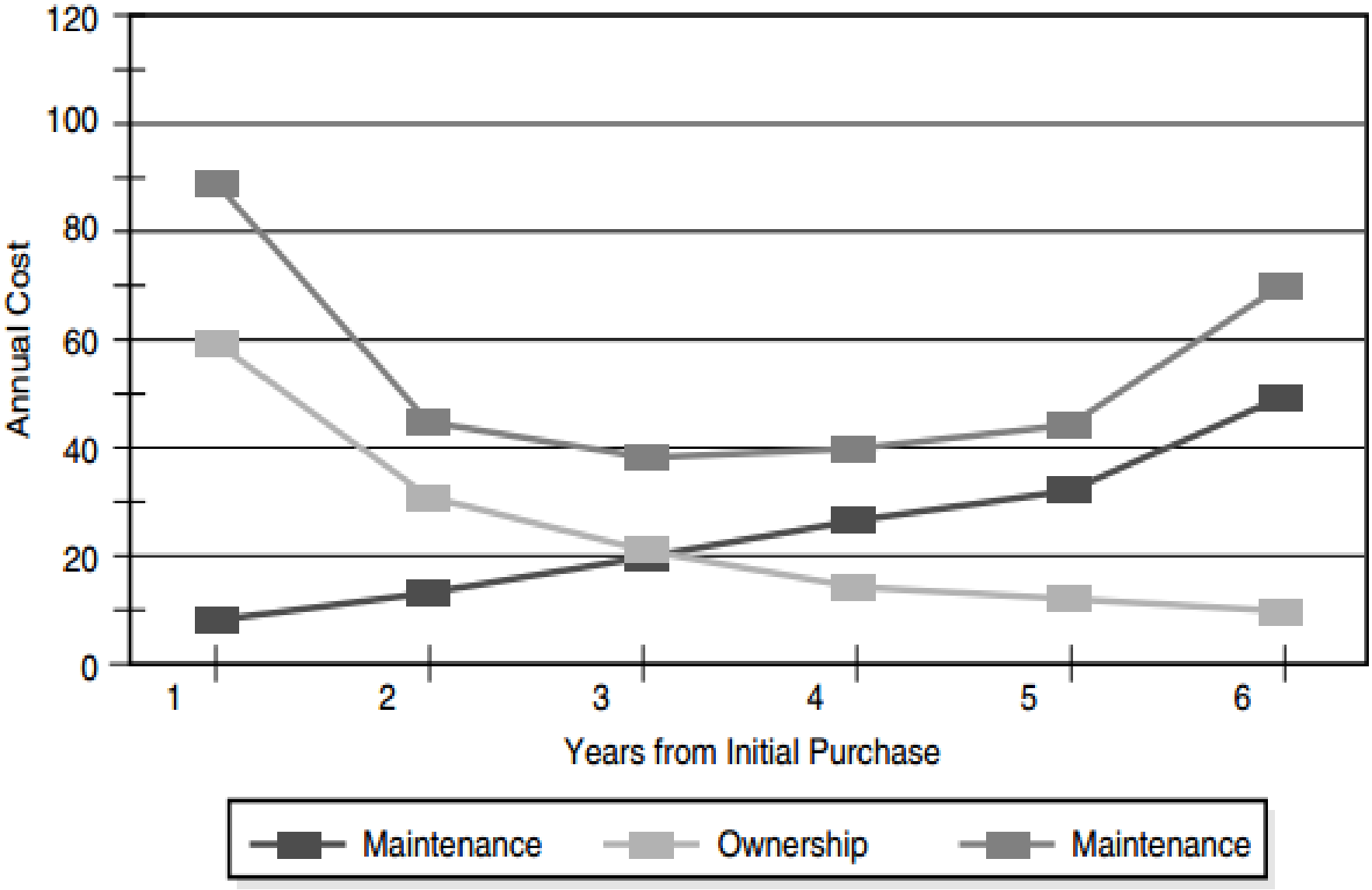


Fleet Acquisition and Replacement

Fleet terms of acquisition in the food industry

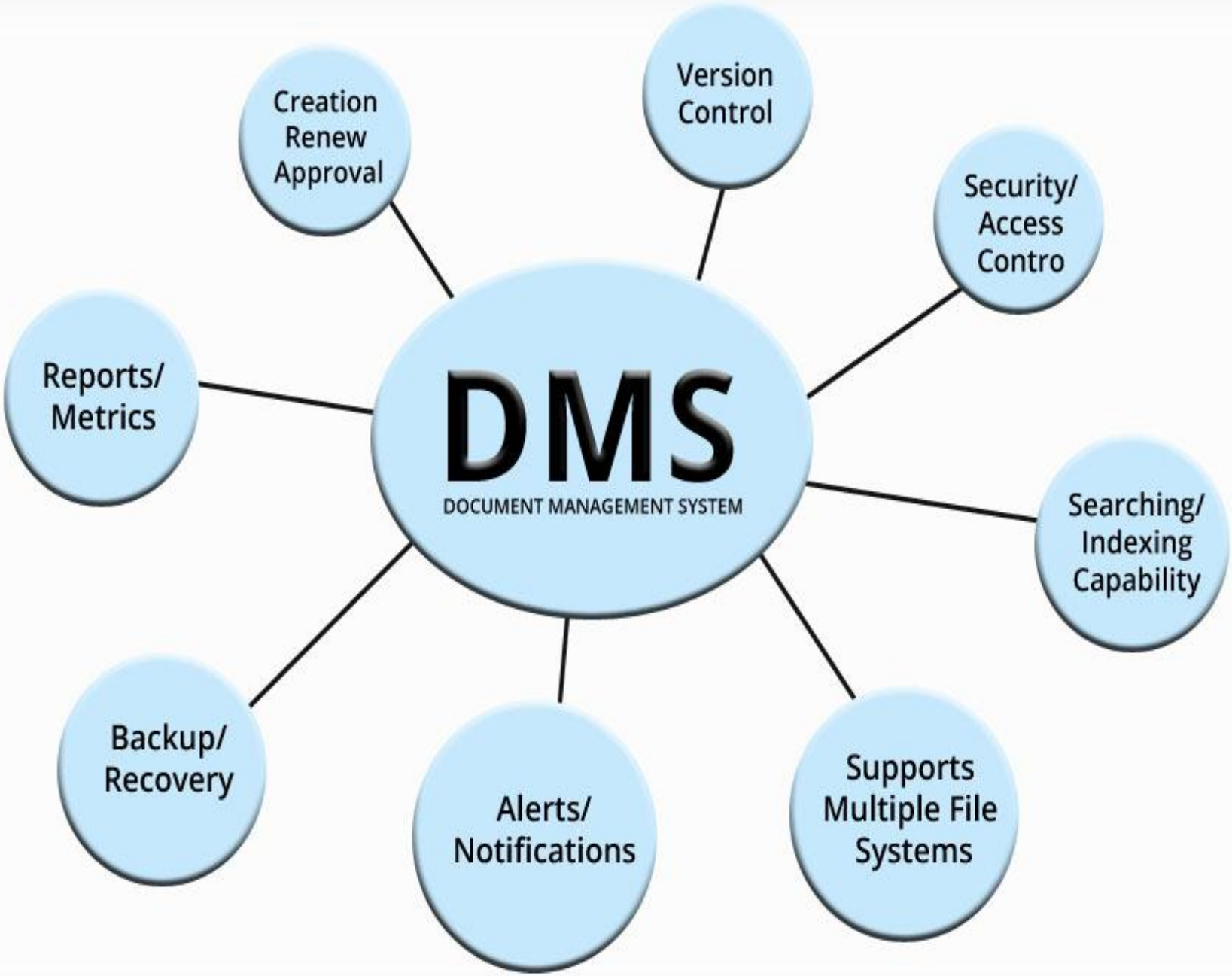


Transportation asset replacement analysis



CARRIER MANAGEMENT

FREIGHT AND DOCUMENT MANAGEMENT


DMS
DOCUMENT MANAGEMENT SYSTEM
Creation Renew Approval
Version Control
Security/ Access Contro
Reports/ Metrics
Searching/ Indexing Capability
Backup/ Recovery
Alerts/ Notifications
Supports Multiple File Systems

TRANSPORTATION MANAGEMENT SYSTEMS (TMS)

Here you can see the summarized set of TMSs requirements

- Transportation data warehousing and data mining
- Transportation performance measurement
- Transportation network design and simulation
- Inbound/outbound consolidation planning
- Shipment and load planning
- Mode and carrier selection
- Optimal and dynamic routing and scheduling
- Online shipment bidding, rating, and tracing
- Carrier management and measurement
- Fleet/container tracking, management, and maintenance
- Dock/yard/port management
- Freight bill payment and audit

THE END

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