B2B (Back to Basics)

Value Chain Management
DCM/SCM/SRM

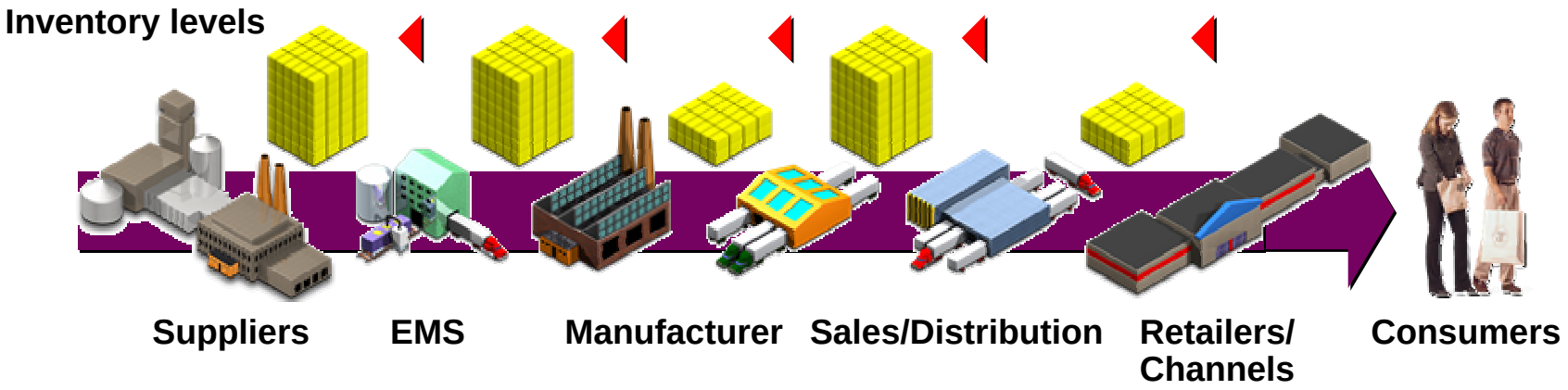
i2 Technologies, Inc.
November 2003

Agenda

- **Current Business Environment**
- **Value Chain Management (VCM)**
- **Supply Chain Management (SCM)**
- **Supplier Relationship Management (SRM)**
- **Demand Chain Management (DCM)**

Current Business Environment

State of Business
Estimated Consumer Electronics Revenue: $650B



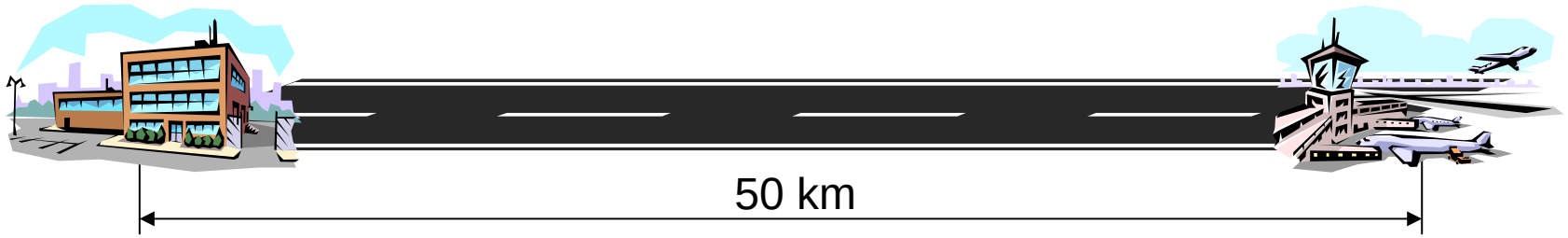
Inventory	$200B Value Chain Inventory 10+% Stock outs	100 days
Info Flow		50 days
Physical Lead Time		70 days

Response Buffers

Three Factors constrain success

- Supply and Demand **Variability**
  - Economic changes
  - Mass customization
  - Less customer loyalty
- **Complexity** of business
  - Shorter product lifecycles
  - Shorter order lead times
  - Outsourcing
  - Globalization
- Poor **Visibility**
  - Inter and Intra Enterprise

Illustration: Driving To The Airport



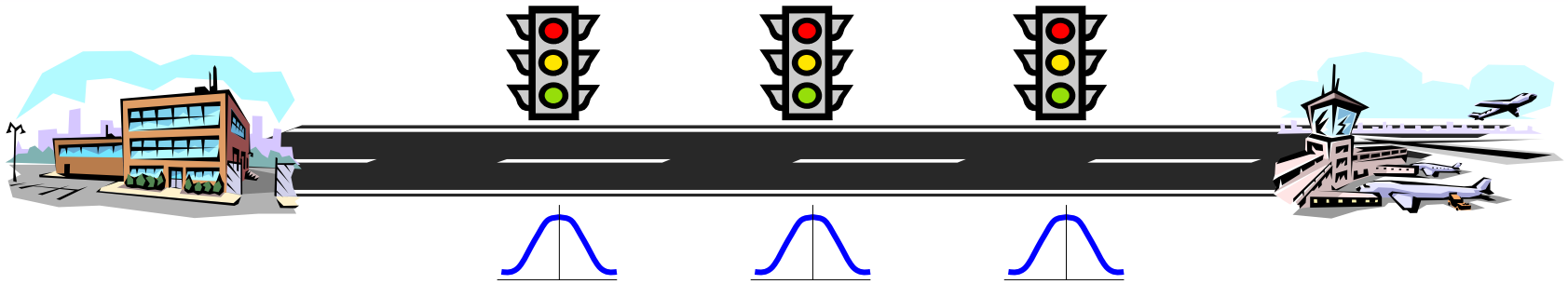
- Work ~ Airport = 50 km
- Driving Speed = 50 km/hour
- Flight Checkin Time = 11:00 am

Q) What time should you start to reach the airport by 11:00?

A) In all cases, your trip will take 60 minutes, so you must start by 10:00 am in order to be at the airport by 11 am.

Ideal Case: No Traffic Lights	Time	Probability
Mean Travel Time	60 min	-
Probability of Delay	-	0%
Best Case Scenario	60 min	100%
Worst Case Scenario	60 min	100%

Driving To The Airport With Uncertainty

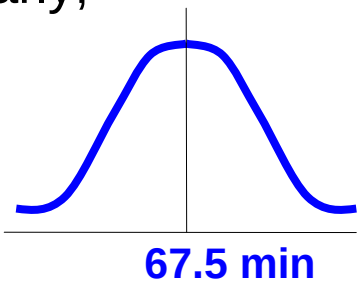


- Change: Three traffic Lights have been installed. (each 5 minutes)

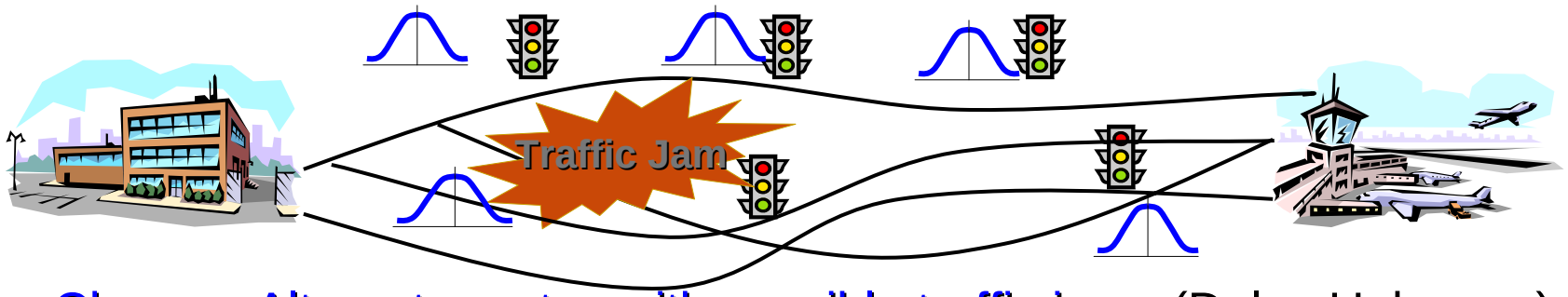
Q) Now what time should you start to reach the airport by 11:00?

A) Minimum Trip time = 60 minutes. Trip time will be max. 75 minutes if you hit all three red lights. To definitely reach the airport by 11am, you must start by 9:45 am. You may reach the airport 15 min early, depending on the lights.

Case 2: Three Traffic Lights	Time	Probability
Mean Travel Time	67.5 min	-
Probability of Delay	-	87.5%
Best Case Scenario	60 min	12.5%
Worst Case Scenario	75 min	12.5%



Driving To The Airport With More Uncertainty



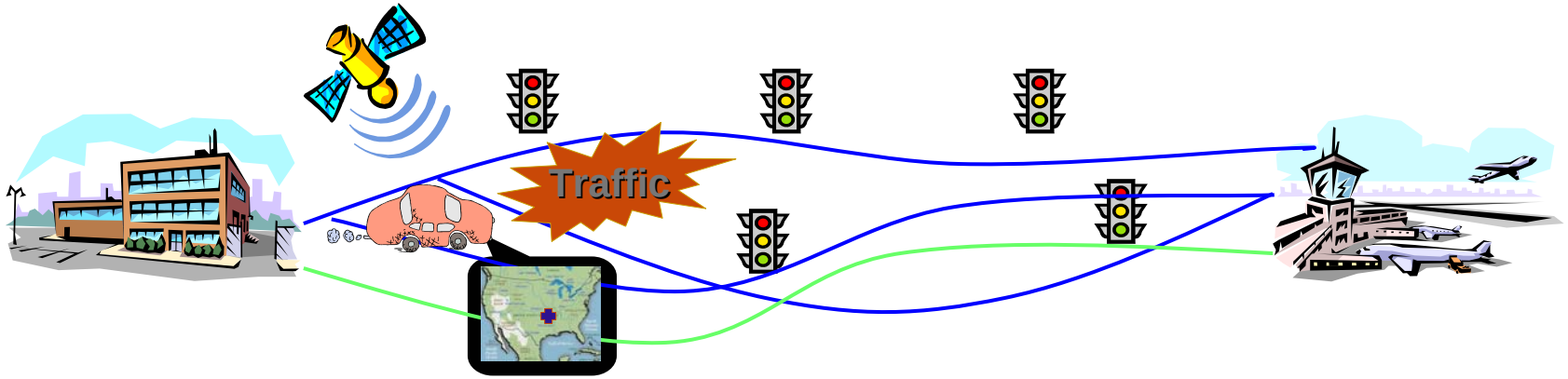
- Change: Alternate routes with possible traffic jams.(Delay Unknown)

Q) Now what time should you start to reach the airport by 11:00?

A) Minimum Trip time = 60 minutes. Trip time will be max. ? minutes if you hit all red lights and traffic jams. To definitely reach the airport by 11am, you must start by ? am. You start VERY EARLY(8 am?) due to many uncertainties.

Case 3: Many Uncertainties	Time	Probability
Mean Travel Time	? min	-
Probability of Delay	-	? %
Best Case Scenario	60 min	? %
Worst Case Scenario	? min	? %

Driving To The Airport With
Accurate Planning & Execution



- Visibility: Road Map, Navigator, Highway Traffic data via Satellites.
- Velocity: Shortest and fastest routing and dynamic rerouting along the way.
- Complexity: Automated green light sequencing. Modeling all signals, possibility of traffic jam based on historical patterns, speed limits.

Choose Route C to Start

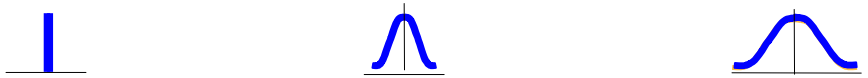
Start by 9:45

Alter route as the Navigator tells you.

You will arrive by 10:50, with 99% reliability.

Supply & Demand Uncertainty:
Impact on Inventory

- **Now we convert the trip into a journey through the value chain, from manufacturing facility to DC to store backroom to shelf. In the entire order to delivery cycle across the value chain, uncertainty is caused by:**
  - Inability to accurately model material, capacity and inventory levels
  - Inability to generate rapid replenishment signals
  - Supply and demand variability



LT Variability		Demand Variability		
		Demand = 10 (Fixed) Mean Demand = 10	Demand = 10 units +/- 2 Mean Demand = 10	Demand = 10 units +/- 4 Mean Demand = 10
	LT = 7 days +/- 0 days Mean LT=7	70 units required (0% excess)	84 units required (20% excess)	98 units required (40% excess)
	LT = 7 days +/- 2 days Mean LT=7	90 units required (29% excess)	108 units required (54% excess)	126 units required (80% excess)
	LT = 7 days +/- 4 days Mean LT=7	110 units required (57% excess)	132 units required (89% excess)	154 units required (120% excess)

How to Reduce the Impact?

- **Improving Visibility**
  - True sharing of information across value chain
- **Increasing Velocity**
  - Rapid decision making for global optimization
- **Decrease Complexity**
  - Reduce number of parts, suppliers and warehouses

		Improving Visibility	Increasing Velocity	Controlling Variability
Physical Lead Time	70 days	70 days	70 days	50 days
Info Flow	50 days	25 days	25 days	20 days
Inventories	100 days	75 days	50 days	30 days
Lost Sales	10-15%	< 10%	< 8%	< 5%

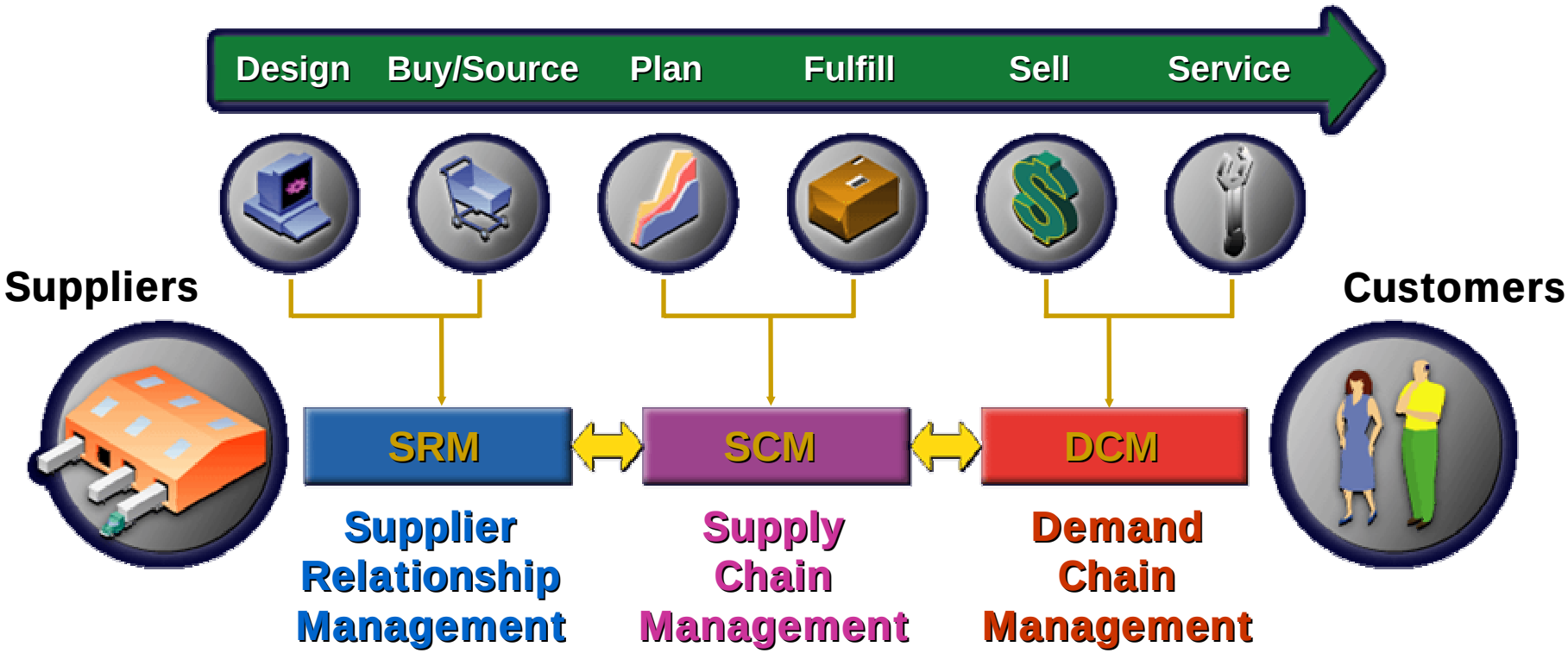
Value Chain Management

(VCM)

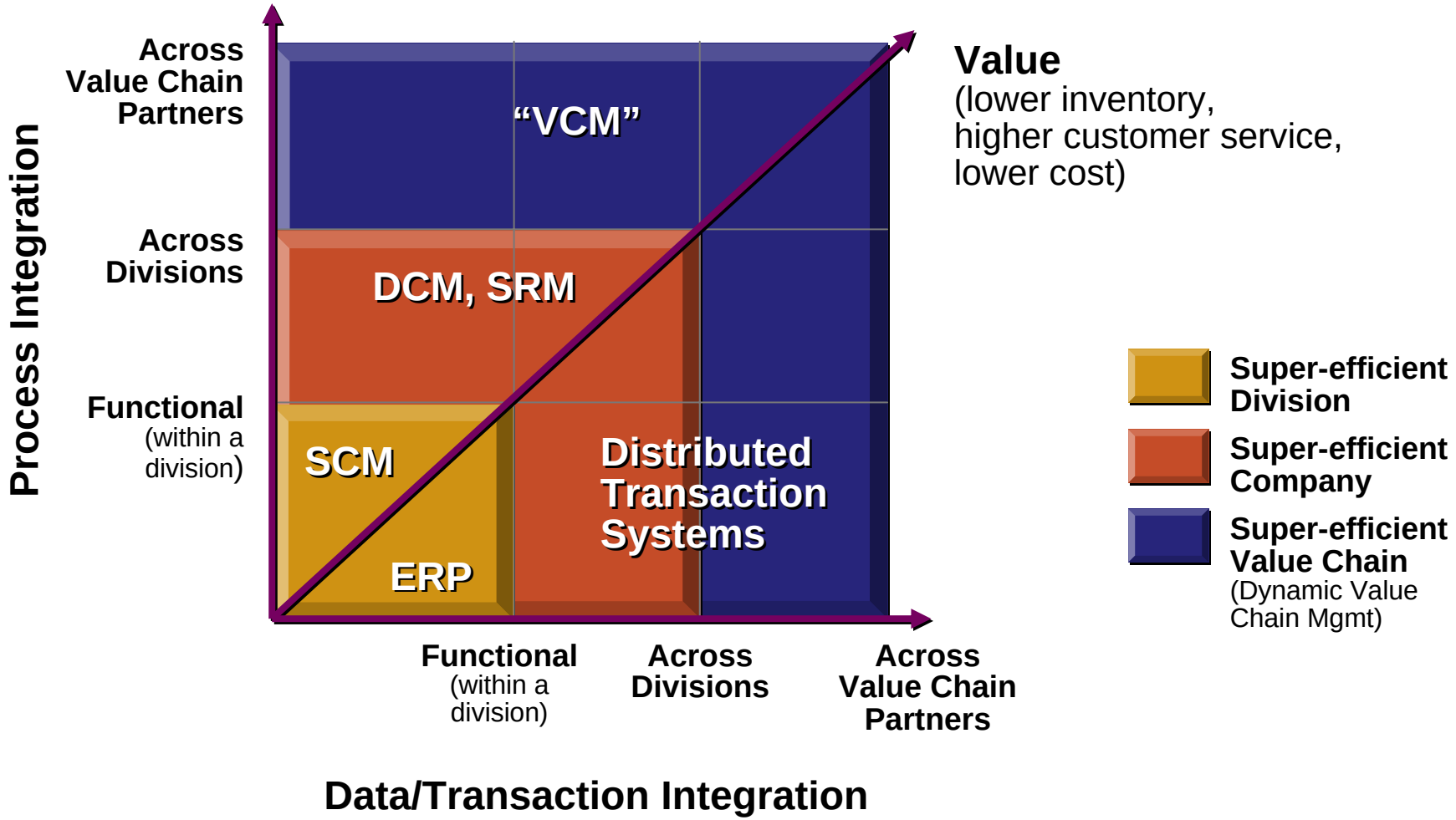
Value Chain Management (VCM)

Value Chain Management is a business approach to continuously increase efficiency in the value chain by concurrently reducing complexity, increasing visibility and increasing velocity.

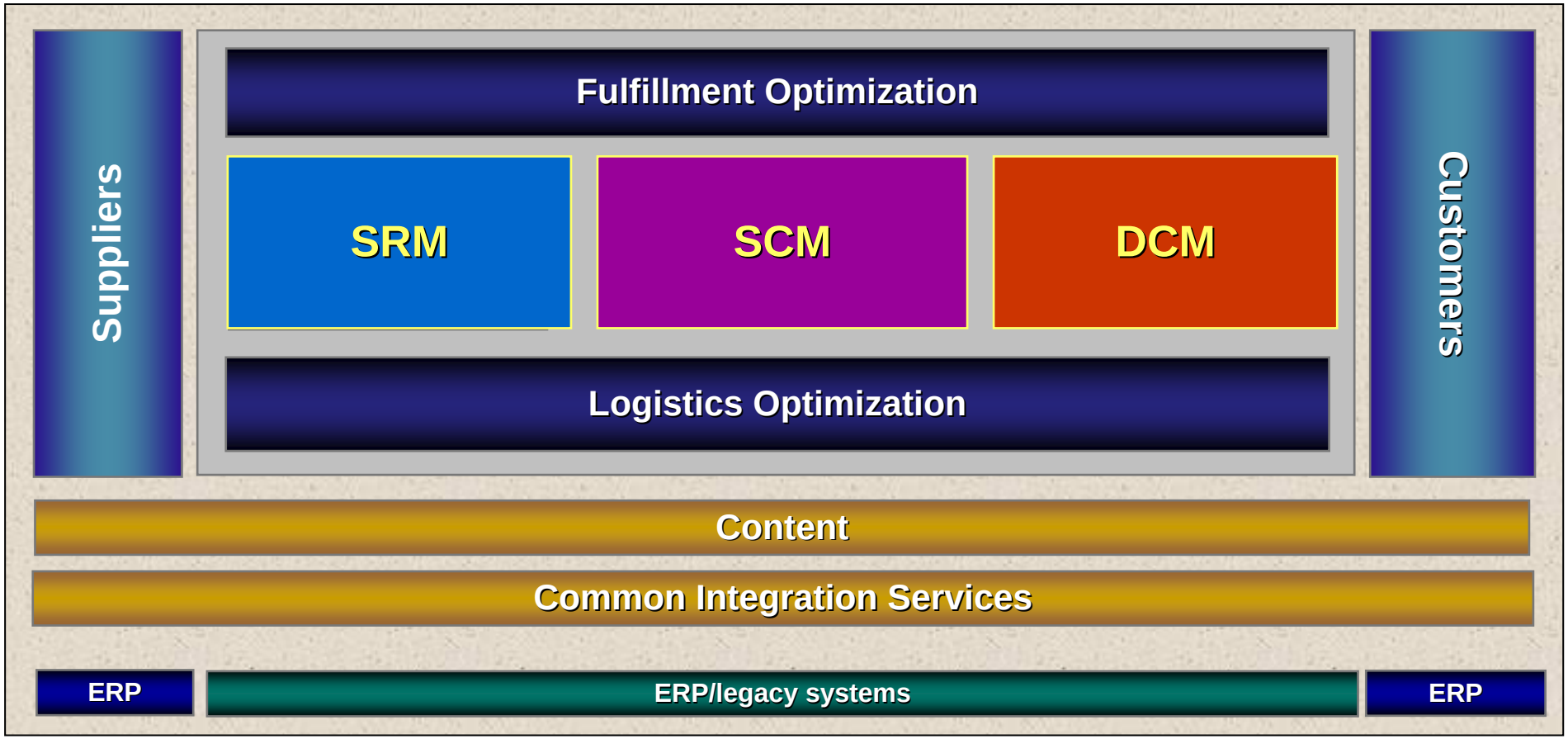
Value Chain Management (Extended Supply Chain)



Evolution of Value Chain Management



Next Generation Value Chain Processes



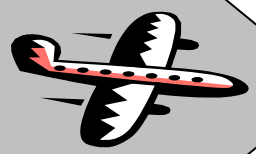
Supply Chain Management

(SCM)

What is SCM?

- **Right Product is in stock at the right time, at the right place, at the right price and at a minimal cost-to-serve.**

- High forward visibility
- Intelligent and fast decision making & execution
- Optimization across business functions



Velocity!

Through the Integration of Processes and Information for all Trading Partners

Process, Organization, System Need to be Re-aligned for Extended SCM

- **Process**
  - 단납기 체제
- **Organization**
  - GBM 체제, 프로세스형 조직
  - Master Scheduler (Command Center)
  - MBO (예: 재고 책임)
  - 정책 (예: Sales Minus) 등
- **System**
  - APS (Advanced Planning System)

Enabling SCM System
Advanced Planning & Scheduling System (APS)

- **APS is Used to Find the "Optimal" Solution Given Competing Constraints...**

↗ Return on assets
↗ Profitability
↗ Customer service

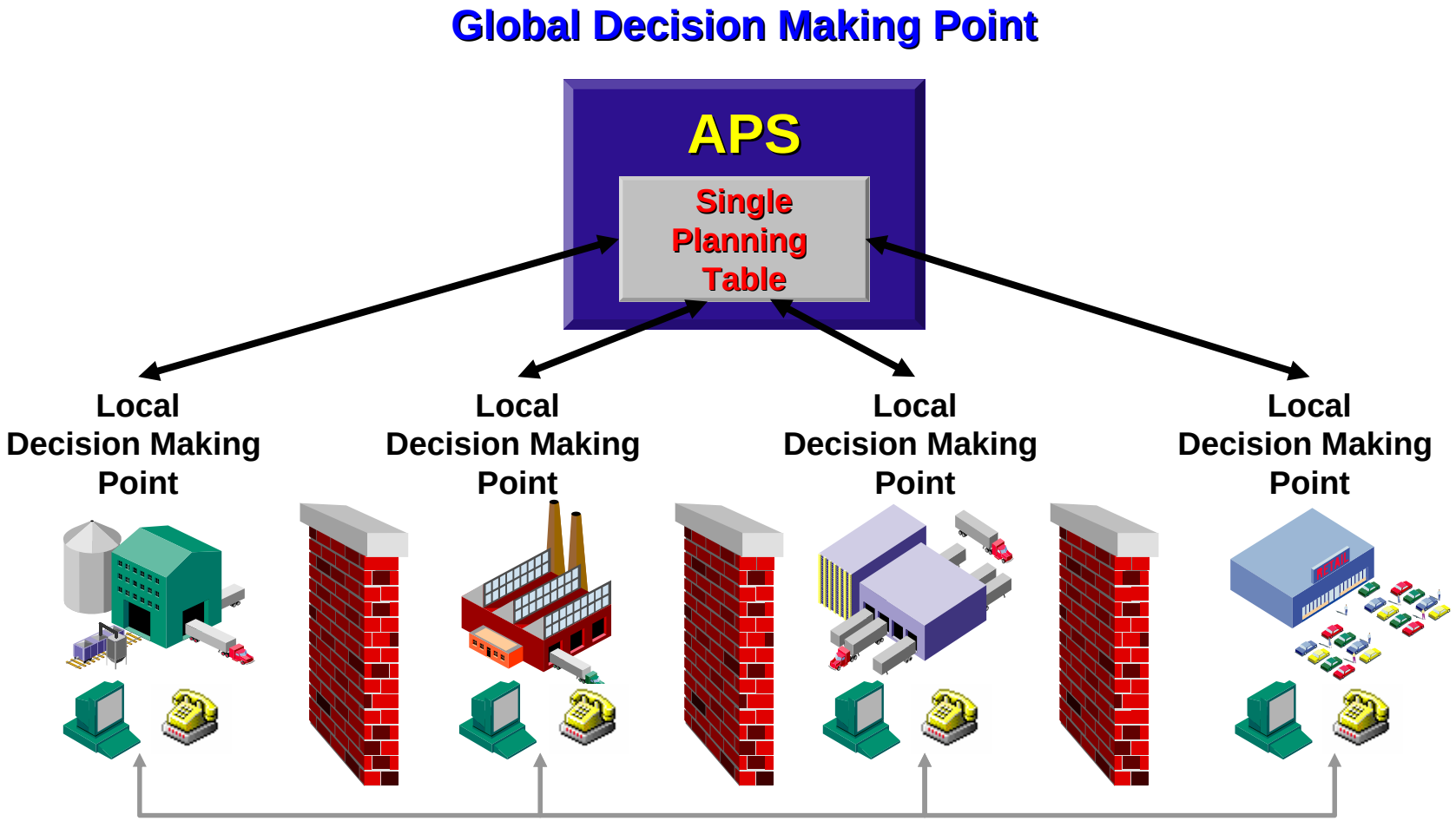
- Labor productivity
- Overtime
- Premium freight
- Sales incentives
- Rebates
- Production volume
- Product mix

- Fixed assets
- Capacities
- Inventories
- Lead times
- Labor
- Government requirements
- Supplier capabilities
- Process variability

APS is Based on Some Simple Concepts...

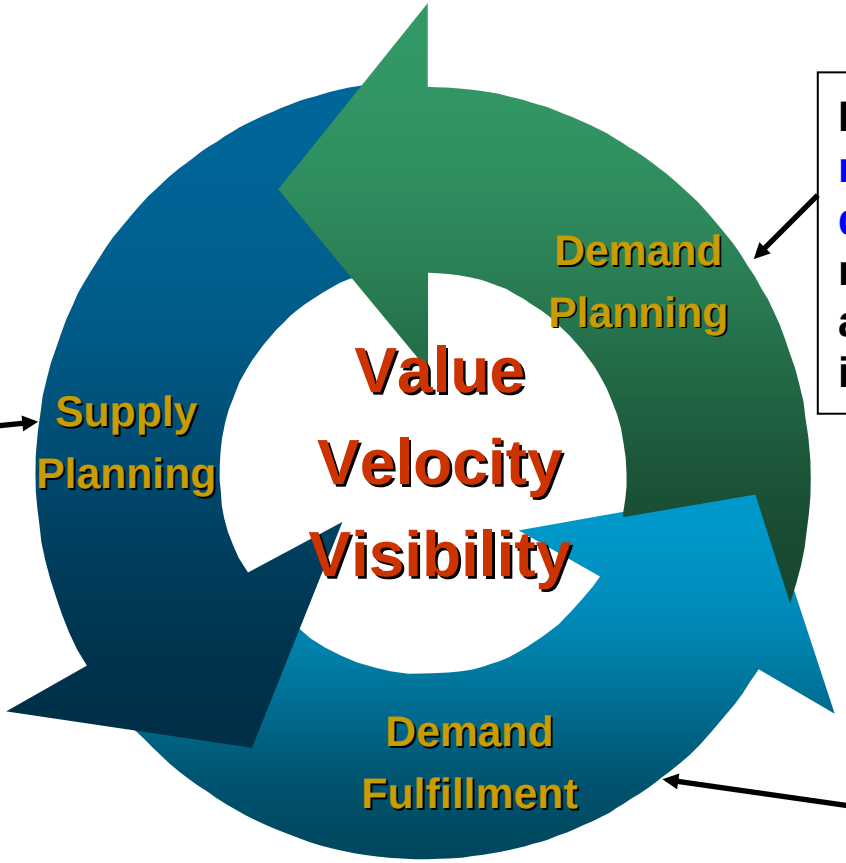
- **Synchronous manufacturing and the Theory of Constraints**
  - simultaneous consideration of constraints (material, capacity, demand, labor, setup, etc.)
  - coordinated material release and synchronized schedules at each point in the process
- **Advanced warning of problems**
- **Extensive what-if analysis for dealing with process disruptions (i.e. downtime, absenteeism, late material deliveries, demand mix and volume volatility)**
- **Interactive problem solving and optimization**
  - Marrying the knowledge of the human planner with the speed of the system
- **Automatic problem solving and optimization**
- **Leverage existing legacy systems**
- **Speed**
- **Sequential Planning ➔ Concurrent Planning**

What is APS?



What is Supply Chain Management (SCM)?

Ensure that the enterprise is **prepared to meet the forecasted demand** by generating a constrained, optimal supply plan

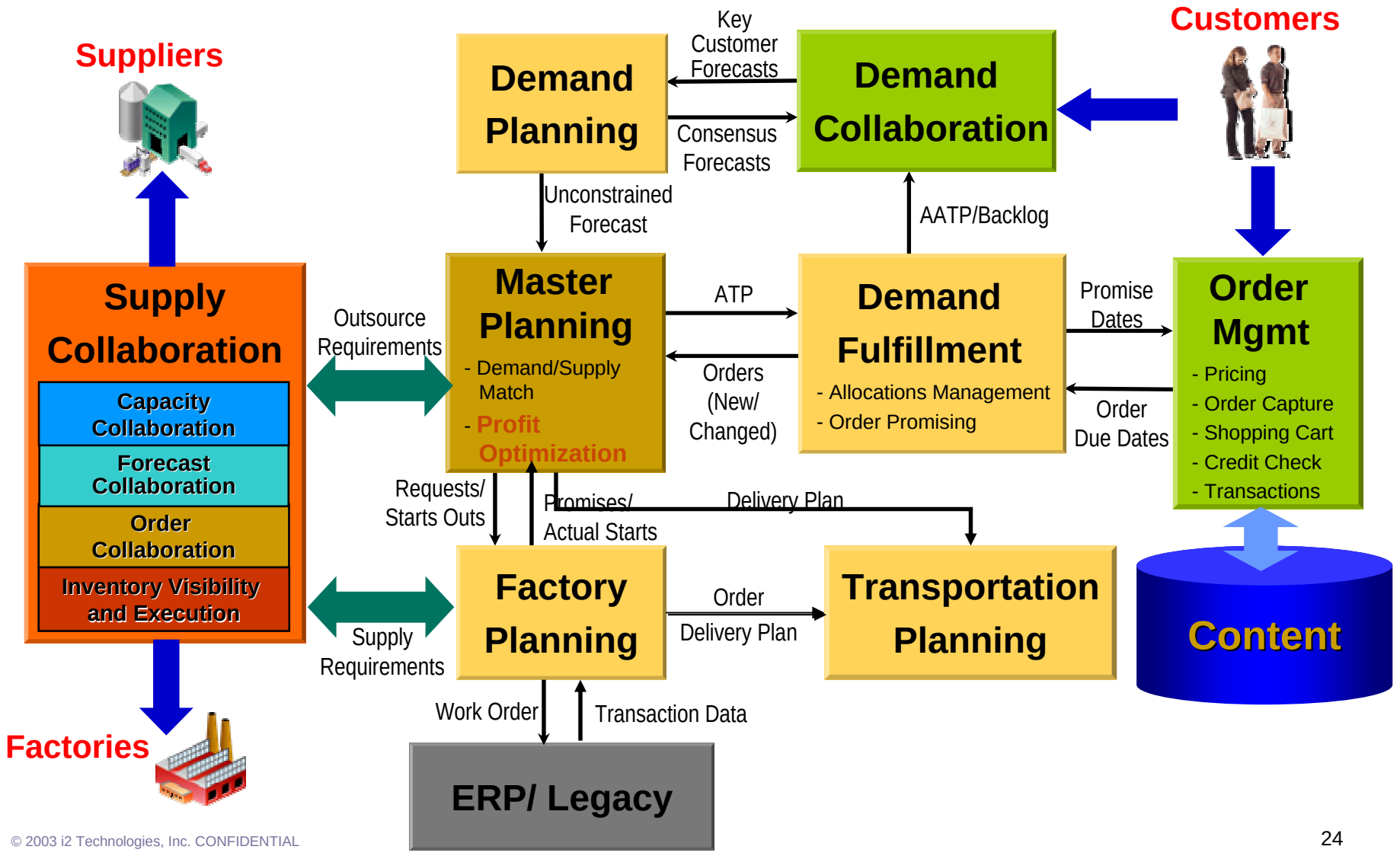


Develop an **accurate, reliable view of market demand** by identifying market trends and predicting changes in customer preferences.

Provide **fast, accurate, and reliable delivery commitments** to customer orders, and manages these commitments in a profitable way.

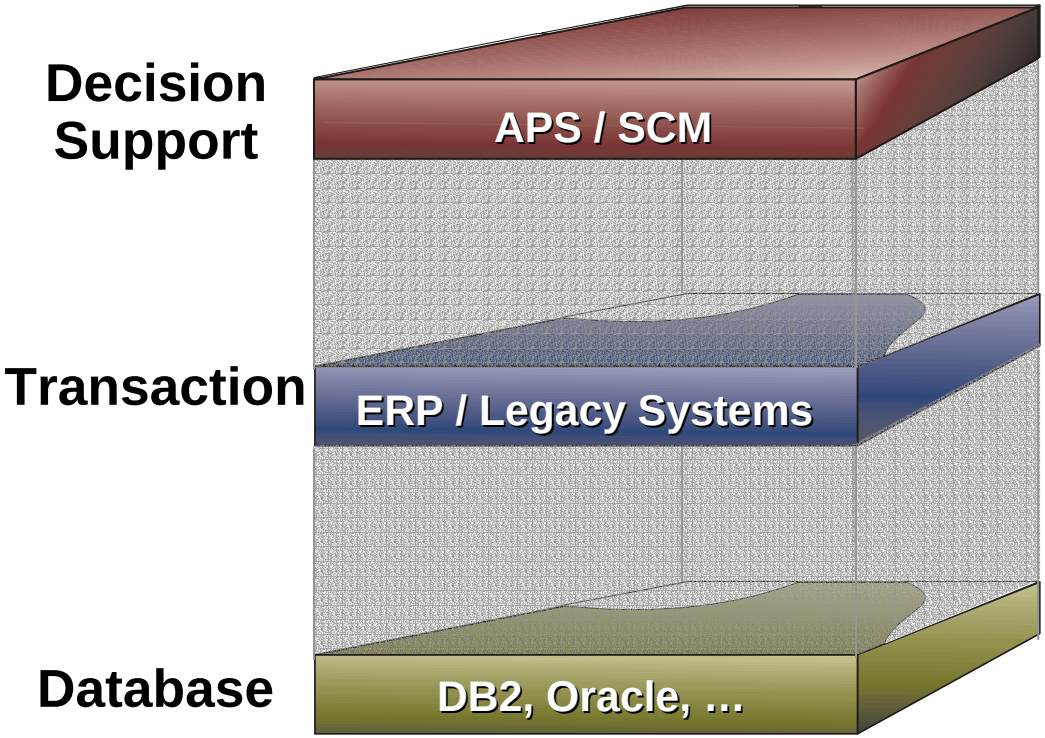
SCM involves the effective anticipation market demand, the optimal positioning of enterprise resources to meet demand, and the efficient fulfillment of demand as it is realized.

APS Solution Components & Workflow



Decision Support Is Not Same As ERP

Technical Infrastructure Layers



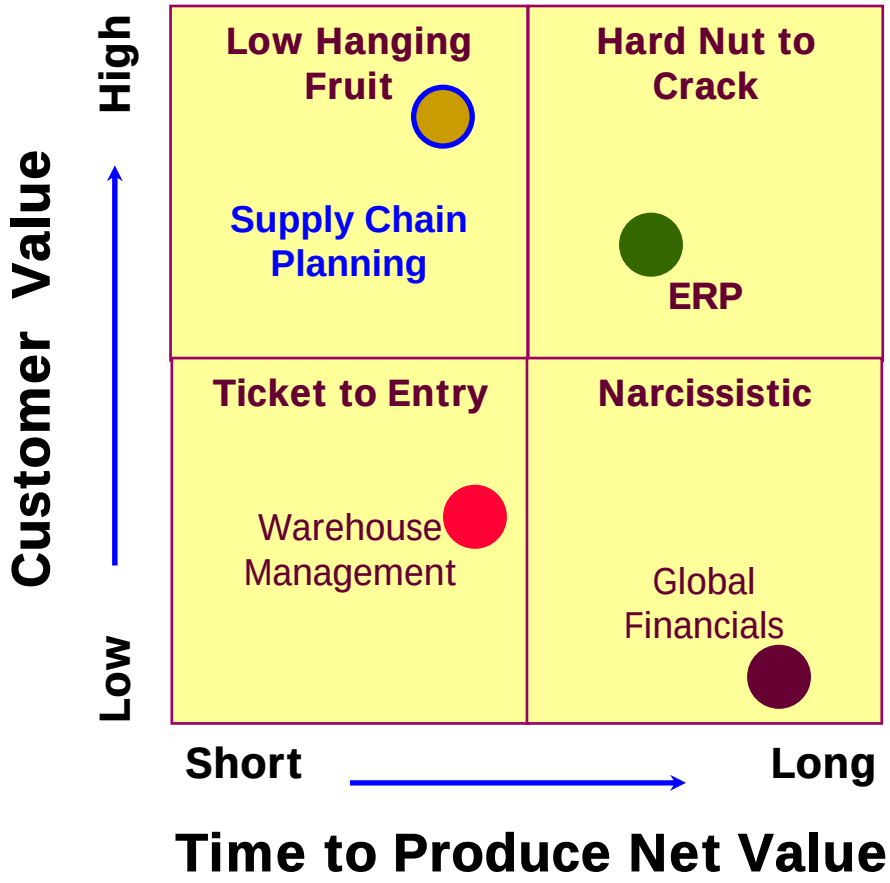
APS/SCM Is the Wave After ERP

ERP	APS/SCM
■ Transaction processing	■ Planning and optimization
■ Generating historical reports	■ Optimal execution with velocity
■ Answers “What did we do?”	■ Answers “What should we do?”
■ Designed for internal company use	■ Enables multi-enterprise eCommerce

Key Differences in Planning Capabilities Between APS/SCM and ERP

Criteria	ERP	APS/SCM
Planning Material and Capacity	Sequential	Concurrent
Planning of Time Buckets	Separate	Continual
Organizational Planning	Planning per function	Integrated Planning
Propagation of Changes	Uni-directional	Bi-directional
Allocate Supply to Customers	Unable	Able
Due Date Quoting (ATP)	Static	Dynamic
Type of Constraints considered	Only Soft Constraints	Hard and Soft Constraints
Mfg. Lead Times / Yield	Fixed	Flexible (Time phased)
Simulation Capabilities	Low (DB work)	High (Memory residence)
Visibility of Planning	Local	Local and Global
Speed of planning / Replanning	Low (DB work)	High (Memory residence)
Assessing opportunity costs	Unable	Able

Supply Chain Planning Projects Deliver Significant Value Quickly

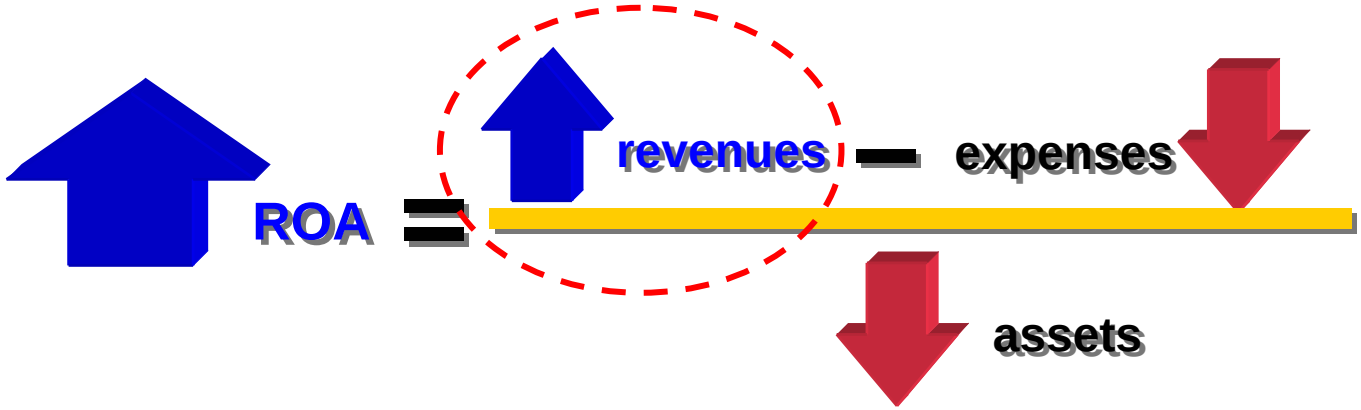


Project Rationalization: "Create a project portfolio that balances 'hard nut to crack' projects with 'ticket to entry' and 'low-hanging fruit' projects." - *Gartner Group*

Source: GartnerGroup Report TV-000-109, 30 December 1996
"Which Comes First: ERP or Supply Chain Planning Projects?", Enslow, B.

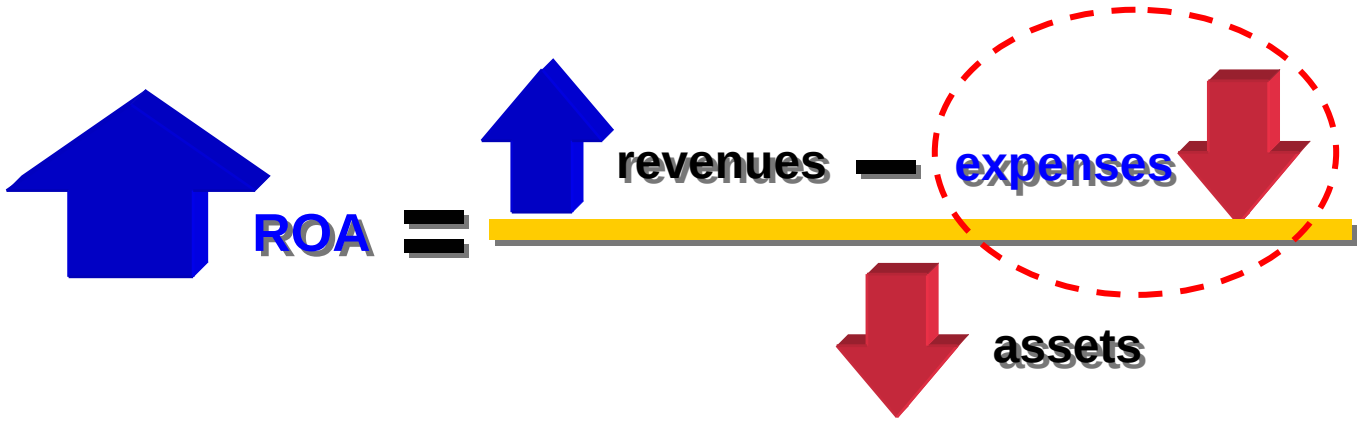
Why Invest in SCM?
Business & Financial Benefits

- Increase customer service 5% to 15%
- Slash order-to-delivery cycles over 50%
- Accelerate cash-to-cash cycles 15-30%



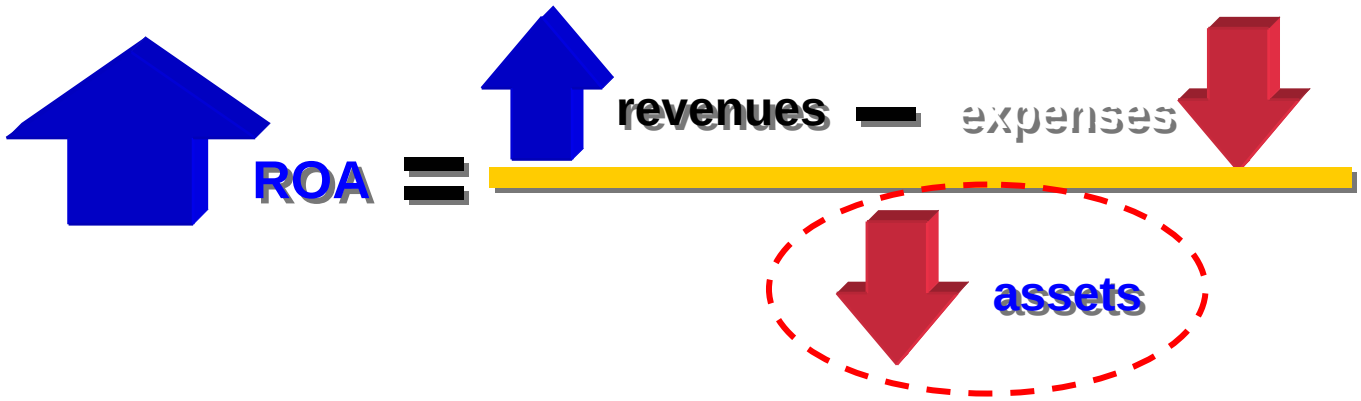
Why Invest in SCM?
Business & Financial Benefits

- Reduce operating expenses 10% – 50%
- Reduce logistics spend 5% – 20%
- Slash COGS (cost-of-goods-sold) over 10%



Why Invest in SCM?
Business & Financial Benefits

- Reduce inventory (raw, WIP, FG) 10% to 25%
- Reduce planning cycle times 70% to 95%
- Reduce production lead times 10% to 50%
- Increase fixed asset utilization over 10%



Dell Computers
High Velocity for Competitive Advantage

CASE STUDY

Business Overview

- #1 Direct Seller of Computers and world's second-largest PC Manufacturer
- $32 Bn. in Annual Revenue
- Growing annually at 27%

Business Objectives

- Reduce on-hand vendor managed inventory
- Reduce customer's order-to-delivery cycle times
- Get real-time visibility into supplier inventory and capacity
- Design optimum fulfillment network
- Lead PC industry with supply chain best practices for competitive advantage

Dell was already best-in-class in supply chain practices in the PC industry when it deployed i2

Dell Computers
High Velocity for Competitive Advantage

CASE STUDY

BEFORE i2

- Supply Chain processes well-executed
- Close proximity with suppliers-JIT relationships
- Highest inventory turns with lowest inventory levels in the industry (best in class in asset management)

WITH i2

- **12% improvement** in ship-to-target cycle times
- VMI on hand **reduced by 70%**
- Reduced Inventory levels from days to hours – >**100% Improvement in inventory turns**

i2 enables Dell to operate its CTO Supply Chain with only 5-6 hours of inventory on the factory floor

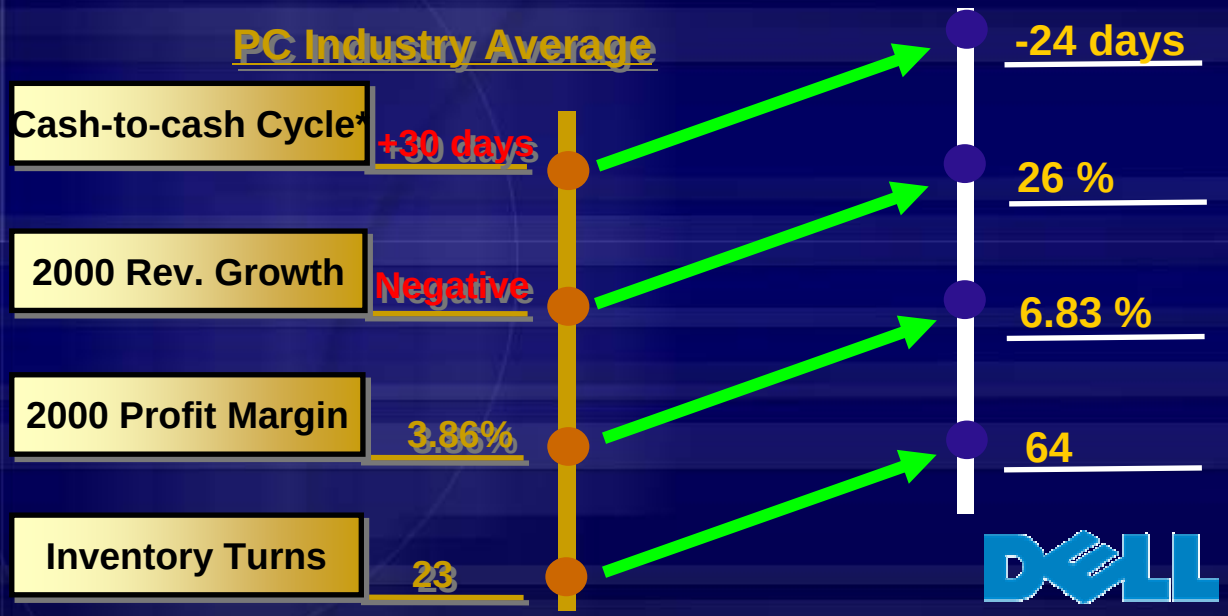
Dell Computers
High Velocity for Competitive Advantage

With i2

VMI On- Hand	Ship-to-target	Inventory Turns
70% Reduction	12% improvement	>100% improvement

CASE STUDY

DELL's Competitive Advantage



Dell implemented i2's SCM in its Americas region in 109 days with over 100% ROI

"A couple of years ago, realizing we couldn't grow to $75 billion with the tools we had in place, we selected i2 Technologies software. Now all our global manufacturing sites are operating on the same i2 resource-planning and execution systems."

"With i2 we now schedule every line in every factory around the world every two hours- we typically run a factory with about five or six hours worth of inventory on hand, including work-in-process"

Dick Hunter, VP of Supply Chain Management, Dell

Samsung Electronics (Visual Display Division)

Delivery within 5 Days in Worldwide / 1 Day in Domestic

CASE STUDY

SCM Vision

Customer Satisfaction & Resources Effectiveness

– Delivery within 5 days in worldwide / 1 day in domestic–

- 98% OTD/Real Time Promise
- 15 Inventory Turns
- 90% Obsolescence Reduction
- Increased Forecast Accuracy
- 30% O/H Reduction

Process	System	Organization

9 Big Items

1. Planning Cycle Time Reduction
2. Consensus Based Forecasting
3. Customer Collaboration
4. Procurement Synchronization
5. Global Real-Time ATP
6. Production/Distribution Concurrent Planning
7. Bi-Directional Problem Solving
8. Pre-Allocation
9. Profit Simulation

Samsung Electronics (Visual Display Division)

Delivery within 5 Days in Worldwide / 1 Day in Domestic

SAMSUNG 삼성전자

CASE STUDY

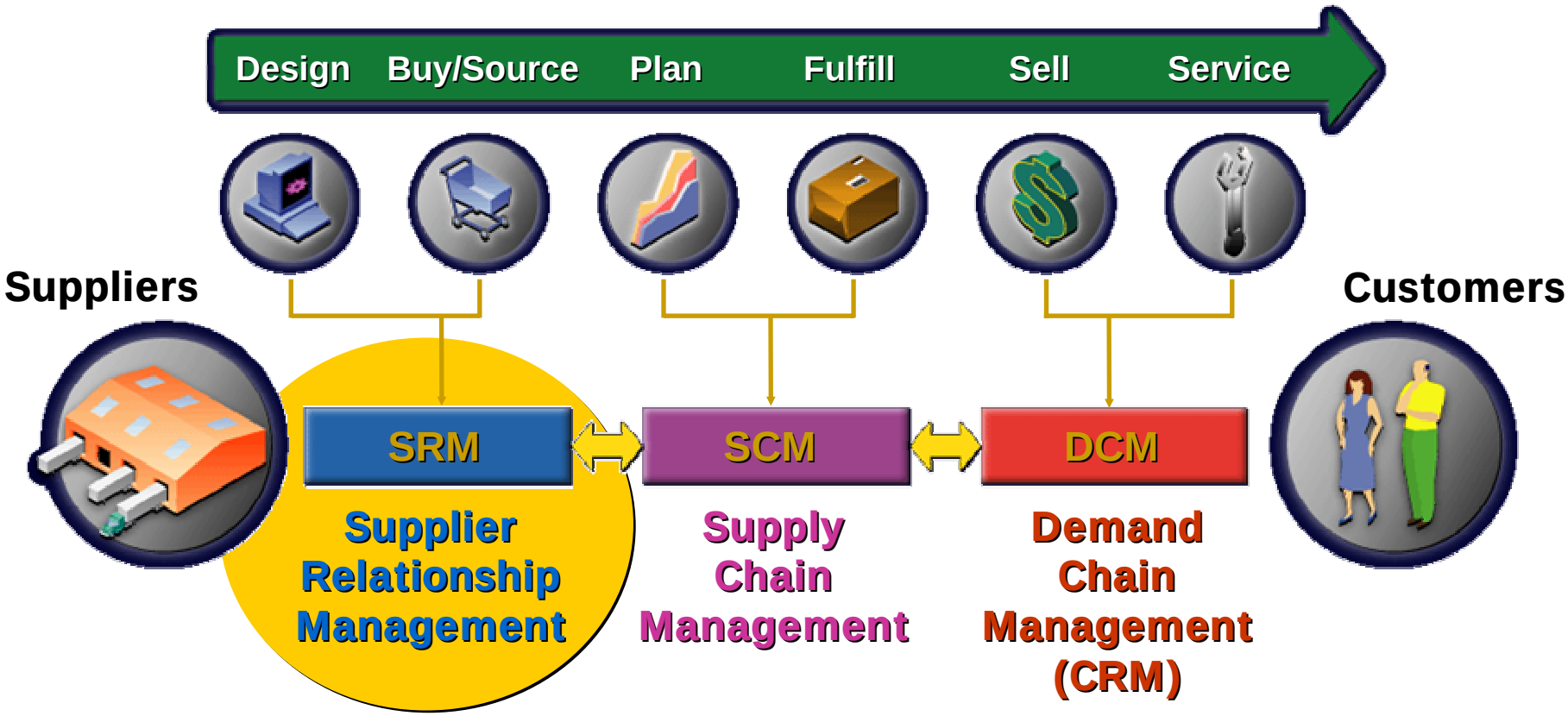
SCM 구축 효과

(Monitor Business)

Supplier Relationship Management

(SRM)

Value Chain Management (Extended Supply Chain)

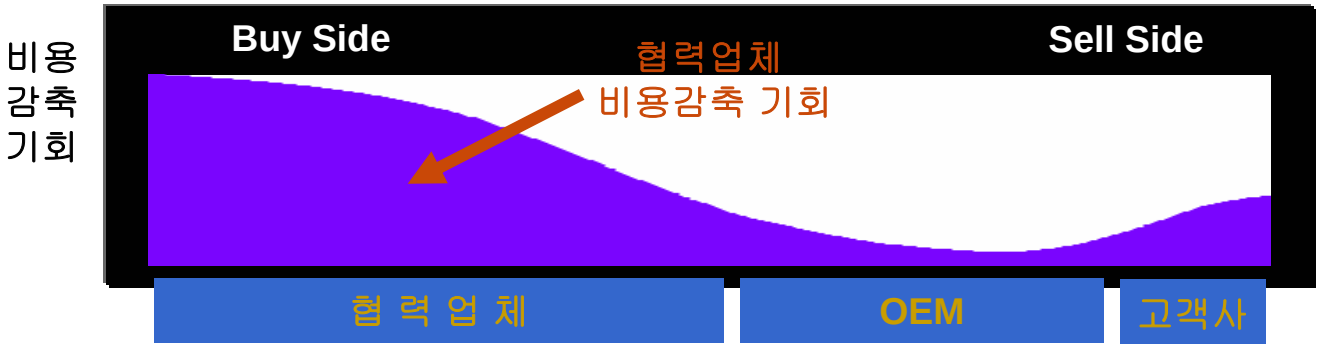


Expand SCM into SRM !

- **SCM**
  - Generates an optimized plan across existing supply base
  - React quickly to fix supply chain events as they occur by evaluating the current supply base
- **What if your existing supply base is un-optimized**
  - Bloated supply base
  - OR sourcing strategy creates supply chain risks
- **An optimized plan against an un-optimized supply base**
  - Generate a less then perfect plan

Expand SCM into SRM !

- **SRM is all about**
  - Analyzing your existing supply base and its performance to:
    - Optimized creation and evolution of your supply base and your sourcing strategies
    - Proactive way to prevent supply chain events before they occur



- **SCM is improved by SRM in two ways**
  - Generate an optimized plan across an optimized supply base
  - Improves supply chain resolution by rapidly identifying, qualifying and sourcing new sources of alternate supply

Decisions enabled by SRM

- **For Design or Engineering**
  - What parts should I use in my design ?
  - What equipment or MRO should I have for my plants ?
  - If I want to outsource design or manufacturing who should I use ?
  - How do I collaborate with my outsourcing partners ?
- **For Sourcing and Negotiation**
  - Who do we buy from?
  - What do we buy?
  - How do I buy it? (contract type, spot, strategic relationship)
- **For Buying (Purchasing)**
  - How much do I buy (Today and Future)?
  - When do I need it ?
  - Where do I need it ?

SRM
Value Proposition!

Cost of Goods Sold	■ 5-10% of direct material spend
Asset Reduction	■ Increase inventory turns 20-40%
Time to Volume	■ Reduce Development Cost by 10-20% ■ Time to Volume 25-60% Improvement ■ Time to Market 15-50% Improvement
Risk Management	■ Reduction in Production Downtime
Innovation	■ 15 - 20% Improvement in Cost of Quality ■ 10% Improvement in Manufacturing Cost

Summary

- **SRM provides a single integrated suite addressing Spend Optimization with differentiating strengths:**
  - Comprehensive approach with modular entry-points and growth paths allows rapid time to value and progressive ROI
  - Addresses both commodity-based and product-based sourcing needs
  - Bridges engineering and procurement to drive reuse and enforce sourcing
  - Leverages content and classification strengths to establish fully cross-referenced item-level enterprise view – without “re-numbering”
  - Provides workflow-maintained enterprise sourcing master for items, suppliers, contracts, price, sourcing strategy and preferences
  - Standards-based architecture delivers excellent enterprise citizenship with low total cost of ownership
  - Integrated decision-support and execution tools cover complete sourcing process

Demand Chain Management

(DCM)

What is Demand Chain Management?

- **Demand Chain Management (DCM) enables companies to manage and shape customer demand to the perfect order and then to deliver that order as promised to the customer.**
- **DCM is to bridge the gap between your traditional customer relation management (CRM) systems (SFA and call centers) to your supply chain and ERP systems by synchronizing your customer-facing processes and channels with your operations and the responsiveness of your supply chain.**
- **Simply put, DCM enables you to profitably shape customer demand to supply and to maximize customer loyalty by promising what you can deliver and delivering on every promise:**
  - Shape customer demand to supply
  - Promise what you can deliver
  - Deliver on every promise
  - Coordinate service parts and people

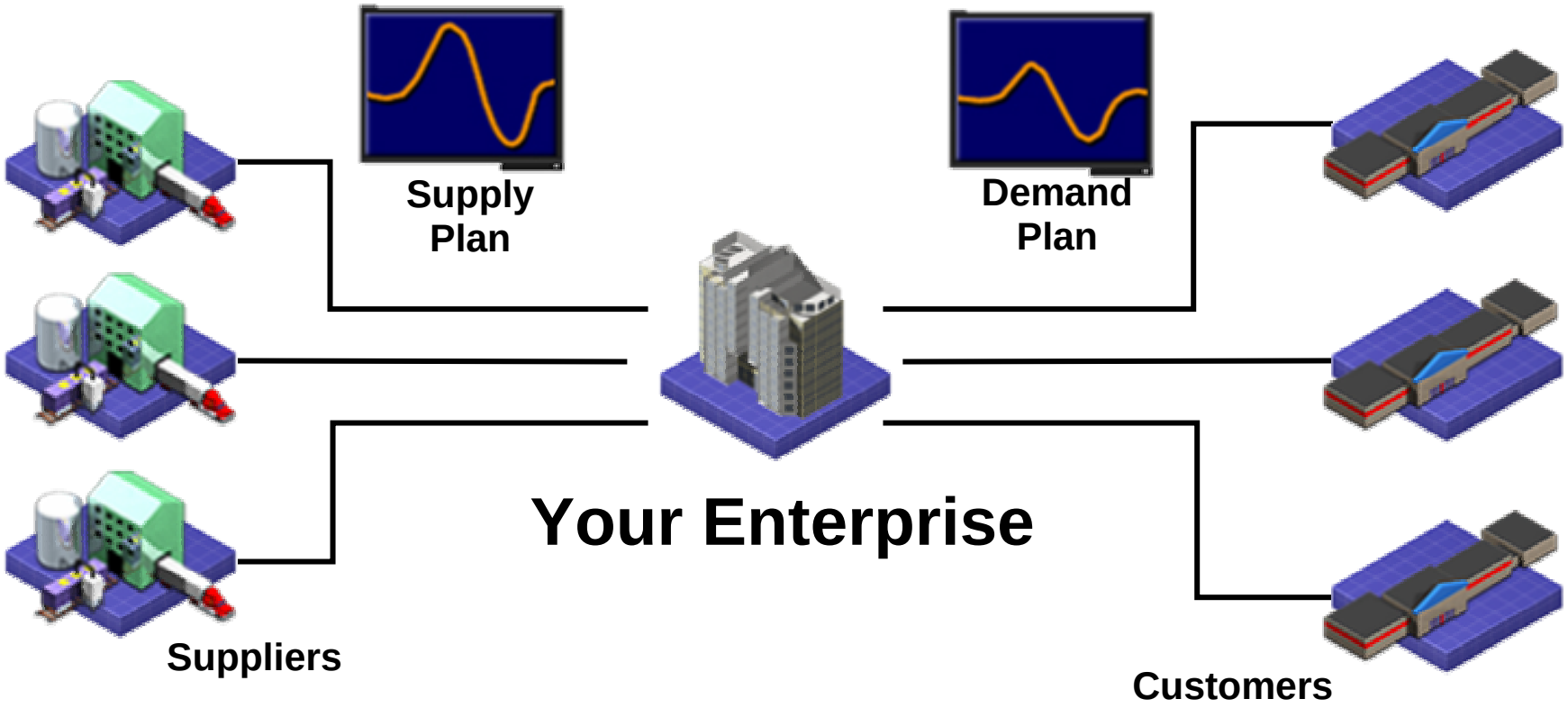
Where does DCM (RPO) fit in?

Supply Side

- **Shape Product Mix to meet demand**

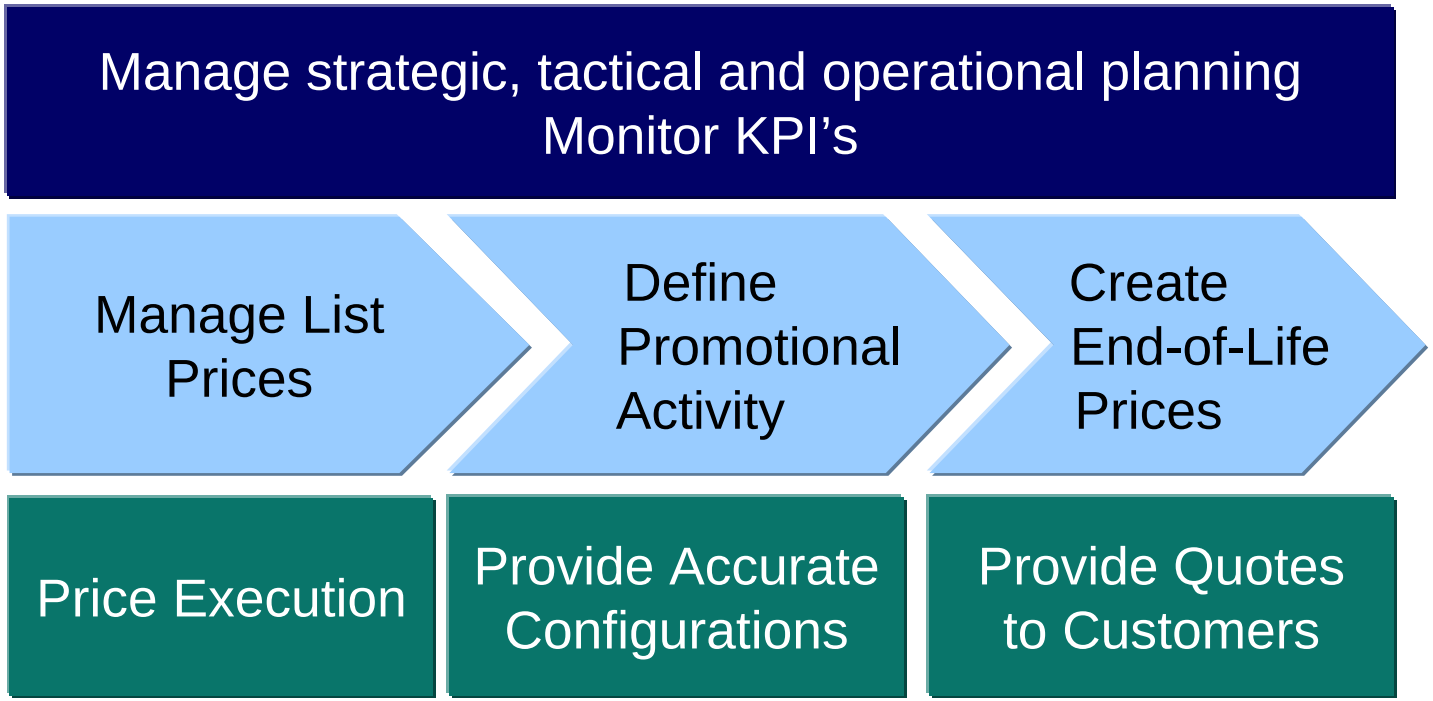
Demand Side

- **Shape Demand through optimal pricing**

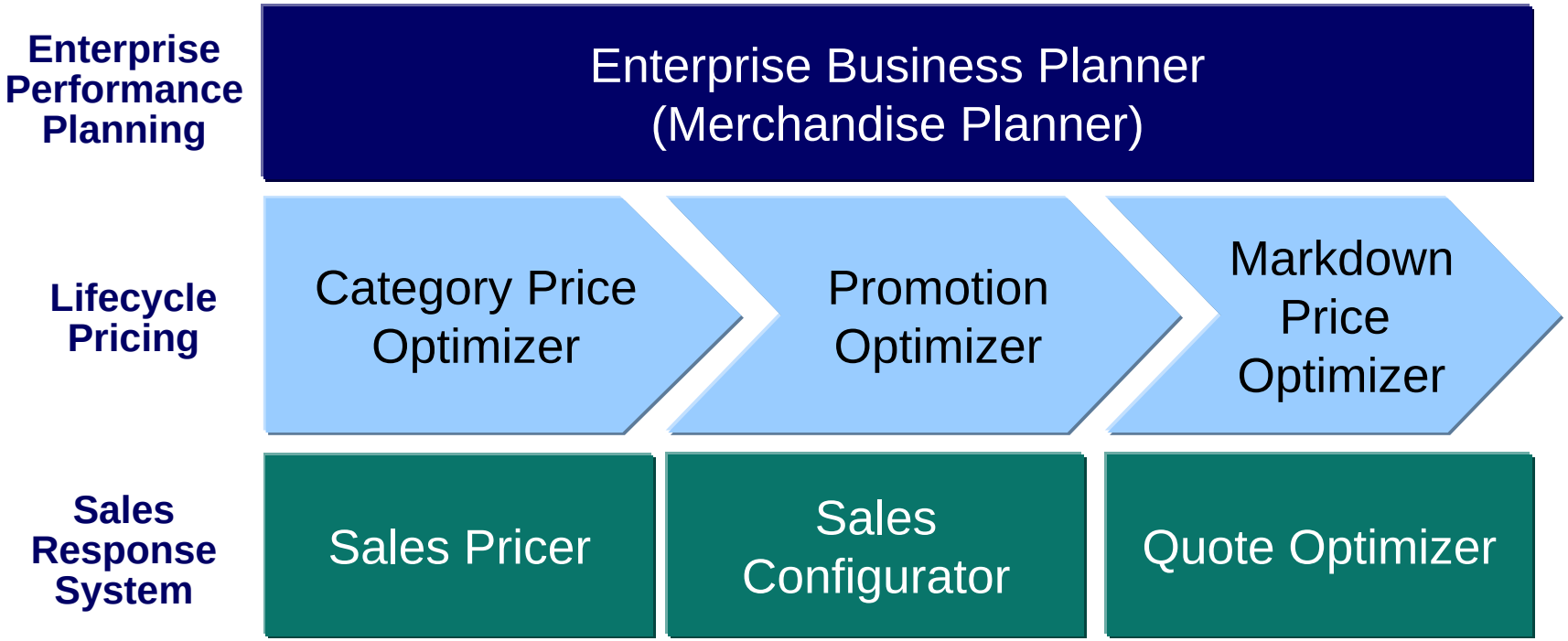


Revenue and Profit Optimization

Key Customer Processes



Revenue and Profit Optimization
Solution



DCM Key Benefits

- **Decision support and optimization for closed-loop centralized planning with a common set of KPI's to drive transparency throughout the organization**
  - Synchronized and pro-active closed loop decision making to achieve corporate objectives. Multiple plans that are linked to ensure consistency in reconciliation of all metrics across plans maintained at multiple levels
  - Process of continuous improvement with corrective action to corporate plan variances on a weekly basis to ensure that the desired goal is achieved with pro-active decision making
  - Forecast new item sales and incorporate trends, lifecycles, and changing business conditions
  - Plan assortments/product-mix by channel based on demographics (attributes)
  - Proactive and what-if analysis for pricing, promotions & markdown decisions
  - Complete visibility into channel performance at aggregated and detailed level

DCM Key Benefits

- **Return on investment with pro-active optimal pricing decisions**
  - Improve predictive ability of price changes & price breaks
  - Develop optimal pricing guidelines, based on prioritized objectives
    - Maximize market share and simultaneously minimize revenue dilution with optimal portfolio price optimization, promotions and markdown plans
    - Maximize net margins while simultaneously improving competitive position
    - Maintain price consistency and create positive price image (business rules considered in price optimization)
    - Maintain competitive price positioning
    - Reduce markdowns with closed loop planning over time
    - Optimize markdowns for seasonal and clearance items
  - Type of guidelines
    - Price-Volume breaks, lead-time based discounts
    - Acceptable backlog impact
    - Quoting service levels

DCM Key Benefits

- **Channel Performance**
  - Improved customer program management through enhanced service levels
  - Channel performance visibility and margin analysis
  - Increase sales by tailoring assortments to individual channels based on demographics
  - Improve margins by geo / retailer with custom price quotes
- **Improve Inventory Turns**
  - Rationalize assortments by channel to eliminate duplicate, slow-moving items
  - Reduced inventory, optimized assortment
    - Micro-merchandizing
  - Support seasonal purchasing and sell through decisions through forecasting

DCM Key Benefits

- **Flexible Price Optimization Architecture**
  - Multi-pass hierarchical optimization with configurable optimization models using math programming
  - Embedding of best-of-breed dynamic programming and non-linear programming algorithms for optimal pricing decisions

- **Automated, scaleable, integrated**
  - Automate and eliminate manual, fragmented, and paper-based processes
  - Integrate forecasting with assortment planning, price optimization, and markdown optimization
  - Integrate assortment plans and communication to channels / customers

Summary

- **The holy grail of managing customers' demand**
  - Value chain profitability + customer loyalty
    = Profitable market share growth
- **The demand chain and its barriers**
  - The network of marketing, sales, fulfillment and service channels working in unison to ensure value chain profitability and customer loyalty
  - Disconnected from operations and the responsiveness of the supply chain
- **The benefits of acting now**
  - Shape customer demand to supply
  - Promise what you can deliver
  - Deliver on every promise

Summary

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- **SCM (Supply Chain Management)**
  - Generates an **optimized plan** across **existing supply base**
  - **React quickly** to fix supply chain events as they occur by evaluating the current supply base
- **SRM (Supplier Relationship Management)**
  - Analyzing your existing supply base and its performance to:
    - **Optimized** creation and evolution of your **supply base** and your **sourcing strategies**
    - **Proactive way** to prevent supply chain events **before they occur**
  - SCM is improved by SRM in two ways
    - Generate an **optimized plan** across an **optimized supply base**
    - **Improves** supply chain resolution by rapidly identifying, qualifying and sourcing **new sources of alternate supply**
- **DCM (Demand Chain Management)**
  - Maximize customer satisfaction by
    - Providing **single face to the customer** – Distributed Order Management
    - Supporting the most important **customer interactions** – Configuration & Pricing

Summary

- There is a huge opportunity available to companies to reduce their cost of goods sold while increasing customer service
- This opportunity can be realized by implementing Value Chain Management
- Value Chain Management is a Business Methodology that increases velocity in the Value Chain and helps manage complexity
- Keys to implementing VCM are executive commitment, well defined metrics and a strong technology base

Question & Answer

Thank you!