

**Boston
Scientific**

Delivering what's next.™

Inventory Optimization

May 23, 2006

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BSC Overview

- Key Stats
- Products
- History

Operations Excellence at BSC

- Early challenges
- Resolution of challenges

Multi-Echelon Inventory Optimization at BSC

- Supply chain structure
- Advances

Boston Scientific is a global, multi-billion dollar company focused on less-invasive medical devices and procedures



Boston Scientific Corporation Profile

General Facts:

- Founded in 1979 with 38 employees, \$2 million in sales. Now Fortune 500 company
- World's largest medical device company dedicated to less-invasive therapies
- Portfolio of 15,000 products, many with market leading positions
- The TAXUS® drug eluting stent has been the most successfully launched product in the history of the industry
- Corporate HQ: Natick, MA
- Regional HQs: Singapore, Paris, Tokyo
- Website: www.bostonscientific.com

Product Innovation:

- 9,790 Patents issued worldwide
- \$680 Million invested in R&D ('05)
- \$540 Million in 40 Investments ('05)

Financials:

- \$6.3 Billion Revenue ('05)
- 29% CAGR* ('02-'05)
- \$1.5 Billion Net Income ('05)
- NYSE: BSX

Demographics:

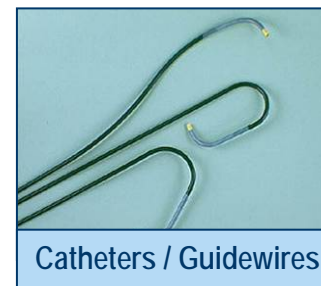
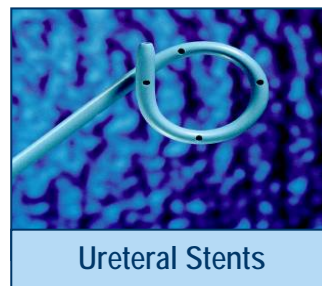
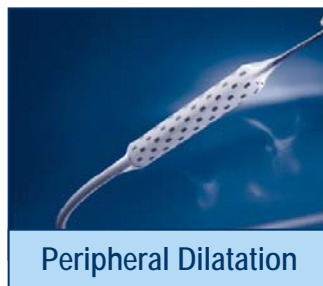
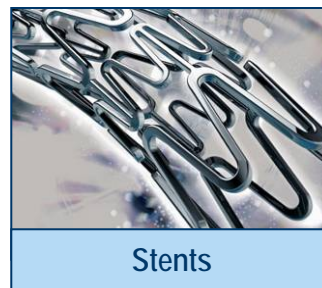
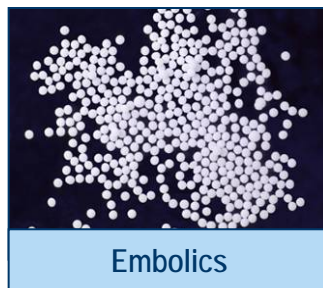
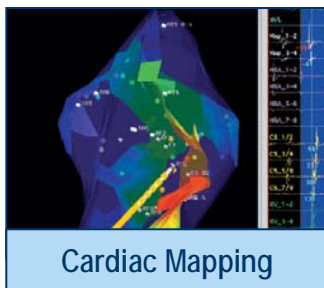
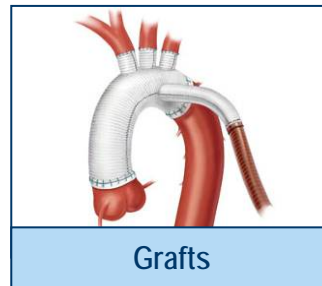
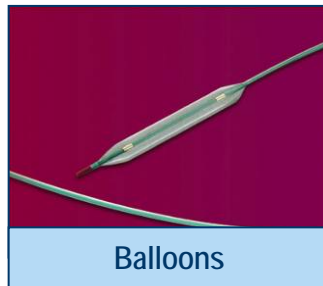
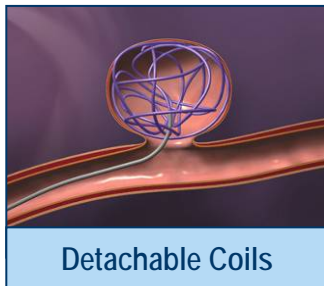
- 20,000 Employees
- Direct marketing & sales in more than 40 countries
- 16 Primary manufacturing locations in U.S., Ireland & Costa Rica

* Compound Annual Growth Rate

Over 25 years of Innovation has led to a broad portfolio of more than 15,000 products

Boston Scientific

Sampling of Boston Scientific's Product Portfolio

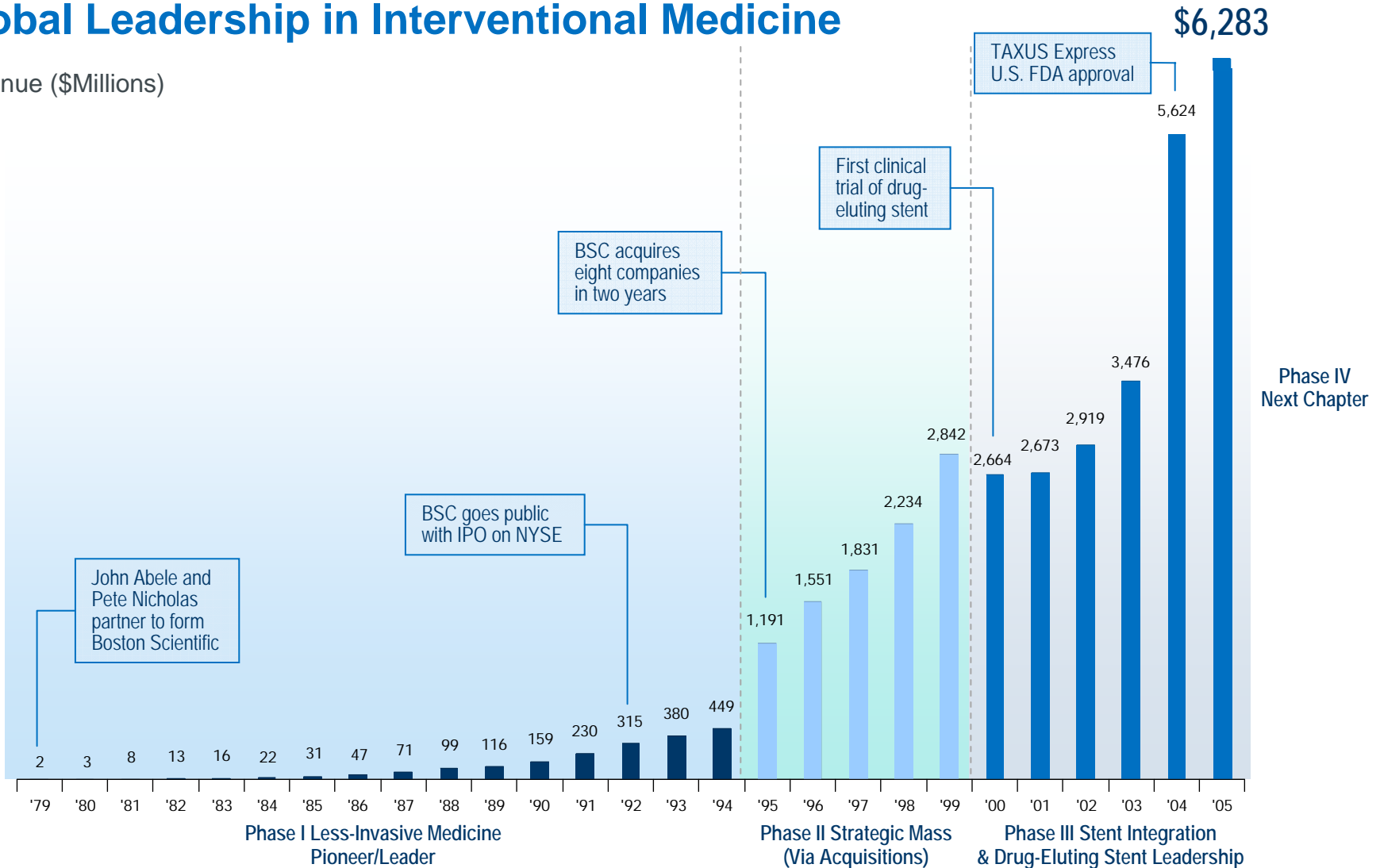


Boston Scientific has evolved from early pioneer to industry leader



Global Leadership in Interventional Medicine

Revenue (\$Millions)



BSC's Operations Excellence Approach

BSC boasts one of industry's best performing supply chains given the formidable challenges

Key Challenges

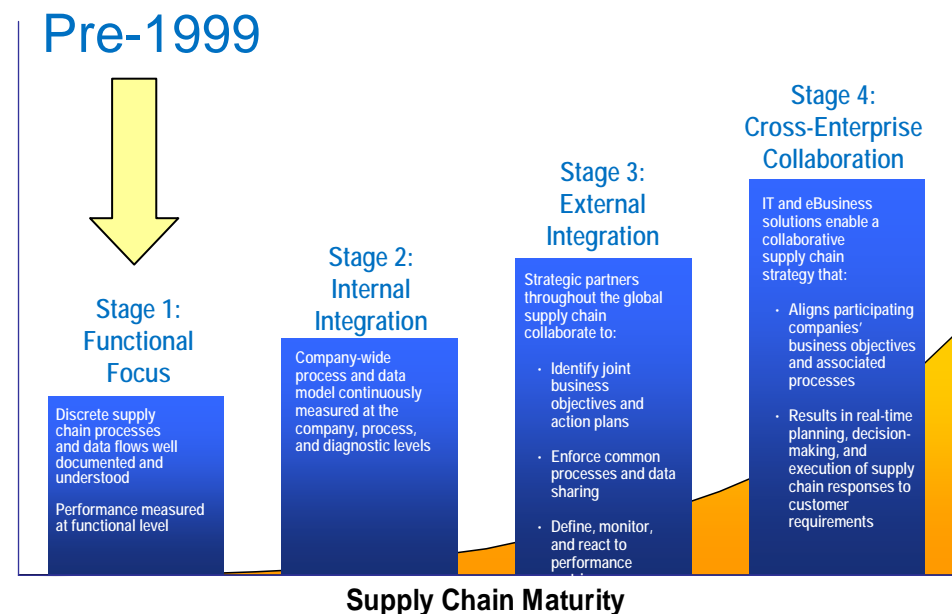
- **Highly regulated operations environment**
- **High supply chain complexity**
 - High level of vertical integration
 - High number of supply nodes
 - Direct distribution to the customers
 - Large number of BSC owned distribution centers
 - Large number of suppliers
- **High Level of organic growth**
 - Entry into new markets
 - Emphasis on growth in new geographies
 - 15,000 products
- **Growth through acquisitions**
 - Supply chain integration for the new companies
 - Scalability of BSC processes and systems
- **Continuously evolving product portfolios**
 - 40% revenue from new products
 - Constantly rationalizing product lines

BSC Supply Chain Performance

- Next day delivery on most orders
- Consistent 98% service levels
- Industry leading inventory turns
- Globally expanding scope (40+ countries)
- Advanced planning capabilities and supply chain visibility
- Exceptional forecast accuracy for both mature and new products
- Relatively short manufacturing and distribution lead times
- **BSC has been recognized through industry benchmarking and national awards in the areas of manufacturing, logistics, customer service, and inventory performance**
 - Lean Manufacturing facilities
 - 2005 Shingo Prize at Maple Grove (MN)
 - 2006 Industry Week "Best 10" at Wayne (NJ)
 - Boston Scientific's Quincy Call Center
 - 3x North Face Award for Customer Service
 - 2005 J.D. Power: Customer Service excellence"
 - Inventory performance benchmarked in top quartile of Medical Device Industry

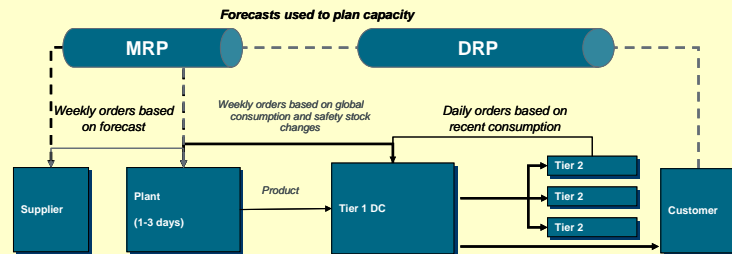
However it wasn't always like this... we experienced all the challenges reminiscent of a poorly performing supply chain

- Constant firefighting mode
- Frequent stock-outs
- Frequent expedites involving premium freight
- Excessive inventory
- Poor inventory mix
- Poor forecast accuracy
- Long manufacturing and transportation lead times
- Frequent write-offs of excess and obsolete inventory
- Suboptimal logistics network
- Poor risk mitigation

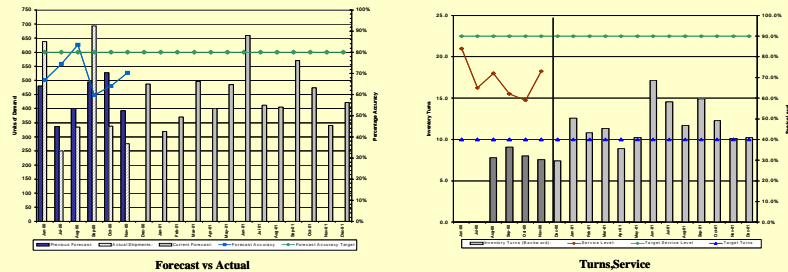


We undertook a Supply Chain Transformation in the late 90's, that was grounded in four basic guiding principles

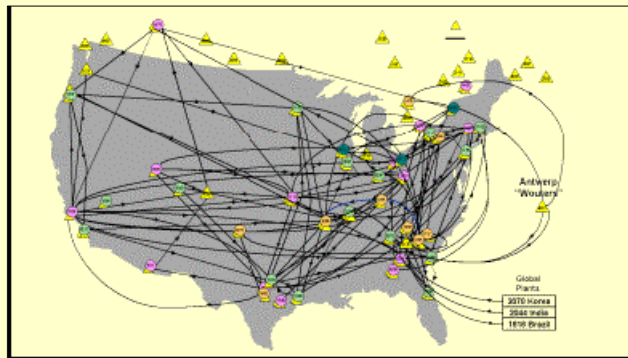
1) Hybrid replenishment process that uses forecasts to make capacity plans and raw material purchases, but consumption data to drive production schedule mix



3) Improved supply chain responsiveness by compressing the order fulfillment lead times by driving lean thinking from manufacturing through distribution



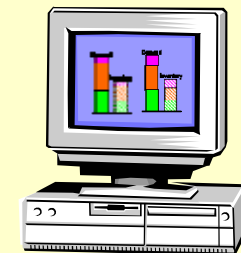
2) Globally-pooled safety stocks that are analytically determined based on demand/supply volatility and lead time



4) Consolidated spend and procurement practices that leverage global demand and volume to drive efficiency

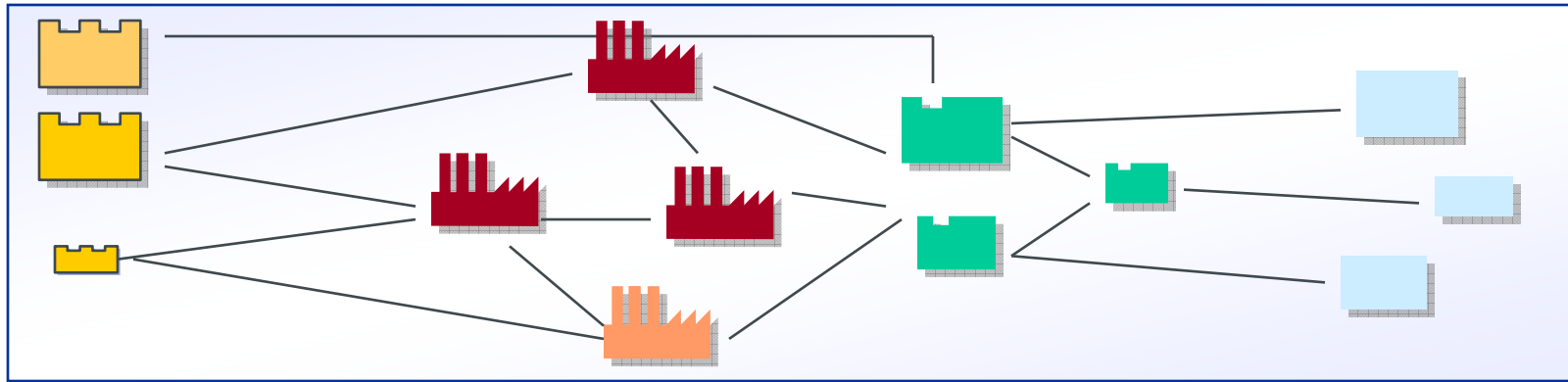


**Fact-Based
Communication
and Decision-Making**



Systems and Tools

Supply Chain Network Configuration



Suppliers

- ◆ ~50 large strategic suppliers servicing multiple plants
- ◆ 1,000+ small suppliers
- ◆ ~50 OEM vendors supplying FG products

Plants

- ◆ 16 BSC facilities in the USA and Ireland
- ◆ 2 Off-shore Contract manufacturers

Distribution Centers

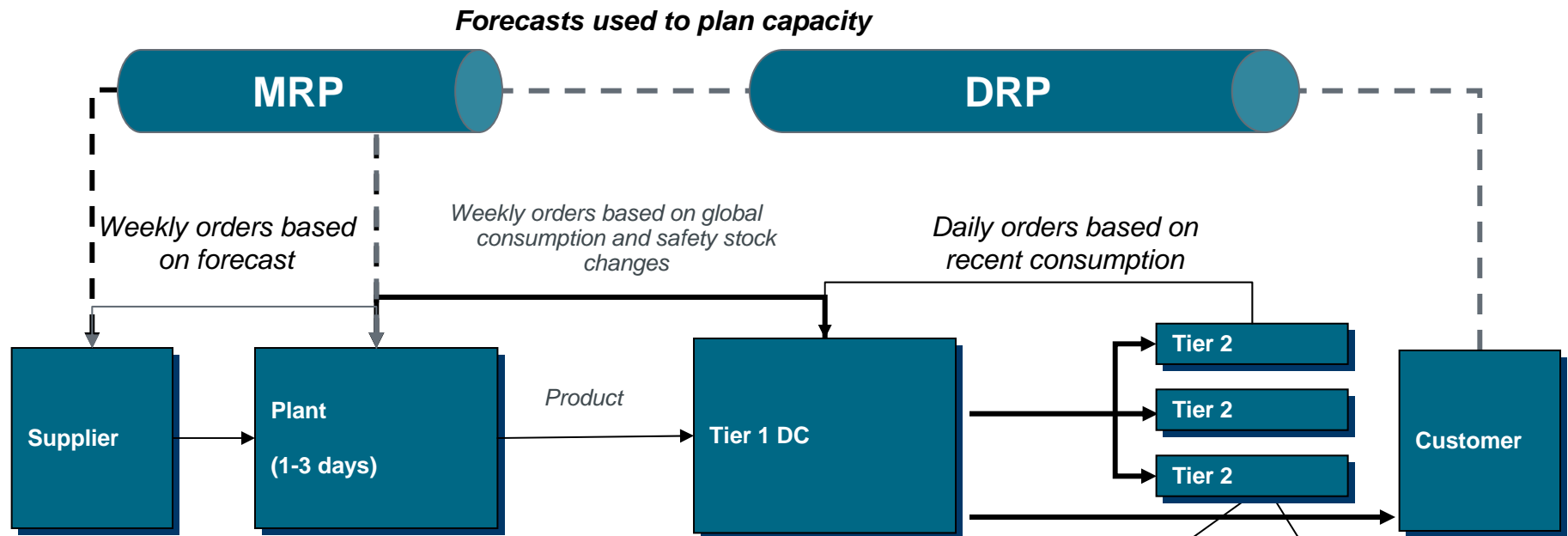
- ◆ 1 Global CDC- USA
- ◆ 1 Int'l CDC -NL
- ◆ 17 Tier 2 regional DCs
- ◆ 6 Tier 3 local DCs

Customers

- ◆ Prime channel: Direct hospital deliveries
- ◆ Few Distributors in select Emerging Markets

Technical Environment:

BSC Hybrid Replenishment Model Tightly Couples Sales and Production

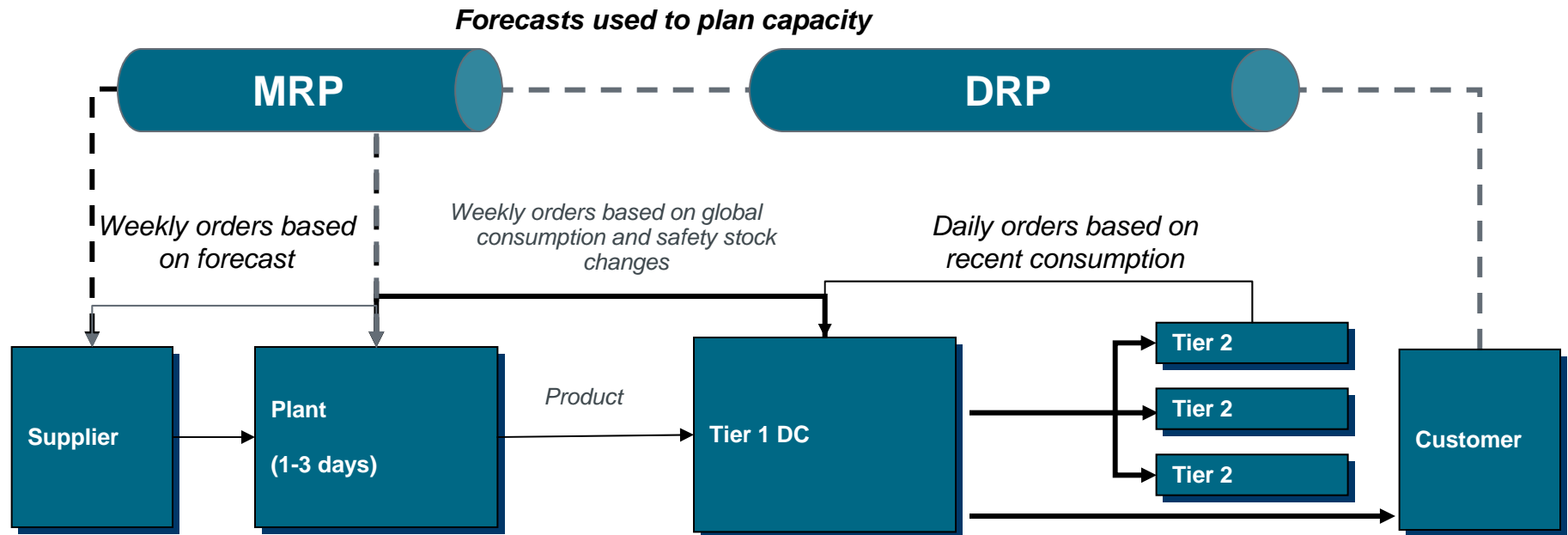


Guiding Principles

- Hold minimum stock in Tier 2 DC to buffer “local” demand uncertainty over Tier 1 lead times
- Use analytical safety stock model
- Buffer supply and demand variability

Technical Environment:

BSC Hybrid Replenishment Model Tightly Couples Sales and Production

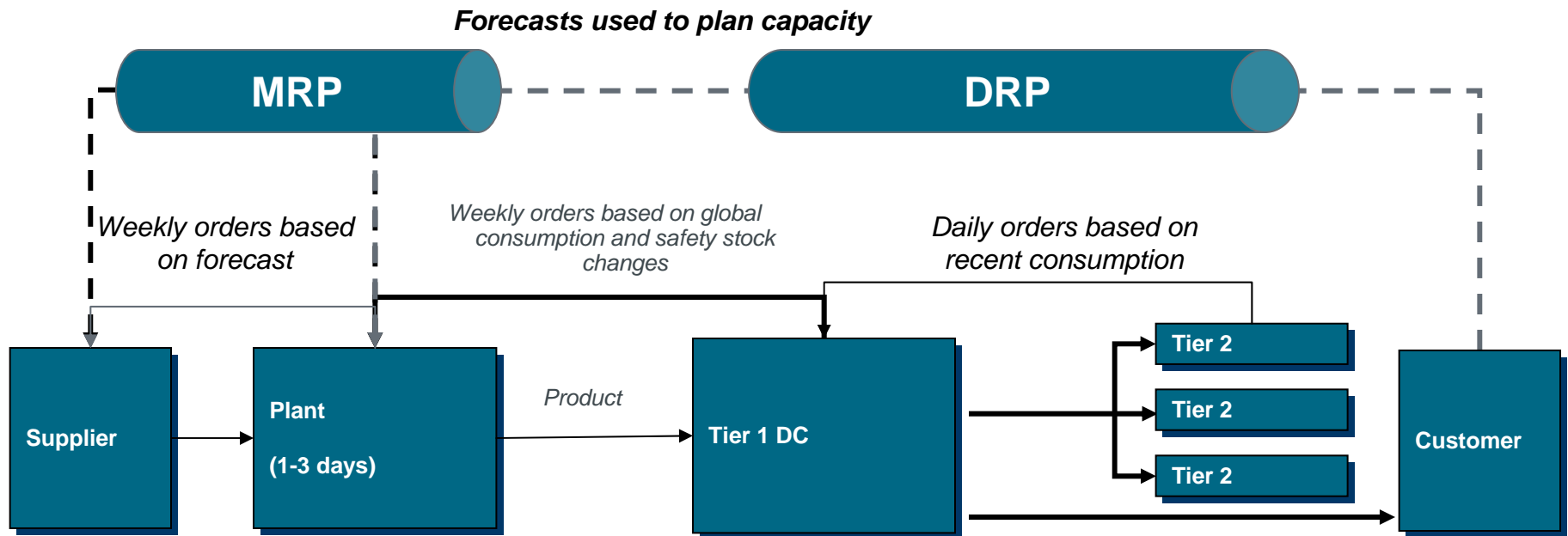


Guiding Principles

- Ship daily to major Tier 2 DC's based on previous day's sales
- Pool global safety stock in Tier 1 DC's
- Set order frequency based on EOQ (daily for largest volume orders)

Technical Environment:

BSC Hybrid Replenishment Model Tightly Couples Sales and Production

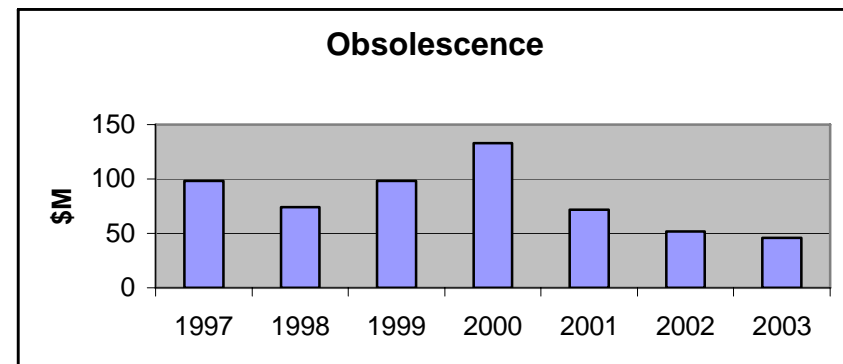
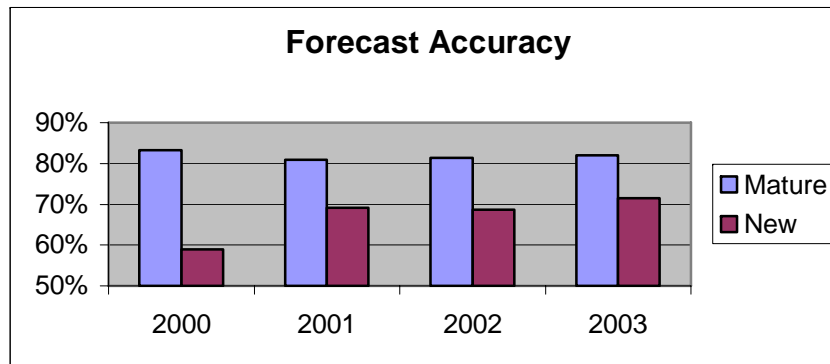
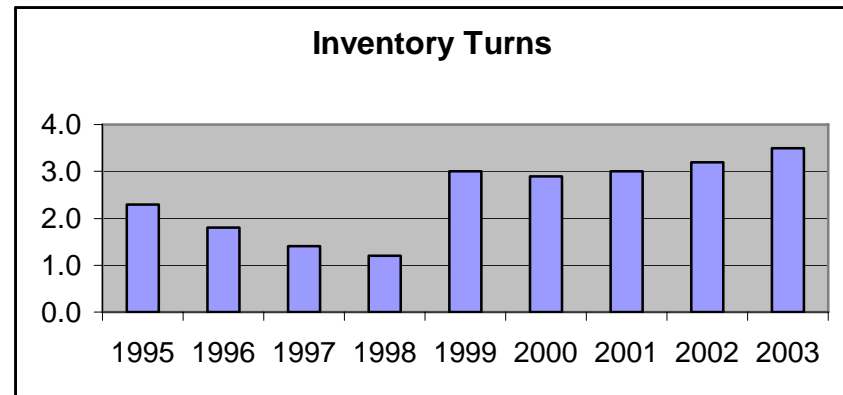
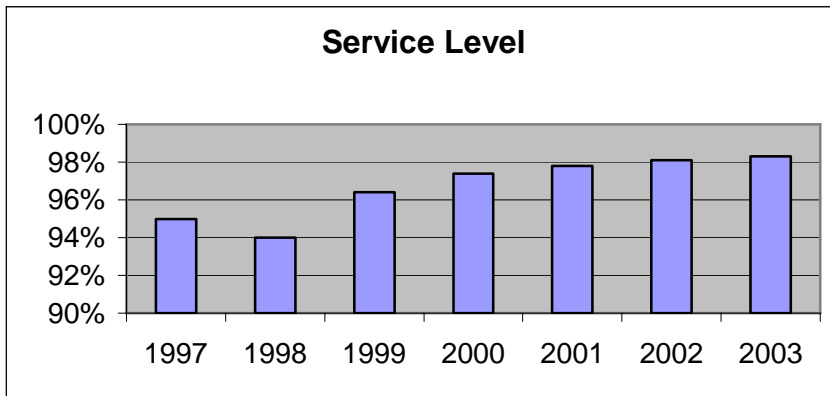


Guiding Principles

- Plan capacity and raw materials purchases from forecast
- Produce prior week's/day's sales up to reorder point
- Produce complete mix weekly for most items
- Schedule production mix using actual sales rather than forecast

Supply Chain Performance through 2003

Consistent, Global Metrics

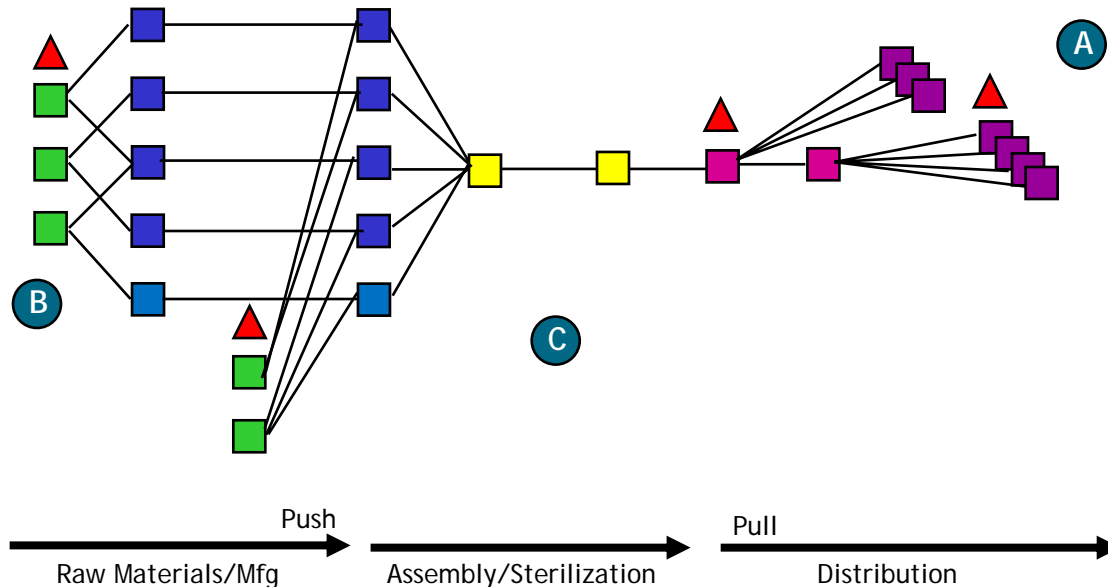


Annual Operating Savings of \$250M+ since 2000

Advanced Inventory Optimization

Inventory optimization solution integrated with SAP for monthly planning

- *Monthly inventory target calculation for 40,000 SKU-locations*
- *High volume, low and intermittent demand items*
- *Manufacturing and sterilization capacity constraints*
- *Batch size constraints at each tier along with periodic review*

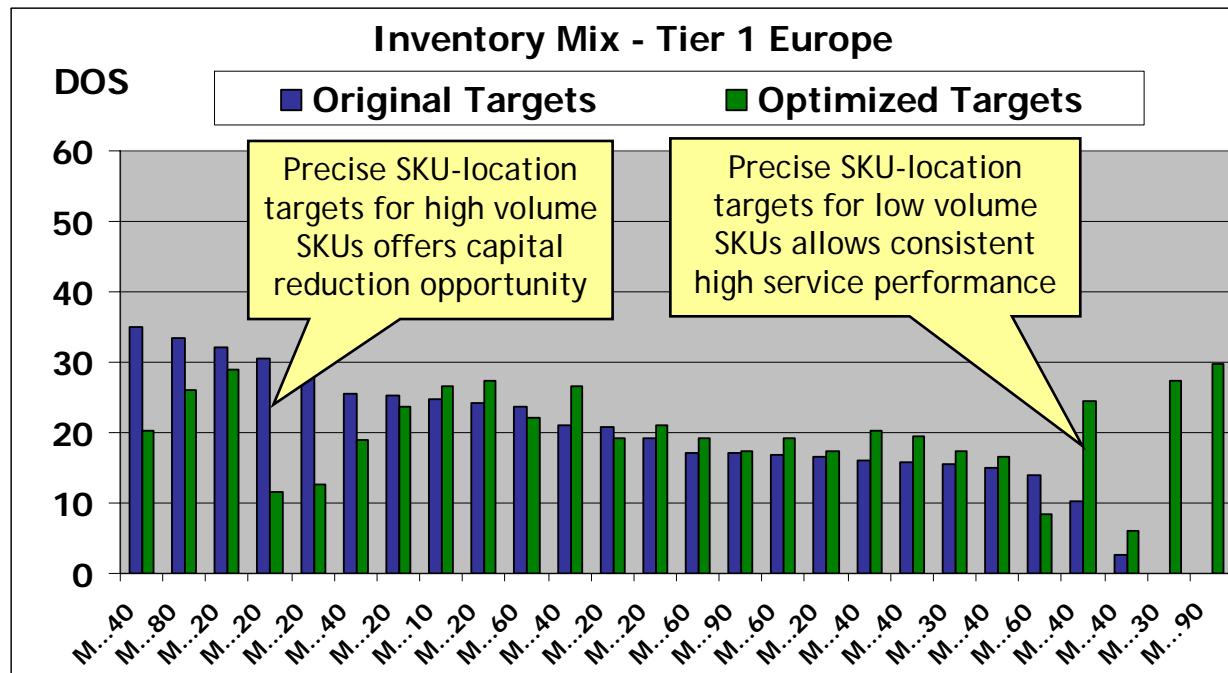


A *Tactical finished goods planning:*
SKU-location specific inventory targets for finished items including local and global demand at each DC

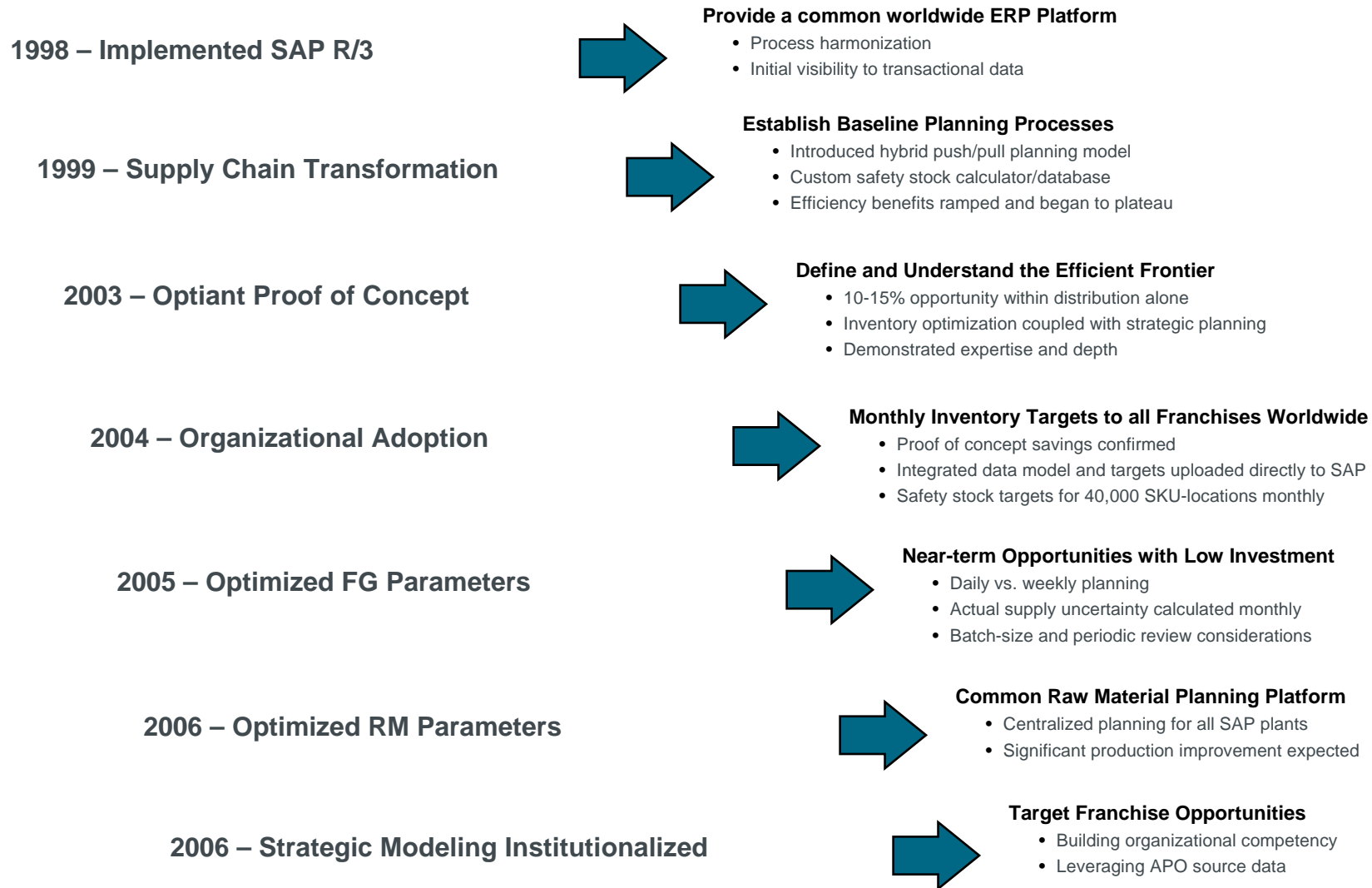
B *Common, tactical inventory planning for raw materials at each production facility:*
Analytical raw materials solution with optimized inventory for Kanban, min/max, and base stock policies

C *Internal expertise for strategic supply chain design:*
Strategic modeling for initiatives including sourcing strategy, postponement, new product introduction

Inventory Optimization Solution Highlights



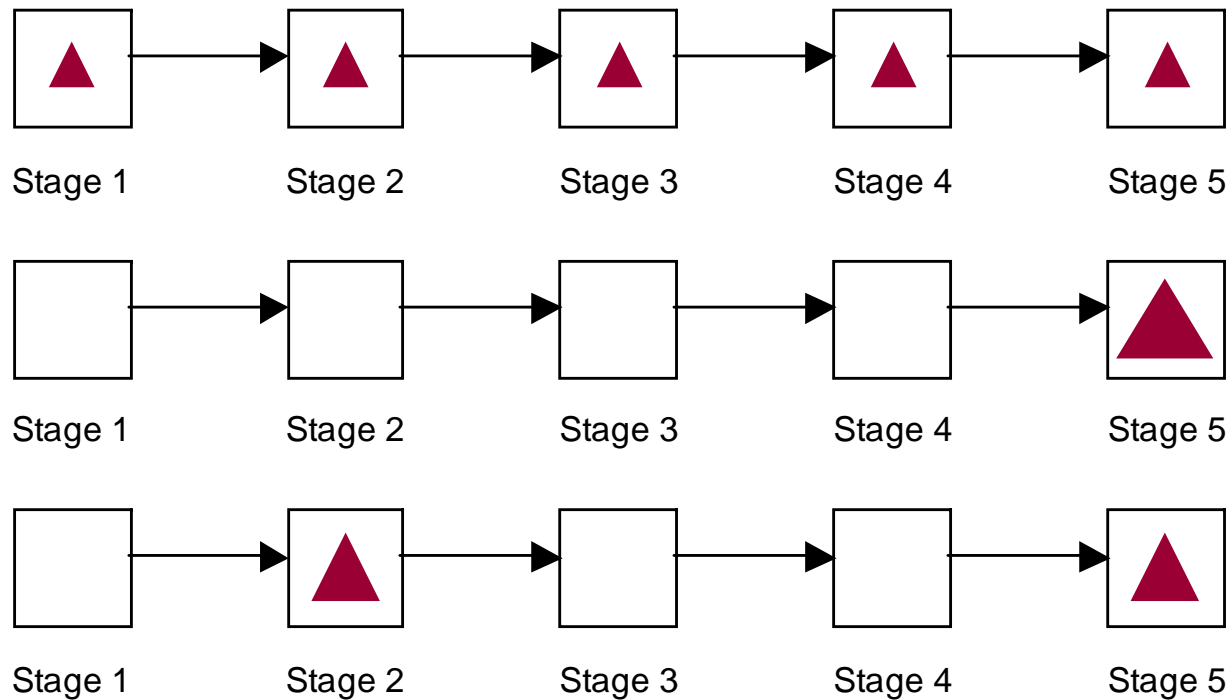
- Multi-echelon inventory optimization considering all complex conditions including demand uncertainty and supply variability
- 98-99% service performance with inventory planning fully integrated with SAP
- The right inventories at the right place with precise targets for every global SKU location
- Solution transparency—clear understanding for the drivers of efficiency and resulting inventory policy, which is important for successful solution adoption



- Structured pursuit of Artificial Volatility
 - Driven by the best of intentions, ...with a splash of ignorance
 - Begins with cross-functional attitudes
- Tactical foundation to enable Strategic modeling
 - Organizational learning environment
 - Aggressive continuous improvement, ...bounded by intelligence
 - Ready → Aim → Fire
- Managing the Inputs
 - Users learn to appreciate the force of their levers across multiple nodes
 - Reflective of a true management system that transcends individuals

- What is multi-echelon inventory optimization?
- How did we get here?
- What does it look like?
- Best practices
 - How do companies integrate inventory optimization into their business processes?
 - What organizational structure works best?
 - How do companies gain value?
- Q&A

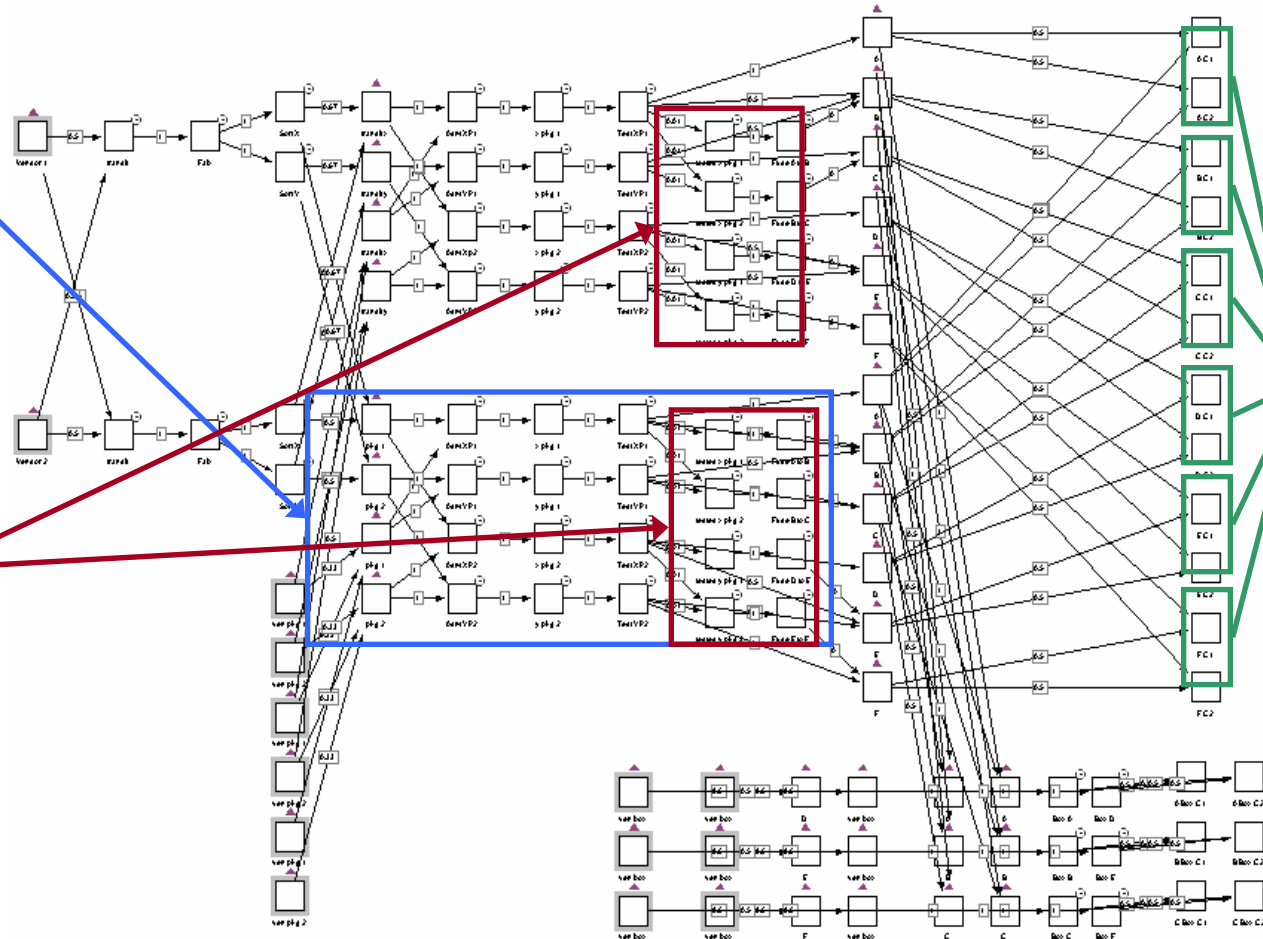
Three potential inventory policies for a simple serial supply chain



Multi-echelon Inventory Motivation

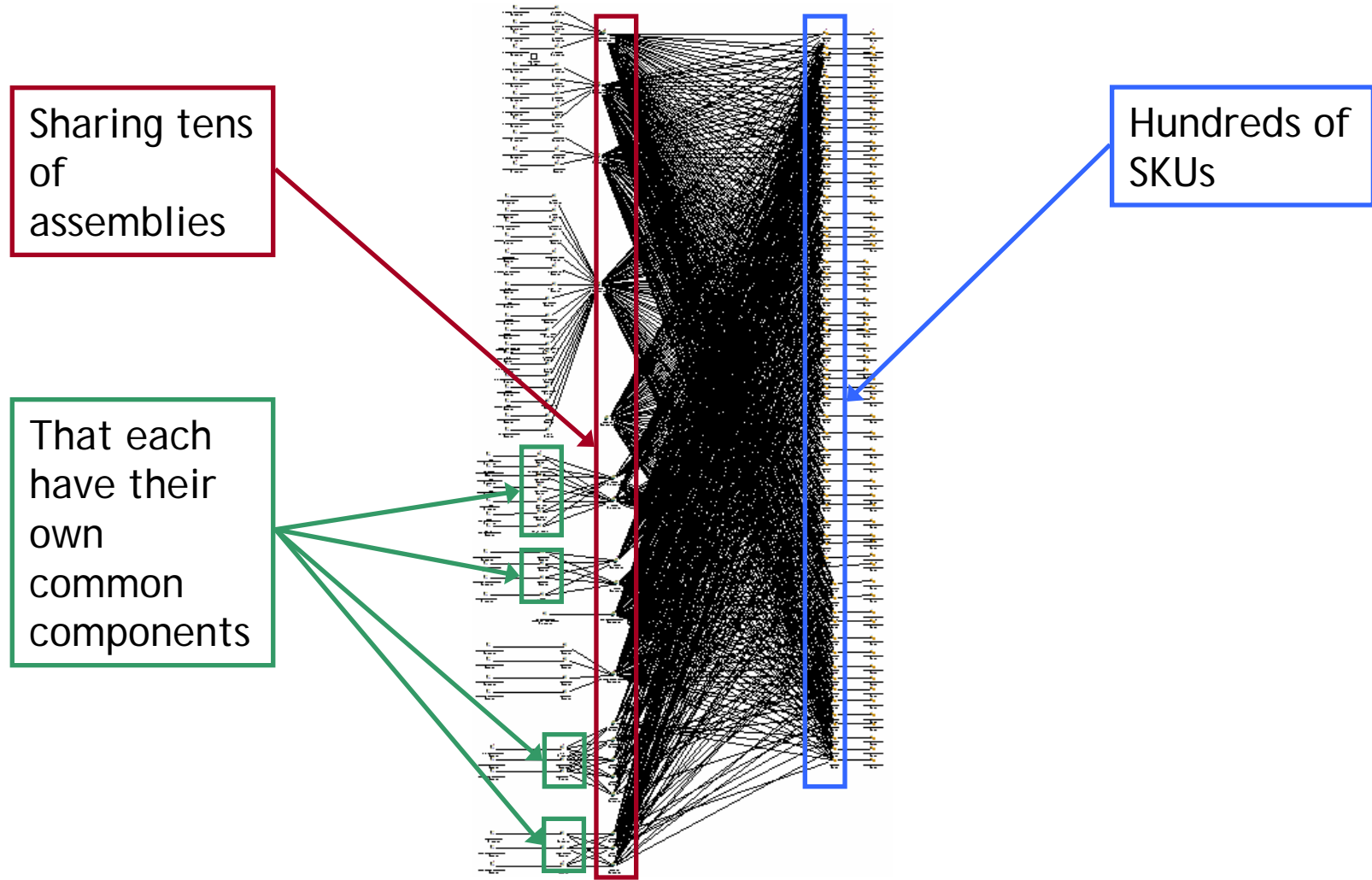
Outsourcing production is an option

Product can be converted

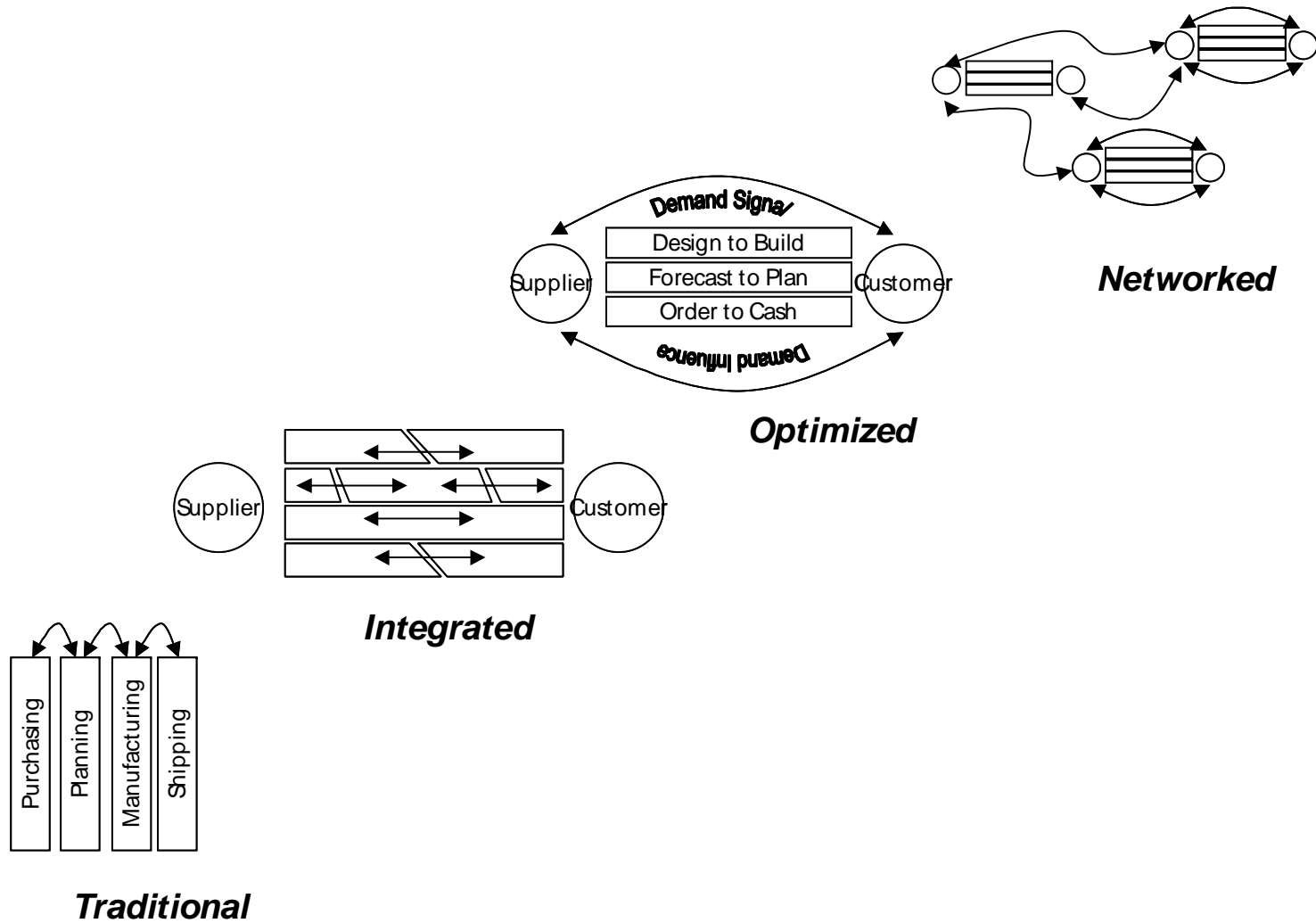


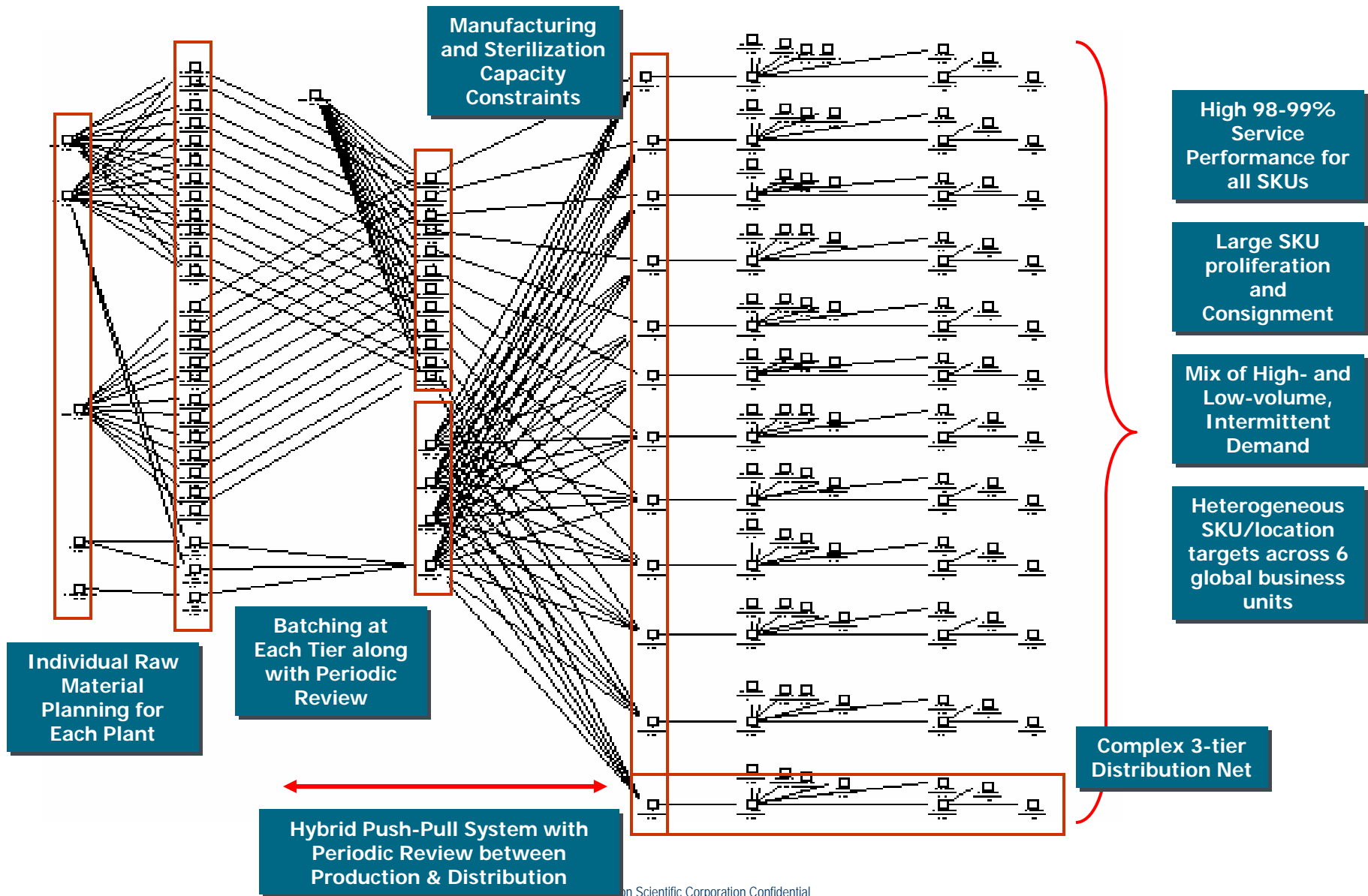
Multiple classes of demand exist

These Chains Can Get Complicated...



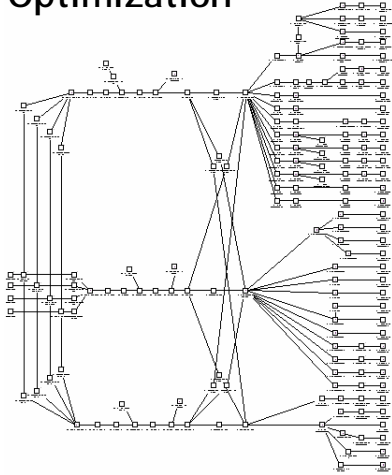
Evolution of Inventory Optimization w/in the Enterprise





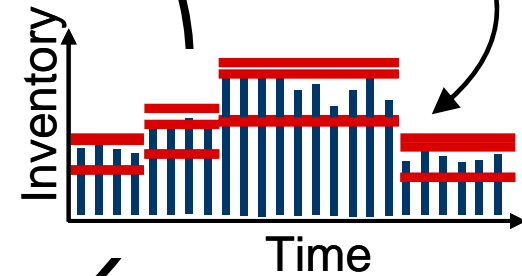
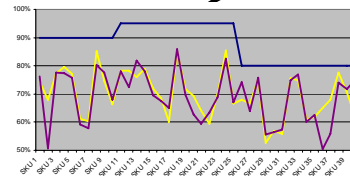
Process to Improve Supply Chain Performance

Strategic Inventory Optimization



Configure supply chain and optimize inventory plan

Optimize inventory targets over time



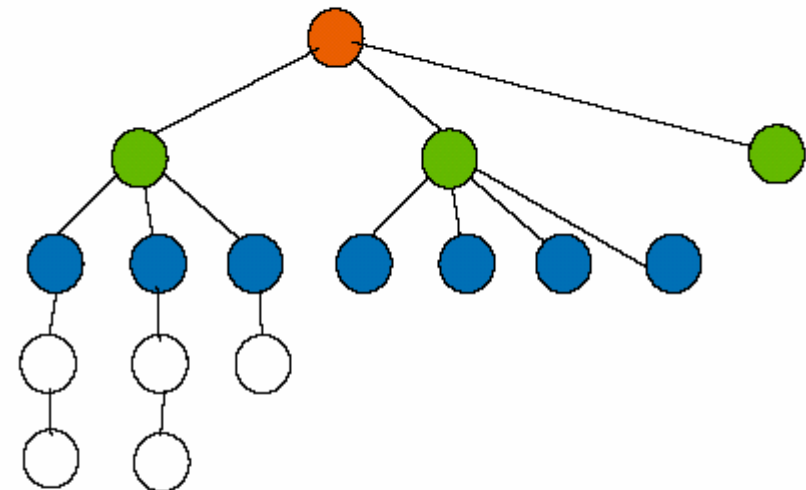
Tactical Inventory Optimization

Close loop for next product generation



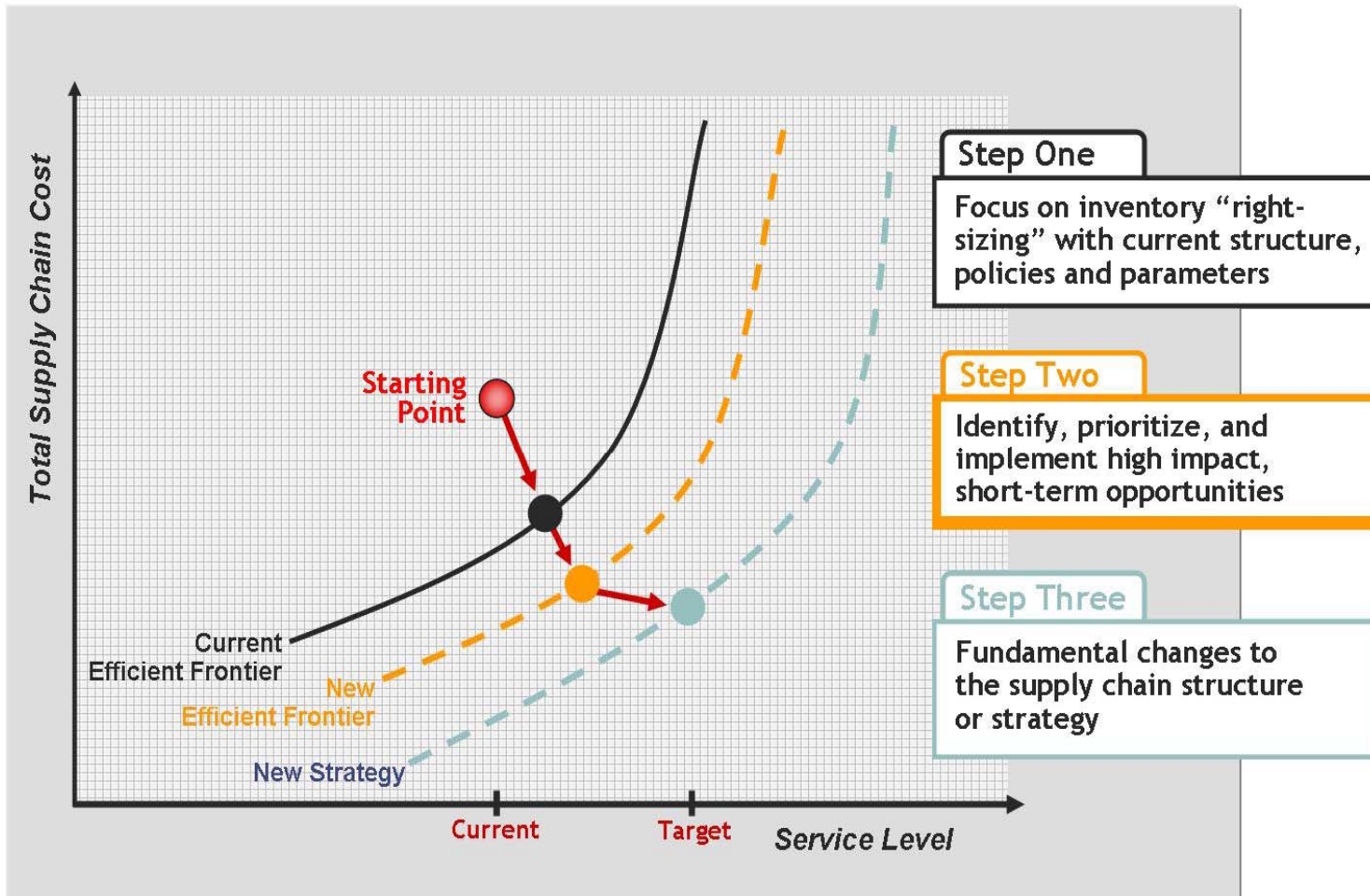
Modeling Support

- Users are distributed throughout HP
- Tiered modeling support is needed
- Three layers of modeling competency should be expected, that's OK
- Formal corporate training program needs to be led by **Expert User** at a minimum



- Super User
- Expert User
- User
- Sponsor

How to Deliver Value Across the Enterprise



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Delivering what's next.™

Q&A

