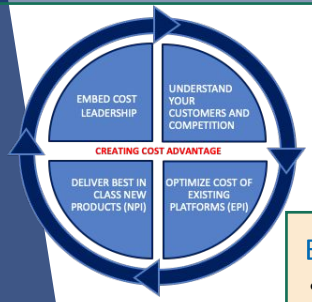
PCL Core Offerings

PCL Associates



Primary Capabilities

Existing Product Improvement (EPI)	New Product Introduction (NPI)
• Incremental Cost Improvement • Idea Pipeline Development & Delivery • Target Costing – Plan, Manage, Achieve • Project Management	• Step Function Cost Improvement • Integrated Development Process • Target Costing – Plan, Manage, Achieve • Program/Project Management

Supporting Capabilities

Component Architecture	Competitive Cost Analysis	Product Cost Analysis	Design for Value
• Part Classification • Price Alignment • Part Consolidation • Supply Base Rationalization	• Product Teardowns • Comp. Cost Modeling • Design Ideation • Subsystem Comparisons	• Cost Modeling – CAD • Material Cost Libraries • Subsystem Cost Rollups	• Value Methodology • Design for Mfg. and Assembly • Cost/Function Analysis • Quality Function Deployment

Supporting Operating Model

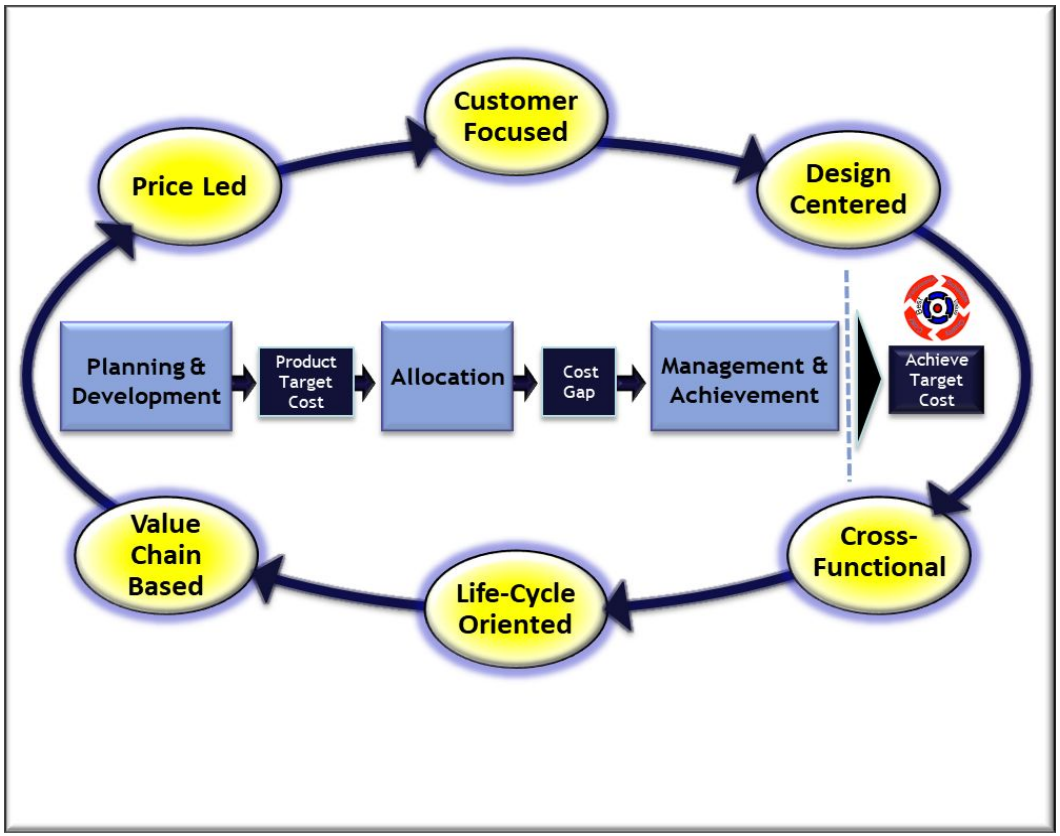
Governance & Change Management

Financial results can be realized in less than 12 months from any of these Capabilities through targeted application

NPI / EPI – Target Costing

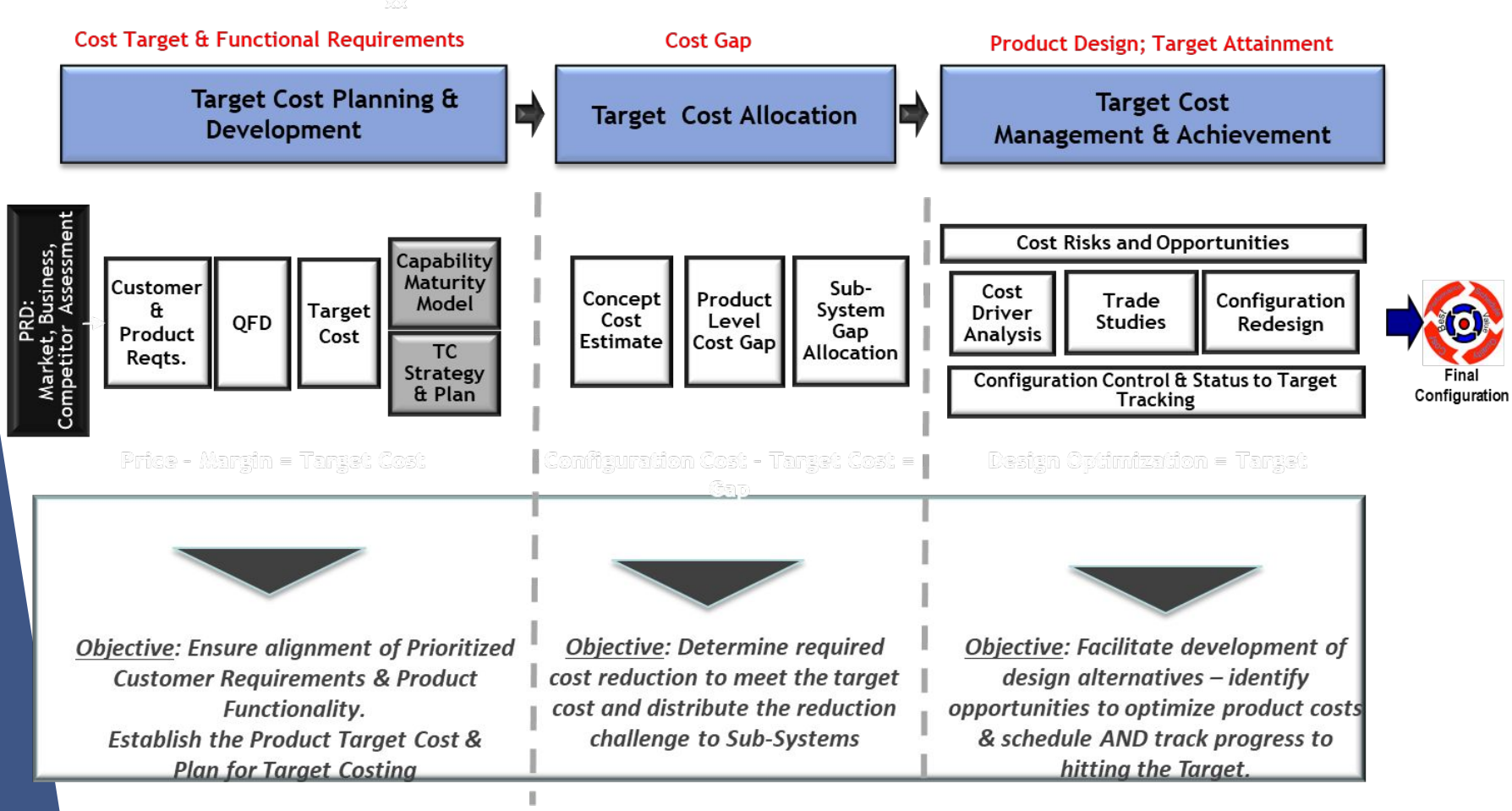
NPI / EPI Target Costing

The Target Costing process (Target Costing) is a system of profit planning and cost management that is price led, customer focused, design centered and cross-functional. Target costing initiates cost management at the earliest stages of product development and applies it throughout the product life cycle by actively involving the entire value chain."



NPI / EPI Target Costing

Phases of Target Costing



The Target Cost is driven by the market, not on our capabilities - it's not cost plus

NPI / EPI Target Costing - Benefits

Customer Requirements- Clear understanding of the customer performance requirements and price level

Protect Operating Margins- Identification of the cost level necessary to deliver required Margins (Price – Margin = Target Cost)

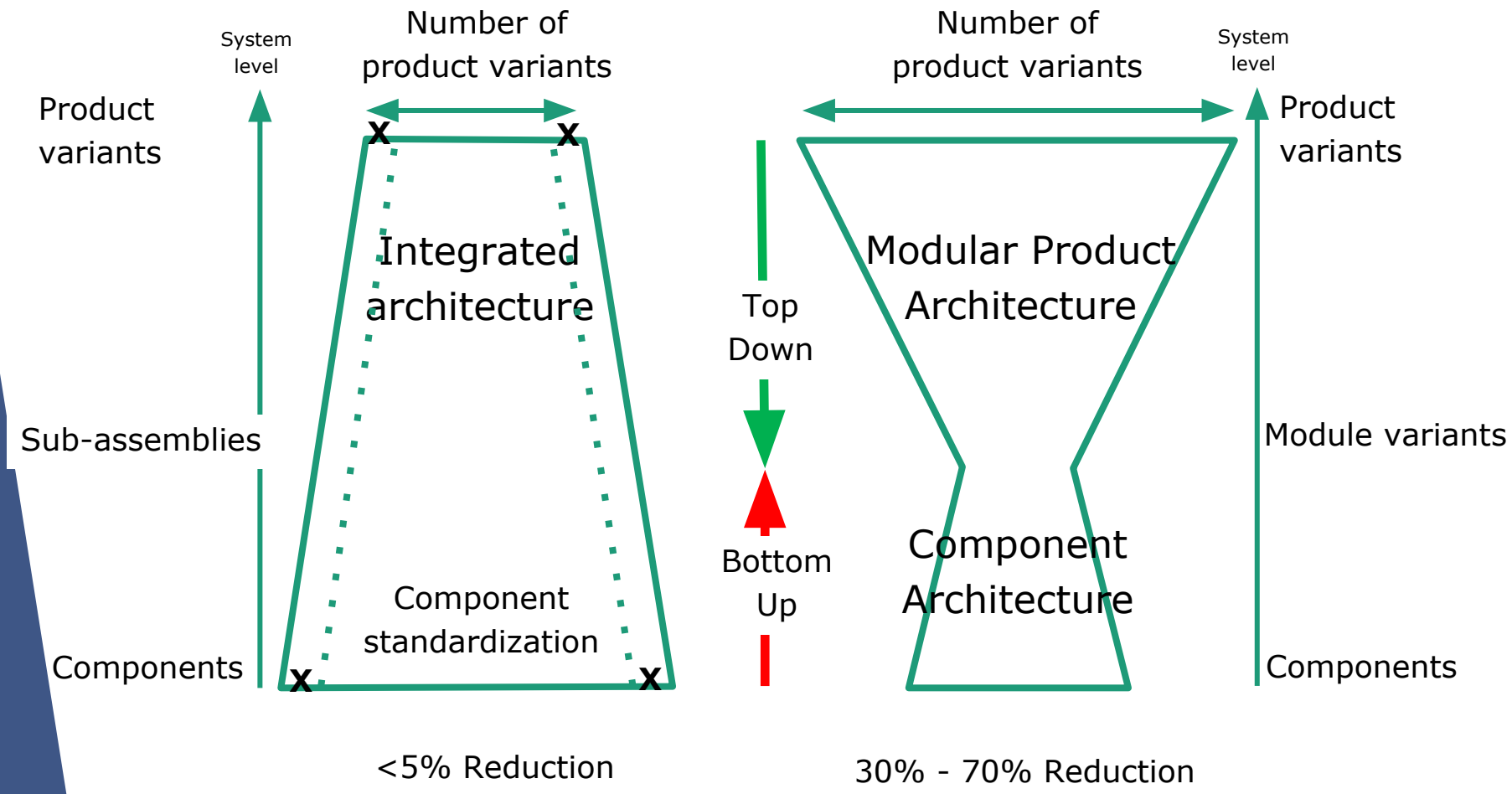
Understand the "Gap"- Early understanding of the magnitude of the challenge to meet market driven required cost & performance

Real-Time Feedback – Provide all cross functional team members (at subsystem level) with real-time program cost driver visibility, status-to-target, and identification of Risks and Opportunities

A Process proven to deliver products that meet Cost & Performance requirements!

Component Architecture

Component Architecture

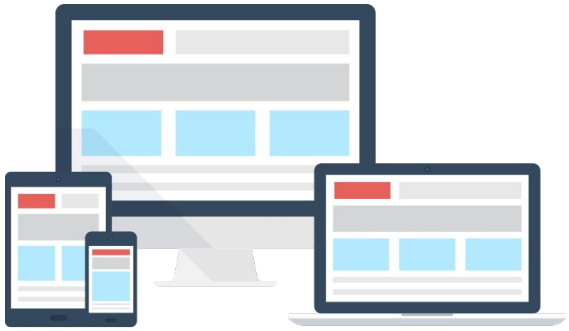


Component Architecture

Harvest Part Data

Part #	Supplier	Price	Length	Width	Diameter

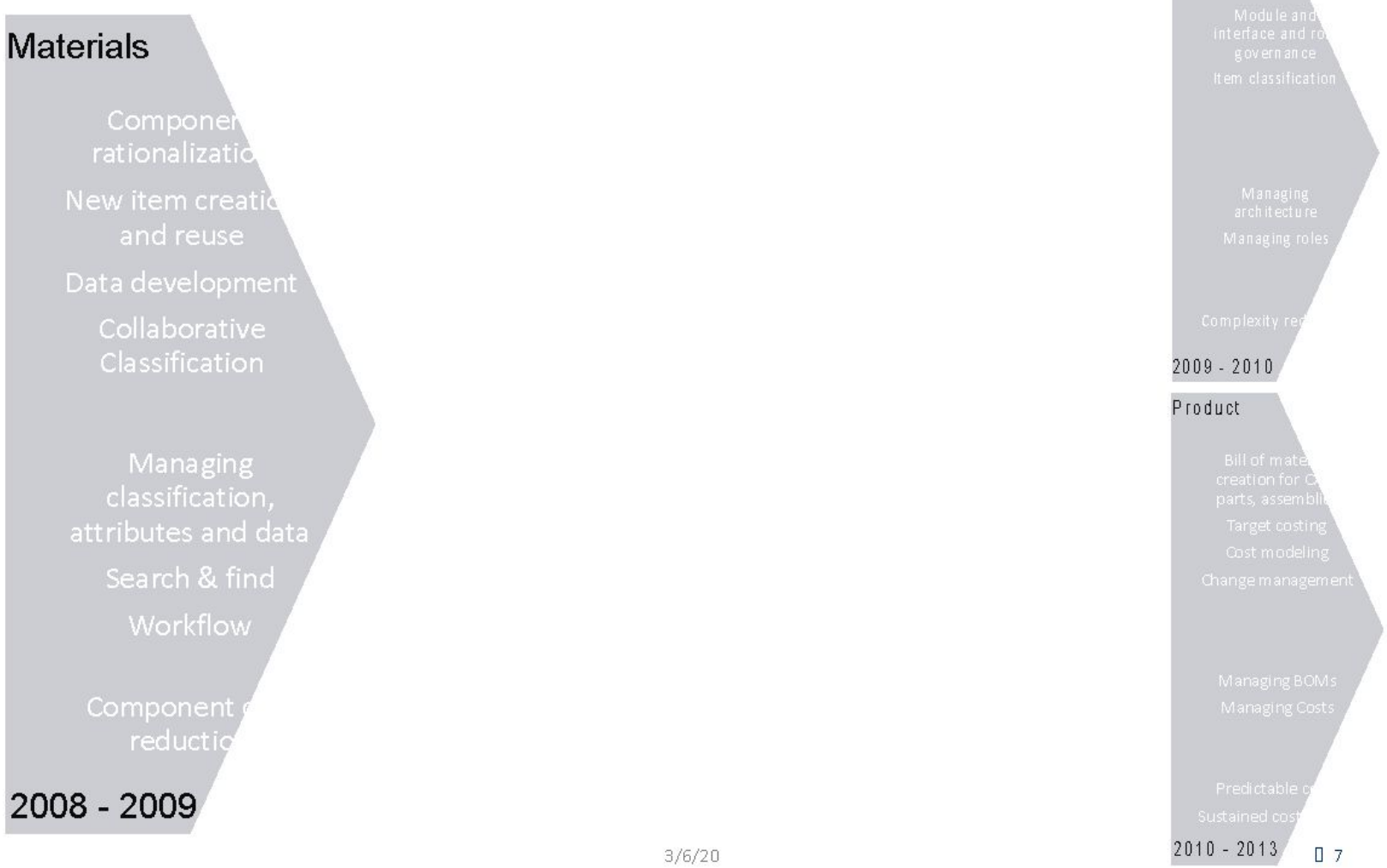
Build Classification Database



Analyze & Search

Component Architecture - Results

Material cost reduction contributed to actual savings to fund the Product Architecture strategy.



Note: This slide used in a public PLM conference presentation in March 2011

Component Architecture - Benefits

Addressing material costs resulted in an average savings opportunities of 10%.

Whirlpool

Materials

Componer rationalizatio

New item creatio and reuse

Data development

Collaborative Classification

Managing classification, attributes and data

Search & find

Workflow

Component reductio

2008 - 2009

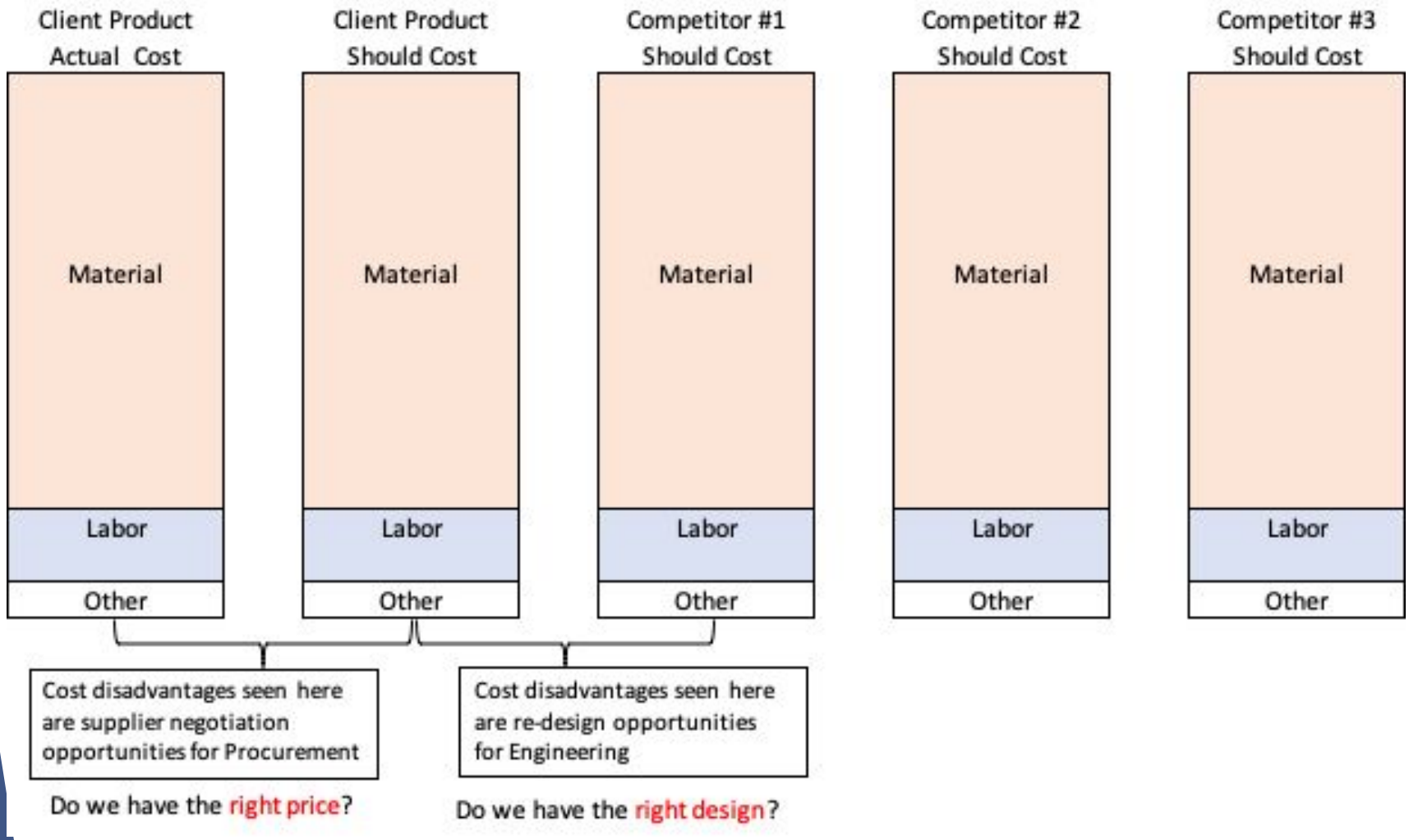
Small Sample of Material Savings

Material	Consolidation Lever	Complexity 2009		Complexity 2011	Savings Opportunity (hard savings only)
Valves	Flow Rates, Brackets	141	74%	36	12-18 %
Steel Coils	Gages, Grades, specs	1008	60%	402	3-5 %
Resins	Colors, Filler, Specs	384	39%	233	4-8 %
Tierll Electronics	Mounting, Ratings	2901	74%	754	10-12 %
Wire Harness Components	Wire Gage, Terminals Housings	2743	56%	1783	9-12 %
Brand Badges	Common Technology, Adhesive	326	77%	76	10-20 %

Note: This slide used in a public PLM conference presentation in March 2011

Competitive Cost Analysis

Competitive Cost Analysis



Competitive Cost Analysis

Step 1 – Identify and obtain baseline & competitor products

Step 2 – Document product characteristics with photographs

Step 3 – Disassemble products identifying part weight, material, and physical characteristics

Step 4 – Calculate material & labor content for parts

Step 5 – Aggregate part data into comparable subsystems

Step 6 – Compare subsystems & identify right price and re-design opportunities

Step 7 – Publish CCA report & review with stakeholders for alignment and follow up

Competitive Cost Analysis

Competitive Cost Analysis

Competitive Cost Analysis - Benefits

Best Cost Identification - Clear understanding of your relative cost position vs your most important competitors

Continuous Cost Improvement - Identification of design & sourcing cost savings opportunities for both existing and future new products

Cost Target Identification - Leverage competitive data to establish cost targets for new product modules based on strategic priorities

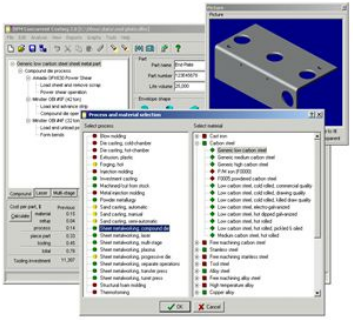
Product Cost Analysis

Product Cost Analysis

Needed to:

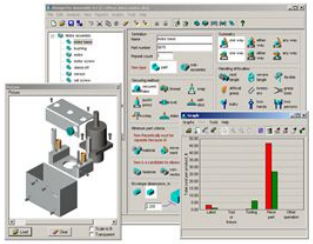
- Estimate the cost of preliminary design concepts
- Evaluate cost impacts of configuration or manufacturing process changes as the design matures

Part Cost



- Design for Manufacturing Software
  - Manufacturing process estimate
  - Customizable libraries of materials and manufacturing processes
  - Industrial standards built into the libraries

Assembly Cost



- Design for Assembly Software
  - Assembly process estimation
  - Customizable libraries of common items and assembly processes
  - Interactive part optimization tool
  - Used with VE / VA efforts

Product Cost Analysis - Benefits

Cost Identification- Clear understanding of the costs early in configuration development. Enables the visibility of the cost challenge (estimated cost vs the necessary “Target Cost”)

Cost Driver Analysis- Identification of the configuration cost drivers through detail manufacturing and assembly cost rollups by sub-system (module)

Material Cost Libraries- the maintenance and usage of up-to-date cost of raw material, to aid in selection of configuration and material alternatives

Design for Value

Design for Value

Design For Value (DFV) Overview:

DFV utilizes a multi-disciplined, Cross-Functional Team to Drive Product Cost Leadership through the evaluation of Product and Manufacturing optimization utilizing DFA and by analyzing functional requirements as defined in the House of Quality.

DFV Cross- Functional Workshops are leveraged to achieve the Target Cost and Performance requirements

Design for Assembly (DFA) Workshop

- Identifies opportunities to optimize product based upon manufacturing capability by price point to meet the target cost, consumer needs, merchandising requirements, and the competitive marketplace.

Value Engineering (VE) Workshop

- Identifies opportunities to optimized product based upon functional requirements by price point to meet the target cost, consumer needs, merchandising requirements, and the competitive marketplace.

Design for Value - Benefits

- Understanding of the product functional requirements to enable alternatives to be evaluated against those requirements
- Cross functional participation in development of cost/performance opportunities
- Use of analytical techniques, such as Quality Function Deployment (QFD) enables the team to understand “Value Mismatches”, where the configuration cost is disproportional to customer value of the subsystem performance
- Identification of opportunities to pursue (configuration alternatives and manufacturing processes) and their impact to product cost, quality and function

Governance & Change Management

Governance & Change Management

Governance in two parts

1. Leadership commitment and involvement (participative management)

2. Application of world class program management tools & techniques
   - Development of Program/Project Baselines (current state)
     - Cost
     - Schedule
     - Configuration
     - Requirements
     - Technical Performance Measures
     - Risk
     - Organization/Resources
   - Develop cross-functional teaming structure (with charters)
   - Decision gates with specific review criteria
   - Multifunctional Change Review Board (for changes to all Baselines)
     - Potential changes to **ANY** baseline are evaluated for the impacts to all other baselines
   - Training & Communication

Governance & Change Management - Benefits

- Cross functional teaming structure is crucial to all program members understanding and accountability
- Responsibility, Accountability and Authority (RAA) are understood by all team members
- Ensures that all team members understand the effects of changes
- Status data is current and available to the team
- Status gates and criteria provide the development pathway to drive necessary action – prevents “development drifting” and “scope creep”