

A red abstract background featuring various currency symbols (dollar, euro, yen) and geometric patterns like concentric circles and lines, creating a financial and technological aesthetic.

WHITE PAPER

# New Product Introductions (NPI) and Target Costs

Meeting and Beating New Product Cost Targets

*An aPriori Whitepaper*

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## NEW PRODUCT INTRODUCTIONS (NPI) AND TARGET COSTS

### NPI AND PRODUCT COST TARGETS

If you are working on a new product development initiative (NPI) for a discrete manufacturer, you're likely under increasing pressure to develop those products within specific cost, weight, market and quality targets under very tight timeframes. Developing and producing products that can meet all of these criteria, particularly cost, can be extremely challenging:

- Setting cost targets and continually estimating product costs for variance as a design progresses over time is very time consuming and resource-intensive. As a result, cost roll ups are often conducted on a limited basis and cost overages may not become apparent until the product nears release to manufacturing.
- You may not have the resources and tools to truly understand a product's key cost drivers nor the luxury of evaluating multiple design alternatives that stimulate innovation and improve profitability. As a result, features that are complex to manufacture and add little market value may go undiscovered until it's too late to change them.
- New government safety regulations may also impact your design requirements and increase product costs without necessarily adding value for your customers. You may not have a way to accurately identify the full impact of those requirements. And if you don't have visibility into other cost aspects of the product, it's difficult to know how to offset those increases.
- Most manufacturers today employ sophisticated supply chains and outsource some or all of their manufacturing. Strategic Sourcing Managers have little insight into early stage product designs, often resulting in designs that are not optimized to leverage the company's value chain.

These situations are very common in most manufacturers' product development process today, but their impact is often more significant than most manufacturers realize. Profit margins are reduced due to product cost overruns or time to market is delayed due to the need to firefight cost "surprises." And there is often expensive post-production cost reduction rework required. At the core of all of these challenges is the inability to accurately identify, assess and manage detailed product costs early enough in a product's lifecycle.

**NEW PRODUCT INTRODUCTIONS (NPI) AND TARGET COSTS**

**CASE STUDY**



**ThyssenKrupp Elevator**

**Background:**

- One of the world’s leading elevator companies with sales of almost 5.2 billion Euros (\$7.1 billion)

**Business Challenge:**

- Product Cost Management was a very manual process that required significant time from multiple resources. It was also inconsistent and subject to the many variables introduced by different design and manufacturing engineers

**Solution:**

- aPriori was deployed to a cross functional product development team including staff from product engineering, product development, manufacturing and procurement

**Results:**

- The design team is able to **evaluate and cost 3X more design alternatives**. This facilitates product innovation while also delivering incremental cost savings.
- Turnaround time for quotes from manufacturing has gone **from 1 week to 1 hour**
- Procurement has used aPriori to **reduce its cost of sourced goods**

**INCORPORATING EFFECTIVE COST MANAGEMENT INTO YOUR NPI PROCESS**

Best-in-class companies are applying effective cost management strategies into the earliest stages of their product design process and collaborating on cost analysis cross functionally. As a result, they are realizing huge repeatable benefits in both hard and soft cost savings including:

- Setting and managing cost targets and getting them right the first time, before products or parts go into production;
- Quickly evaluating the cost of new product design alternatives so that they can focus more time on innovation and less on cost analysis;
- Identifying the real cost drivers behind a product design and minimizing engineering changes later in the release cycle where they cost more to address;
- Eliminating long waits for price quotes from internal cost experts, manufacturing experts or external suppliers;
- Creating should-cost estimates to be used to support vendor selection, quote validation and supplier negotiation.

Few would argue against any of these benefits, but it’s not uncommon for engineers or sourcing and manufacturing team members to worry about product cost management activities slowing them down. In fact, the opposite is true. Effective product cost management activities can actually drive significant time efficiencies for these teams. Implemented properly, most cost management activities fit naturally into existing engineering and sourcing activities and processes. The proper cost management tools also complement the tools being used in most engineering and sourcing groups today. These teams often see time efficiency gains because they don’t wait as long for cost estimates to come from suppliers and they reduce expensive, late stage rework..

**MEETING TARGET COSTS — CORE REQUIREMENTS**

There are some core requirements for effectively managing new product designs so that they consistently meet target cost goals:

- **Early Cost Visibility** — To effectively manage product costs, NPI teams must have early visibility into the cost impact of different design alternatives:
  - Companies should evaluate tools that enable engineers to quickly and precisely determine the cost of a new part or product design by automatically pulling geometric and feature information from a computer-aided design (CAD) model. This approach enables individuals that are not experts in cost engineering or manufacturing to very quickly create an estimate to determine how close they are to established target costs.
  - Costs should also be regularly re-assessed as features and design ideas are added or subtracted. This enables individuals to quickly evaluate various tradeoff decisions that have significant potential to impact cost and evaluate the cost impact of change orders or new marketing requirements.

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**CASE STUDY**



**Polaris Industries, Inc.**

**Background:**

- \$1.8B Manufacturer of personal recreation vehicles

**Business Challenge:**

- No visibility to cost during product development cycle
- Looking for tools to help control costs in a highly competitive marketplace

**Solution:**

- Corporate rollout of aPriori to more than 100 users to inform decisions on new and current products

**Results:**

- More than **\$800,000** in product cost savings reported in first year of use
- Annual capital equipment **tooling cost savings of 50%**
- New product Cost Avoidance estimated at **\$200,000 per month**
- Potential savings over 3 years of contract **> \$7M and 7:1 ROI**

- Cost evaluation milestones should be established at stage gates in the NPI process to assess and discuss the specific cost implications of various design ideas and alternatives.
- Strategic Sourcing Managers and Manufacturing Engineers should also have early visibility to product designs and the most current cost estimates so they can provide input into alternative designs, sourcing options and manufacturability.

■ **Cross-Functional View of Product Cost** — Providing cross-functional teams with a common view of product cost at each stage of the product development process is also extremely important. This ensures that all parties impacting product cost are collaborating early, accessing the same information and working to prevent late stage cost surprises. The resulting benefits of this cross-functional view are significant:

- Strategic Sourcing Managers with a view into current product design and cost are able to consider Make vs. Buy decisions earlier in the process. This can improve profitability and better leverage the design and manufacturing expertise of supply chain partners.
- Manufacturing Engineers that have access to a common product cost platform can regularly evaluate designs for manufacturability and suggest changes that can have a profound impact on cost and time-to market.
- Cost Engineers get access to a broader range of cost information than ever before, and are able to increase their overall economic impact on the company. Manual input costing tools used most often by costing teams today do a great job of helping these individuals control cost for the most complex products, but they don't scale across the product line.

■ **Integration with Enterprise Systems** — Since most new product initiatives are not typically a green sheet program, and build on a current platform, being able to load a BOM (bill of material) and carryover part costs from PLM or ERP systems is very important to successful enterprise cost management initiatives. Furthermore, after an NPI team member calculates cost for a new product design, it is important that your product cost management solution be capable of storing that data back within the existing PLM or ERP systems of record to create a closed loop flow of information.

Without these core practices, processes and tools, product cost management remains a highly manual and decentralized function. Often cost engineering teams focus on a portion of the product because they do not have the resources to cost all components and complete the process when the design is nearly finalized, severely limiting the windows of opportunity to identify and operationalize product cost savings. It also leads to inconsistent estimation methods with static information that is difficult to update, manage and share.

## NEW PRODUCT INTRODUCTIONS (NPI) AND TARGET COSTS

### APRIORI'S PRODUCT COST MANAGEMENT SOLUTIONS

aPriori's software platform incorporates these best practices, processes and tools to address the challenges of product cost management head on. It enables engineering, sourcing and manufacturing personnel to quickly and precisely determine the cost of a new part or product design by automatically pulling geometric and feature information from a 3D solid CAD model. The software leverages intelligent cost models based on the manufacturing process, materials and the plant where a product or part will be produced. Using this new level of cost knowledge, product engineers are able to make more informed new product design decisions, manage to target costs and launch new products at or below target cost while accelerating time to market. Key capabilities of aPriori include:

- Rapidly calculating costs for complete product assemblies to help engineering teams quickly understand how reducing the cost of one component can help offset the increased costs of other components.
- Enabling design teams to perform quick cost evaluation of design alternatives to help project teams understand cost implications of different options and pick the most innovative and cost-effective for the value they deliver to the customer.
- Generate product cost rollups and analyze current designs against cost and weight targets, while also providing detailed component estimates to support decisions in design, manufacturing or sourcing.
- Keeping your new product on schedule. aPriori enables design teams to perform cost evaluations in seconds and minutes vs. waiting hours and days for cost estimates to come back from cost engineering, manufacturing, purchasing or an external supplier. It also eliminates post-launch re-work.

Leading manufacturers such as Ford Motor Company, AGCO Corporation, Polaris Industries, ThyssenKrupp and Ingersoll Rand know that in order to control profitability in a complex global market, they can no longer afford to rely on outdated manual processes for cost management. These forward thinking companies are already out in front of the curve, implementing the most modern product cost management systems available across their global product development and delivery teams (see sidebar case study briefs for more details). To learn more about how these and many other manufacturers are addressing their product cost management challenges more effectively, visit [www.apriori.com](http://www.apriori.com).

**NEW PRODUCT  
INTRODUCTIONS (NPI)  
AND TARGET COSTS****ABOUT THE AUTHOR****Julie Driscoll**

*Vice President, Strategic Marketing & Product Management  
aPriori, Inc.*

Julie Driscoll joined aPriori in early 2006, leading the professional services team and working with discrete manufacturers to drive value with aPriori's product cost management solution. Today she is responsible for the company's strategic product and marketing direction with a keen eye for identifying new product cost savings opportunities for discrete manufacturers. Julie has over eighteen years of product and service delivery experience, working in a variety of operations and consulting management roles at Oracle, ProfitLogic and State Street Bank. She holds a BS in Industrial Engineering from Worcester Polytechnic Institute and an MBA from Babson College.

**ABOUT APRIORI**

aPriori software and services generate hard-dollar product cost savings for discrete manufacturing and product innovation companies. Users include some of the leading manufacturers in Europe and North America. Leveraging aPriori's real-time product cost assessments, employees in engineering, sourcing and manufacturing make more-informed decisions that drive costs out of products pre- and post-production. As a result, manufacturers launch products at cost targets, maximize savings in re-work projects and never overpay for sourced parts.



200 Baker Avenue  
Concord, Massachusetts 01742

**Tel:** 978-371-2006

**Fax:** 978-371-2008

[info@apriori.com](mailto:info@apriori.com)

[www.aPriori.com](http://www.aPriori.com)