Reducing Current Product Costs — Challenges And Opportunities

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 Different manufacturing businesses face different business challenges depending on product sets, competitive dynamics, supply chains and customer trends in a given market. But when it comes to reducing the costs of existing products, they share some very similar challenges. For example:

- Complex global manufacturing and sourcing strategies make it difficult for design and cost engineering teams to identify which product features are driving costs.
- Shifting cost dynamics in low-cost countries and the pressure to re-shore add to the difficulty manufacturers face when it comes to quickly understanding the cost impact of rising material or labor prices on current product programs.
- Time spent on value engineering activities can take away from time spent developing innovative new products. Manufacturers need to do both by balancing the short-term benefits of product cost engineering with the longer-term benefits of increased product innovation.
- Sourcing teams are tasked with reducing product costs by 5 or 6 percent annually, but they likely do not have the right tools to calculate what a product “should cost” or where the best opportunities for costs savings might be. Without this, it’s difficult to conduct fact-based negotiations with suppliers or identify where suppliers may be overcharging your company. Likewise, it is very difficult to compare the cost to source a product in one geographic region versus another in a timely manner.

Most manufacturers have dedicated individuals and teams of cost experts calculating and trying to manage product cost. It’s a very difficult job, exacerbated

by internal processes and systems that cannot effectively overcome the cost management challenges above. In most cases, finance or cost specialists are estimating the standard cost for a product after most of the key design decisions have been baked into the product, so it's difficult to really impact that cost. Furthermore, this cost data is being calculated by different people and stored in disparate, distributed systems, creating huge consistency and data access challenges.

Reducing Current Product Costs — Best Practices

The best product cost management strategies begin attacking product cost before a product ever goes to market and continue across the entire product lifecycle — from design and engineering, through sourcing and manufacturing. But unless you are brand new to the market, you have existing products, which means you have to find a way to take cost out after they have been released to the market. Current products also provide the biggest, short-term opportunity for reducing product costs by:

- Identifying savings on outsourced parts
- Finding savings in redesign
- Optimizing costs on a higher volume of parts by consolidating similar parts
- Consolidating suppliers
- Improving engineering productivity in redesign projects

To leverage these opportunities, we need to be able to identify the parts with the highest potential for cost savings, and investigate various design, manufacturing or sourcing alternatives and the cost savings opportunities they can provide. Consider the following workflow:

1. A cost engineer or project manager creates a project Bill of Materials (BOM) using existing product and cost data (e.g., indented BOM structure, component attribute data, carry over part costs, cost and or weight targets, etc.).
2. The design engineer then loads the project BOM and all associated data into their product cost management system, and provides any other key inputs necessary to generate a preliminary cost (e.g., material, process group, surface treatments, tolerances and any product assembly techniques). The PCM system can then generate an extremely detailed cost estimate that can be analyzed at the product, subassembly or component level.
3. The project manager, cost engineer and design engineer can now quickly identify the most expensive areas of their product, which stimulates ideas for design changes and design alternatives. If they are not able to come up with any ideas that materially lower the cost, they can flag in-house parts for manufacturing review or sourced parts to be quoted.
4. They would then define annual volumes, default production environment data depending on location, manufacturing process, dates, etc.

Through this type of cross-departmental collaboration, the team may be able to come up with an innovative new design concept, sourcing or manufacturing strategy that could substantially lower the cost and improve profitability as the program ramps to volume production.

This workflow enables anyone who can impact the cost of a current product to do so. Let’s take a closer look at the impact at a departmental level.

Designers and engineers, focused on simplifying complex, expensive parts; increasing reuse; and evaluating the most cost effective material or manufacturing options, can:

- Understand the components in a product or subsystem that provide the greatest opportunity for cost savings.
- Explore many more cost savings design alternatives in the same amount of time or less.
- Highlight the most expensive manufacturing features on a CAD model, and then quickly re-evaluate the cost of tradeoff decisions as they update the design.
- Stop waiting for quotes to come back from suppliers and get the information they need when they need it.

Cost engineering professionals, focused on identifying cost savings in existing products, can:

- Apply their expertise to a higher volume of products — driving bigger cost savings than ever before.
- Amplify their knowledge across the entire product development organization, effectively providing “at elbow” cost service for the design team.
- Quickly identify cost savings opportunities and generate ideas for cost reduction programs.
- Have more time to concentrate on really complicated cost analysis projects.

Manufacturing professionals, focused on bringing high quality products to market on time and on budget, can:

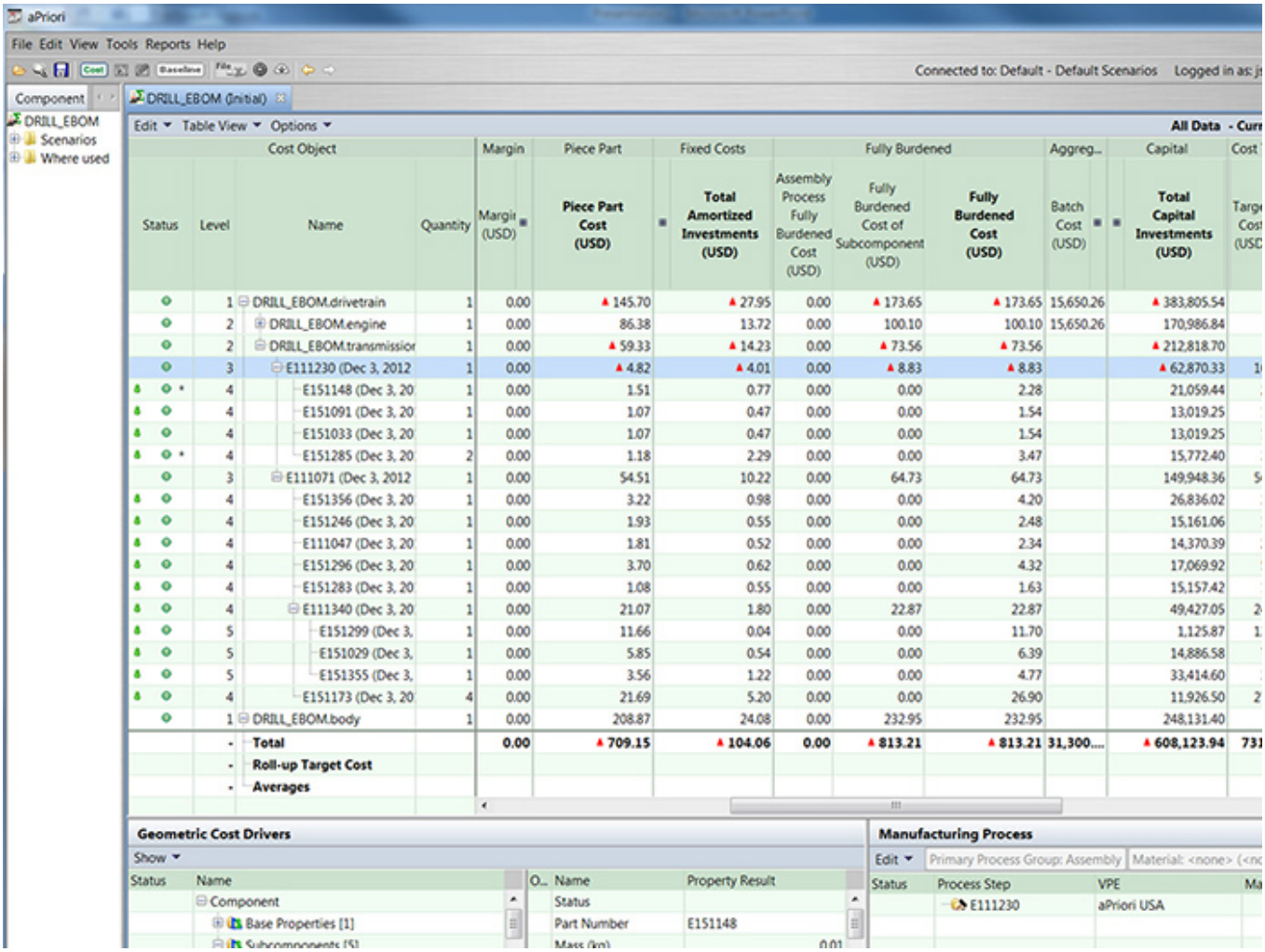
- Discover new, more efficient manufacturing routings within their own factories.
- Evaluate parts that may make sense to manufacture in-house (e.g. re-shoring initiatives).
- Prevent design mistakes that dramatically increase the cost to manufacture a product.
- Reduce time spent developing cost estimates and spend more time on critical manufacturing operations.

Sourcing professionals, focused on identifying cost outliers and driving changes through renegotiating and resourcing, can:

- Run automated cost analysis on hundreds, or even thousands of parts, to identify where they are being overcharged by suppliers, potentially saving hundreds of thousands, even millions of dollars.
- Leverage highly detailed cost estimates that illustrate the most cost efficient way to manufacture product with suppliers and to have a fact-base discussion with suppliers about what a product or part should cost and why.
- Simplify sourcing tradeoff analysis by comparing the cost to manufacture a product in one region versus another, or one supplier versus another.

Program managers, focused on achieving current product costs reduction goals, can:

- Gain visibility into a project’s progress and access up to date reports that illustrate cost savings potential for identified outliers, design alternatives and different manufacturing or sourcing strategies.
- Rapidly access critical product cost information for your projects at any time including recommended actions, status and results



Critical Success Factors

The processes and practices outlined above can provide substantial benefits for any manufacturer, but they don't happen by themselves. Successful product cost management requires changes on both the people and the technology sides of the business:

People Factors

- Management support – Managers must be actively engaged in the cost management process and actively tracking project progress.
- Cross-organization commitment – Related to the above, this can't be done in a silo. It requires the participation of multiple groups in the organizations to capture and provide the necessary data for analysis and take action on the findings.
- Qualified resources - Cost specialist(s) are needed to review, refine and scrub outliers for an effective analysis.
- Follow-through – By all participants on tracking actions and savings on components identified for cost reduction.

Technical Capabilities

- User Interaction designed for the masses – Systems that can only be used by highly specialized cost engineers dramatically limit the potential of your product costing efforts to be used by design, engineering and sourcing professionals. Look for a system that is fast and easy to use, even by new college graduates, or new employees that may have very little experience with cost evaluation.
- Automated cost analysis - The ability to automate costing and batch analyze hundreds or even thousands of components, and compare a calculated "should cost" to current cost can identify potentially millions of dollars of savings opportunities. This cannot be done manually, though. Users will need to leverage enterprise-class product cost management tools.
- The ability to read geometric cost drivers from any 3D solid CAD model – This significantly reduces the amount of manual data input to produce cost estimate, minimizes potential for error in manual input and dramatically accelerates time to produce a detailed cost estimate.
- Rules-based routing – It is important to be able to identify the most cost efficient manufacturing routings based on design, volume, material, manufacturing process and manufacturing location changes.
- Centralized Database – Standalone costing systems that do not aggregate information into a centralized database create islands of automation and limit the ability of team members to leverage the experience of others. Look for a product cost management platform that stores all information in a centralized repository that can easily be accessed by everyone on the product development team.
- Integration – The ability for a costing solution to integrate with other enterprise applications that contain cost information is critical. Any product cost management solution that you investigate should provide the ability to interface with your ERP and PLM systems so that cost data can seamlessly be shared across your enterprise architecture

The most effective product cost management strategies can provide substantial benefit to manufacturers that implement them, but they also require investment from your employees and in technology to realize the full ROI of your efforts. Consider your own level of readiness and the ability to put some of the best practices outlined above into action.