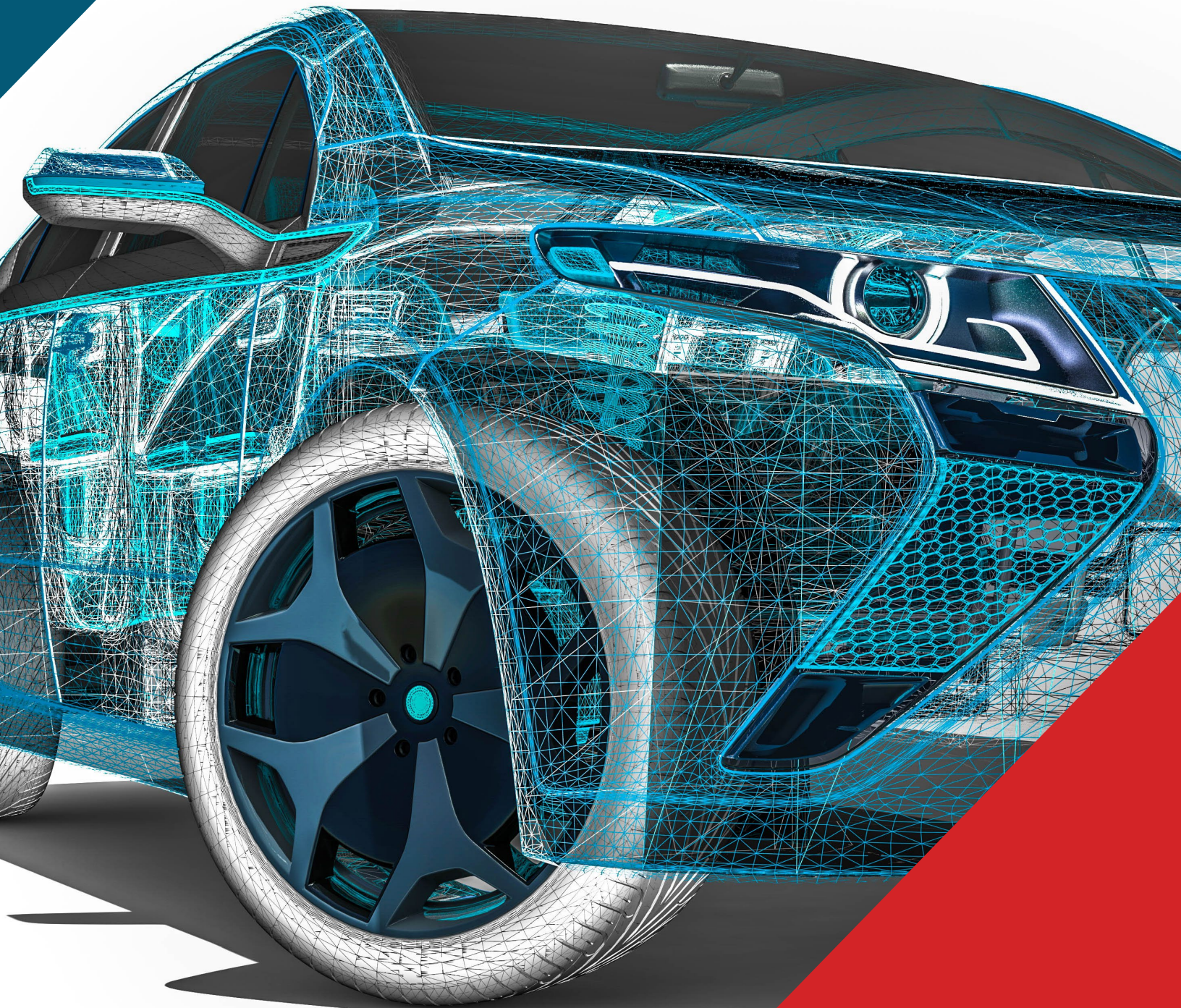


# What Will My Vehicle Design Cost to Produce?





## Real-Time Product Cost Assessments Make Design Engineers Heroes in Increasing Corporate Profits

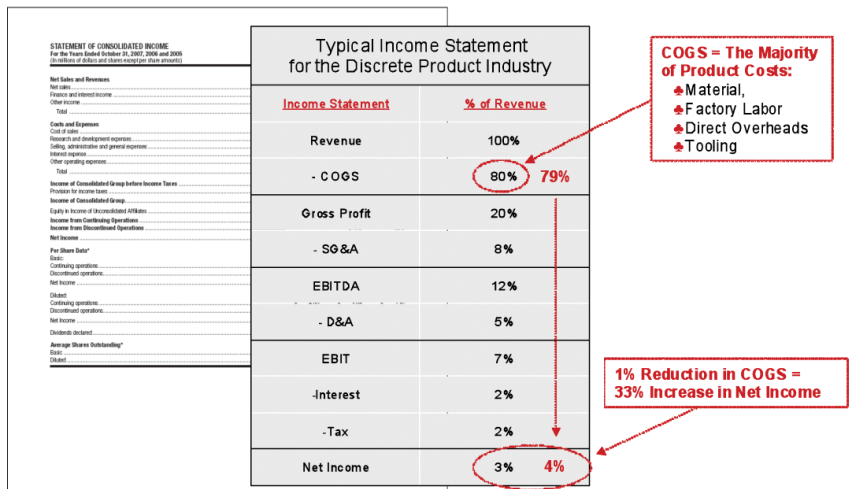
Do more for less. As a design engineer, you are under tremendous pressure to create quality products in today's ultra-competitive automotive environment. You have requirements for form, fit, and function, regulations imposed by the government to push towards ACES vehicle technologies (Automated, Connected, Electric, and Shared)... and a schedule to keep. Of course, your company is under tremendous pressure too. Shareholder expectations are high, profit margins are tight, NPI to delivery cycles are continuing to be compressed, and as a result, budgets are even tighter.

In the never-ending battle for market-leadership, design engineers play a more significant role than they may realize in determining a company's success. But, it's not just about which company has the best product; it's also about which company does a better job of controlling its product costs.

For manufacturing and product companies, the biggest expense on the quarterly income statement is Cost of Goods Sold, or COGS. COGS represents the amount of money required for producing the goods your company sells. Typically, the number is between 70 percent and 90 percent of the gross revenue your company earns. Because COGS in manufacturing is so high, a company that could reduce its product costs by just one percent would see its profit rise substantially. (For a more in-depth discussion about Cost of Goods Sold, visit [www.apriori.com](http://www.apriori.com).)

Figure 1. A mere one-percent reduction in Cost of Goods sold can have a tremendous effect on overall net income.

### Why is Reducing Product Costs Important?



The inefficient process for generating cost information today is preventing you from considering many design changes that will ultimately result in a lower cost.

So where do you fit in? Remember the old mantra that 80 percent of the cost of a product is created in the first 20 percent of development? We all know it's true from our experiences. That means that your design engineering team is responsible for the largest portion of your company's product costs. You and your colleagues are in the best position for increasing corporate profitability if you can reduce the cost of the products your company sells.

So what's stopping you? Typically, the stumbling block is knowing how much your designs will cost to produce.

## Design Costing Challenges

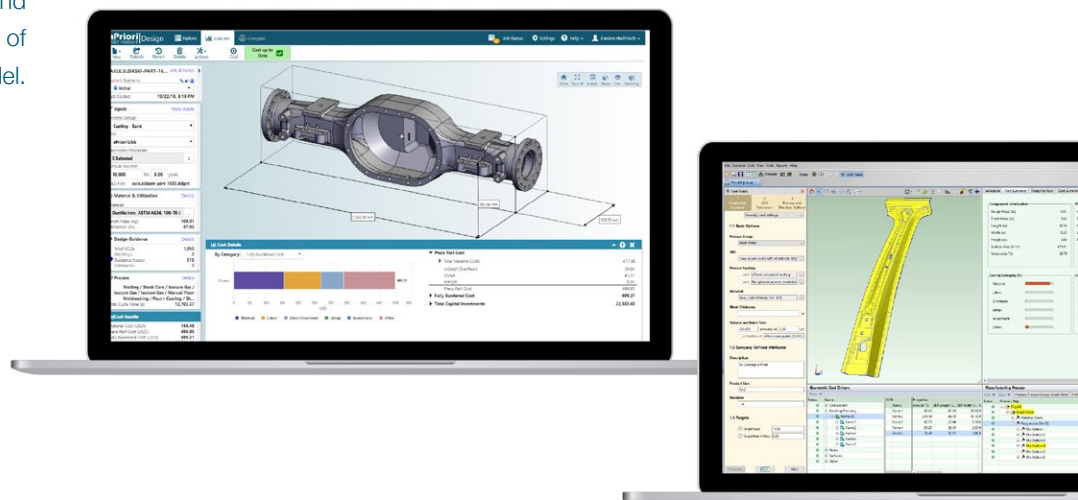
When you are working in your CAD program, every change you make to a design has an impact — positive or negative — On how much the finished product will cost to produce. You may have a general idea on how a particular change - such as changing the material - might affect cost, weight, and stability, yet the only way to know with certainty is to have someone generate an estimate or a quote. That requires either calling in a cost expert or having the purchasing department contact your suppliers.

Obtaining cost estimates can be a frustrating back-and-forth process that might take days or weeks. But with deadlines looming, who has time for that? The inefficient process for generating cost information today is preventing you (and your team) from considering many design changes that will ultimately result in a lower cost to produce a design without sacrificing functionality, performance, or quality.

But there is an alternative process available today utilizing software that works with your CAD system to give you real-time cost information, so you can understand the impact of your design and trade-off decisions as you make them.

Figure 2. Technology from aPriori can instantly (and precisely) determine the cost of a design from a CAD model.

## Real-Time Product Cost Assessments



With product cost management, design engineers can better understand the price tag for changes as they are being considered so you can find the optimal balance between functionality, performance, quality, and cost.

## A More Efficient and Effective Automotive Costing Solution

Product cost management software assesses the cost impact of engineering changes in real-time, helping you and your company avoid a number of profit-killing pitfalls including:

- missed cost targets,
- delayed product launches,
- late-stage product redesign, and
- post-launch cost reduction projects.

With product cost management, design engineers can better understand the price tag for changes as they are being considered so you can find the optimal balance between functionality, performance, quality, and cost that delivers the maximum value to the customer. You can explore more early design alternatives, routing out cost earlier and resulting in fewer changes later in development, when making changes gets incrementally more expensive.

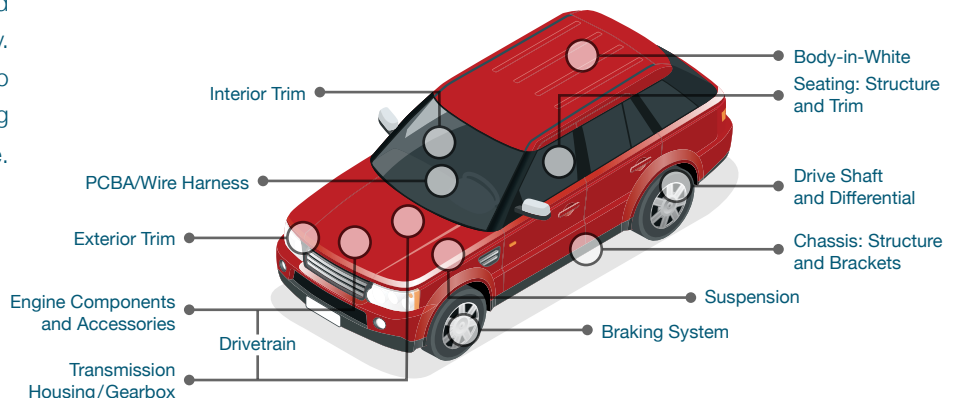
Not surprisingly, the greater impact a change has on its cost, the more radical the change typically is in terms of design. But, these kinds of changes are only viable early in the product development cycle. By generating cost assessments early, companies can drive significant and measurable cost out of their products prior to production. This helps reduce the product costs, and ultimately COGS, which improves the bottom line of the company.

aPriori, the company that pioneered the category of product cost management software, offers an enabling cost management platform that unlocks the potential for optimized design and cost by using information directly from your CAD system. The aPriori product cost management platform understands the geometry of your design and the cost ramifications of the processes that would be required to manufacture it.

Figure 3. Product cost management strategies and technologies can help protect and expand profitability if targeted and executed properly.

aPriori's automotive costing capabilities also include automatic rollup of piece cost and tooling at subassembly, assembly and full vehicle.

### aPriori Automotive Costing Capabilities



aPriori incorporates the cost of materials, labor, tooling and more to create a precise assessment of the cost to produce the part or product you are currently designing. Tooling in particular, has been known to be a big ticket item for some of the largest automotive OEMs, who spend roughly one to two billion per year on tooling alone. The ability to generate highly detailed and complete tooling cost estimates on components (for both injection molding and stamping processes) is essential to understanding the full cost of your parts and products.

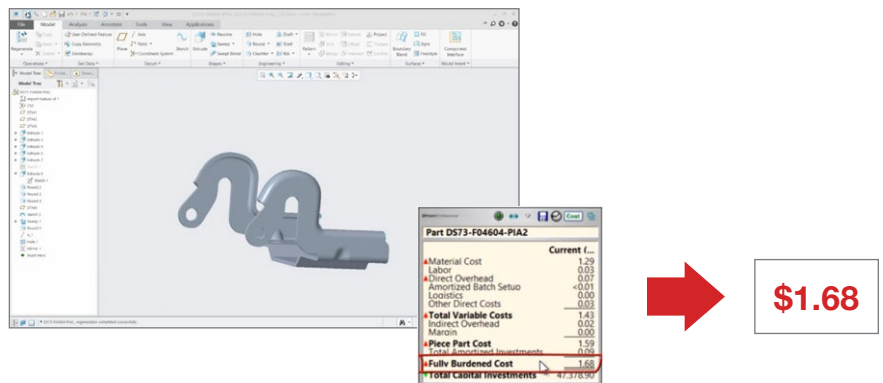
More importantly, these precise cost estimates are automatically rolled up for piece cost and tooling at subassembly, assembly, and full vehicle.

Your CAD system remains the primary data source for geometric information. aPriori, with its tight integration to CAD, evaluates the geometric cost drivers directly from your solid models. With aPriori, the days of waiting for cost estimates and quotes are gone. You always know how much your design is going to cost because you get an instant update when you make a change to that design. As a result, you can make more trade-off decisions early in the design process and drive a significant amount of the cost out of the product.

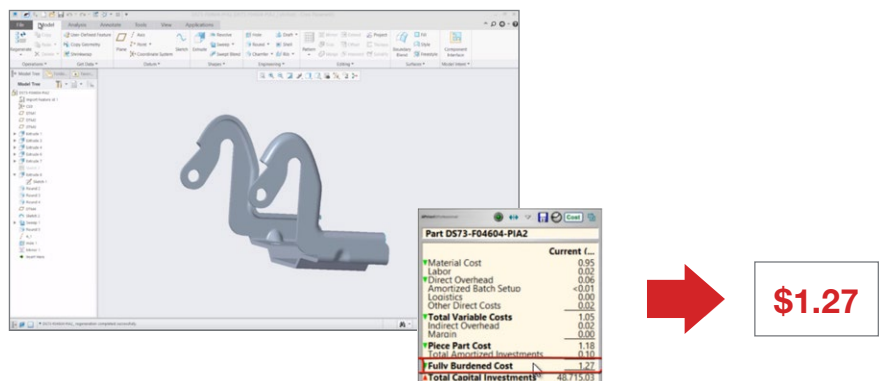
Figure 4. Drive costs out of your products earlier in the development process with real-time access to precise product costs.

## New Product Development

### Alternative #1



### Alternative #2



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On average, design engineers using aPriori are reducing the costs of the parts and products they work on by 18%, which reflects significantly on their company's profit.

While the ultimate result of having real-time access to product costs will help your company boost its profit, that same knowledge also helps your team meet its product cost-reduction goals. Equally important, making changes early on reduces the amount of re-work that will have to be done once the product launches. Routing out more cost up front means there won't be much cost left to route out on future generations. In turn, this will allow your team to focus on more timely new designs surrounding the most current automotive trends, rather than revisiting old ones.

### Summary

Today's automotive engineers are tasked with creating quality parts and products that are safe, light weight, and delivered on time. But more and more they are asked to consider the cost of the product, in order to improve the corporate bottom line. The emerging field of product cost management software pioneered by aPriori makes the cost issue palatable to engineers without compromising product quality. Rather than striving for incremental cost savings after the fact, now design engineers can affect cost savings from the start, when making a change is most cost-effective. On average, design engineers using aPriori are reducing the costs of the parts and products they work on by 18%, which reflects significantly on their company's profit.





Visit [www.apriori.com](http://www.apriori.com)  
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aPriori software and services generate hard-dollar product cost savings for discrete manufacturing organizations. Using aPriori's real-time product cost assessments, employees in sourcing, manufacturing and design engineering make more-informed decisions that drive costs out of products pre- and post-production. With aPriori, manufacturers launch products at cost targets, maximize savings in re-work projects and avoid overpaying for sourced parts.