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### Akoya: A Top-Down Approach to Should-Cost Analytics

Debbie Wilson, May 2006

*Pioneer Akoya reshapes proprietary technology from Caterpillar into an on-demand, scalable solution for the managing fabricated part costs. For more information on should-cost tools in procurement, see this month's [companion article](#).*



Brett Holland

I can only imagine the delight of finding a lustrous pearl concealed inside the rather dull and ugly oyster. That's the image that Akoya Inc., a privately held provider of 'should-cost' solutions (which is named after the common Japanese pearl oyster), hopes will come to mind when its customers successfully identify build-to-specification parts that are strong candidates for cost reduction.

Akoya, of Peoria, Illinois, was spun off from Caterpillar in November 2004 when CEO Glen Barton pushed his organization to commercialize some of the \$35 billion corporation's assets. "Before we finalized our plans to take this product to market, we ran it by several leading industry executives," said Brett Holland, Akoya's COO. "We excitedly moved forward when they agreed that our business plan had legs."



**June 28th, 2006:** Deborah Wilson Consulting, Inc. is pleased to announce that Debbie Wilson has joined Gartner as Research Director!

After seven years of running her own business, Debbie Wilson has decided to make a career change. She has joined the world's leading IT Analyst firm, Gartner, effective today. This has been a difficult decision as it means that Cool Tools for Purchasing Online will be closing down. For more information, [click here](#).

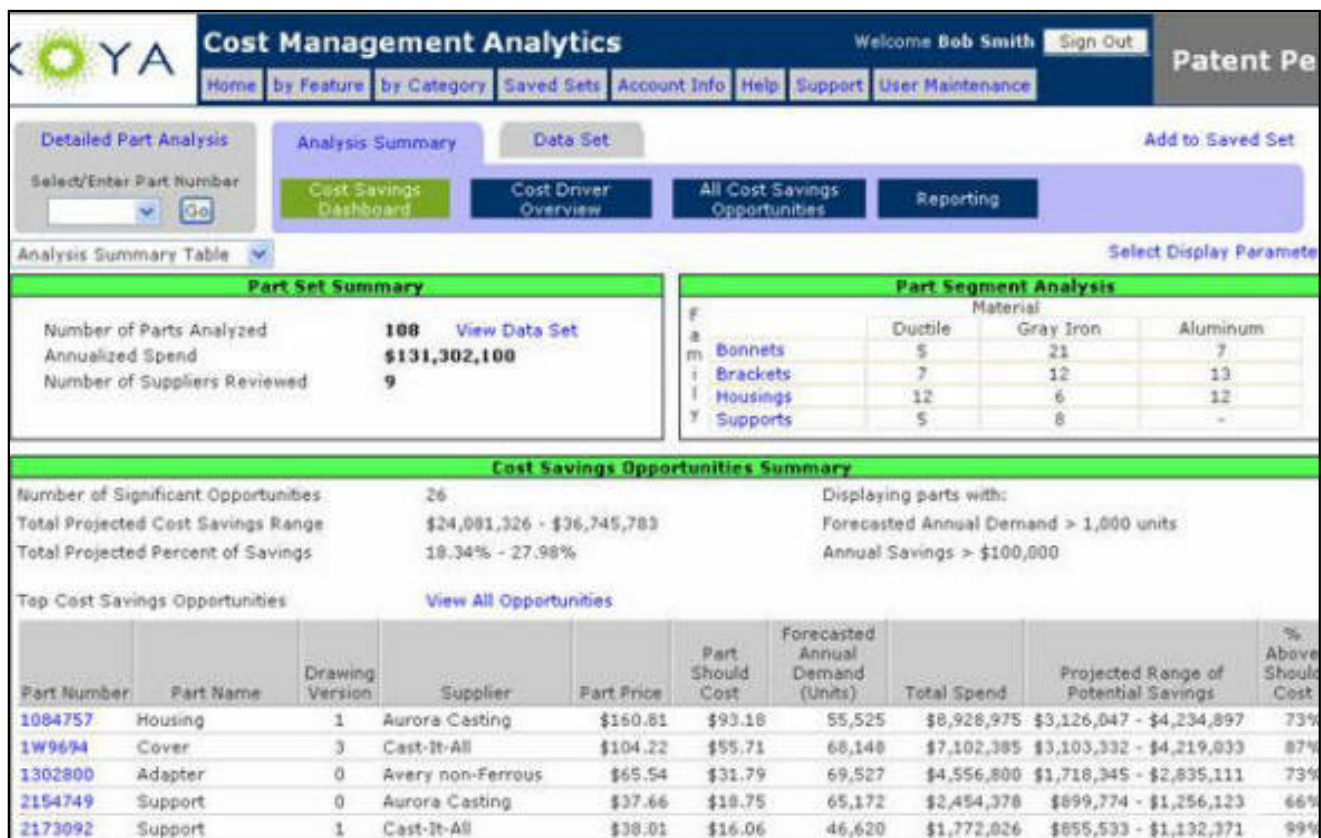
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Most should-cost solutions focus on the careful review of the materials, equipment, and processes required to fabricate a particular item or set of items. This sort of thoughtful study can often yield great results. But what do you do when you have hundreds or even thousands of candidates for cost reduction, and you don't know where to start? That is precisely the question that Akoya attempts to answer with Cost Management Analytics™, a software program that leverages regression analysis to identify part characteristics that are statistically correlated most closely with the part pricing. After creating appropriate algorithms, Akoya runs its program 'backwards,' using its models to identify those parts that diverge farthest from the expected results, or in other words, cost much more (and much less) than they theoretically should.

Akoya's solution starts with the OEM creating a database of build-to-specification parts, fleshed out with a number of part attributes such as height, volume, quantity of drilled holes, weight, material, tolerances, manufacturing requirements and finish. "This work can be done in an automated fashion with an Akoya program that pulls feature information from a variety of CAD files, including Pro/E, EGS, CATIA, AutoCAD, and AutoDesk," explained Holland. "Once we've set up the tool and validated the map, our solution can rip through 1000's of CAD files in less than an hour."

To the feature data, Akoya adds purchasing data such as the current price, current supplier, and forecasted usage for each part. These items are pulled down from the customer's ERP and procurement databases.

Once all the information is in place, the Akoya application analyzes the data, using and fine-tuning mathematical algorithms that are specific to various categories of parts. It is necessary to generate multiple models across part types because the key attributes will vary. For example, the relative influence of the type of material used may be much more critical to the cost of a fabricated metal part than to an injection-molded plastic item. The resulting model is used to establish a should-cost number for each part. Akoya can sort the results to display which items in the group are most out of line, and which offer the greatest opportunities for overall savings. (See Screenshot #1.) Viola, the customer has a strategic, prioritized list of parts that it should focus on to reduce its overall costs.



Screenshot #1

Akoya Cost Management Analytics™ solution is hosted; Holland and his team can therefore learn from what customers are uncovering. Holland strongly asserts that Akoya would never give out one customer's information to another; this knowledge is instead used to help Akoya refine its models. "Our algorithms are evolving. They will continue to improve and optimize over time," said Holland.

Akoya Cost Management Analytics™ doesn't stop with the should-cost forecast: It gleans additional intelligence from its database to arm its customers with information to tackle the projected savings. That includes detailing the tool's should-cost calculations (see Screenshot #2) for the supplier's scrutiny, as well as suggesting alternate suppliers that may be more appropriate for the particular item, when it makes sense. How does the system decipher a supplier's suitability to produce a particular item? "We essentially reverse engineer suppliers, assuming that if one is making part #123 with feature 'B,' that it has that capability," said Holland. The output is a 'fit rating:' for each part/supplier pair.

Feature	Cost Contribution	Units	Statistical Significance
<b>Cost Drivers for:</b> <span>Housings</span>			
<b>Base Cost</b>			
Base Cost	\$13.24 - \$17.17		
<b>Casting Cost</b>			
<b>Material</b>			
Aluminum	\$0.14 - \$ 0.17	per kg	★★★
<b>Part Dimensions</b>			
Height	\$0.03 - \$ 0.04	per cm	★★★
Width	\$0.031 - \$ 0.045	per cm	★
Depth	\$0.037 - \$ 0.047	per cm	
<b>Part Features</b>			
Core Volume	\$0.39 - \$0.82	per cm <sup>3</sup>	★★★
Pressure testing		per kpa	
Oil	\$0.39 - \$4.82	per kpa	★
Water	\$0.49 - \$0.92	per kpa	★
<b>Machining Costs</b>			
<b>Direct</b>			
Parting line perimeter grinding	\$0.39 - \$2.82	per cm	★
Riser Removal	\$0.49 - \$0.92	per riser	
Ports	\$1.39 - \$2.82	per port	★★
Drill holes	\$0.09 - \$0.19	per hole	★★★
Surface Area Flatness	\$0.39 - \$0.82	per cm <sup>2</sup>	★★
Machine setup cost	\$2.43 - \$2.77	per setup	
<b>Indirect</b>			
Forecasted Annual Demand	(\$1.22) - (\$1.88)	per log10 demand	★★★

Screenshot #2

What do suppliers think of this tool? According to Holland, they are proving to be much more receptive than anticipated. "One was so thrilled that it invested in our company," he said. "Others are saying that this is what American industry needs, because cost pressures are so high and the tool is not just another hammer. Akoya provides a body of pertinent information that can spark positive collaboration between manufacturers and their suppliers," added Holland.

Akoya spent most of 2005 rebuilding its software for commercial use, making it multi-tenant (able to serve multiple customers simultaneously) and increasing its scalability, according to Holland. Textron, a diversified \$10 billion manufacturer of helicopters, small planes, and industrial equipment, helped Akoya with additional fine tuning. This past September, Akoya closed on another round of venture capital to take its new product to market. The solution is now commercially available with a module for castings and additional modules for forgings, fabricated metals, and injection molded plastics in the works.

It's still very early to say whether Akoya will succeed as an independent solutions provider. But with a fresh wad of money its pocket, an interesting solution, a blue-blood pedigree, and a board of advisors that reads like a who's who of procurement, it certainly has the opportunity.



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