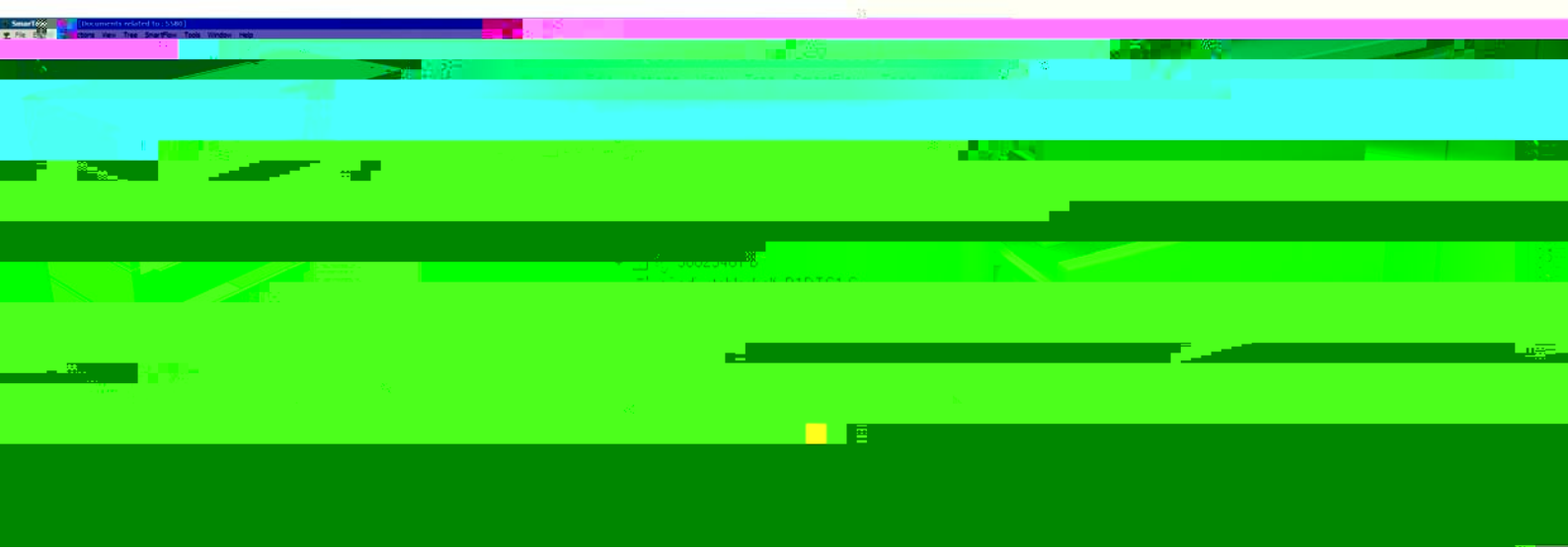
A-dec

Automating dental cabinetry (gn and production with V5 PLM and Microsoft .N

SME Microsoft



A-dec Objectives

- ***Eliminate production-system limits on manufacturing capacity***
- ***Reduce errors by eliminating data re-entry at key transitions***
- ***Improve customer service by reinstating custom order capability***
- ***Capture "tribal knowledge" to improve accuracy and process control***

"With V5 PLM, the constraint on our production capacity is gone."

Wes Snyder, Furniture Engineering Manager, A-dec

Company Overview

A-dec, a privately held company founded more than 40 years ago near Portland, Oregon, has developed into one of the world's largest producers of dental equipment, with annual sales of more than $250 million. The dental furniture division accounts for approximately 20 percent of sales, manufactures more than 17,000 parts per week, and is the North America market leader.

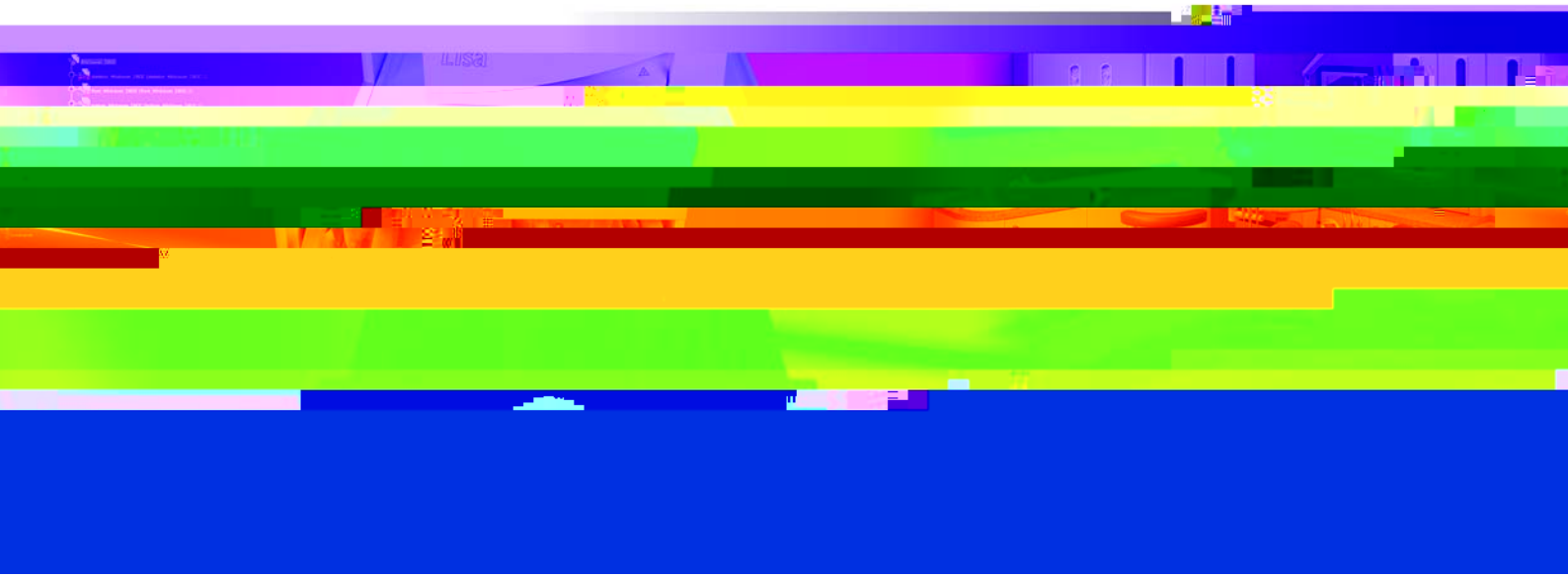
A-dec's primary focus is creating equipment innovations that help dentists operate in healthier, more efficient environments. A-dec owns a number of industry patents. Quality and defect-free craftsmanship are the company's hallmarks.

Business Challenges

When A-dec introduced a greatly expanded catalog of standard-order cabinetry in 2000, orders skyrocketed. Unfortunately, the additional volume was beyond the limits of the company's production system, and orders quickly outstripped capacity.

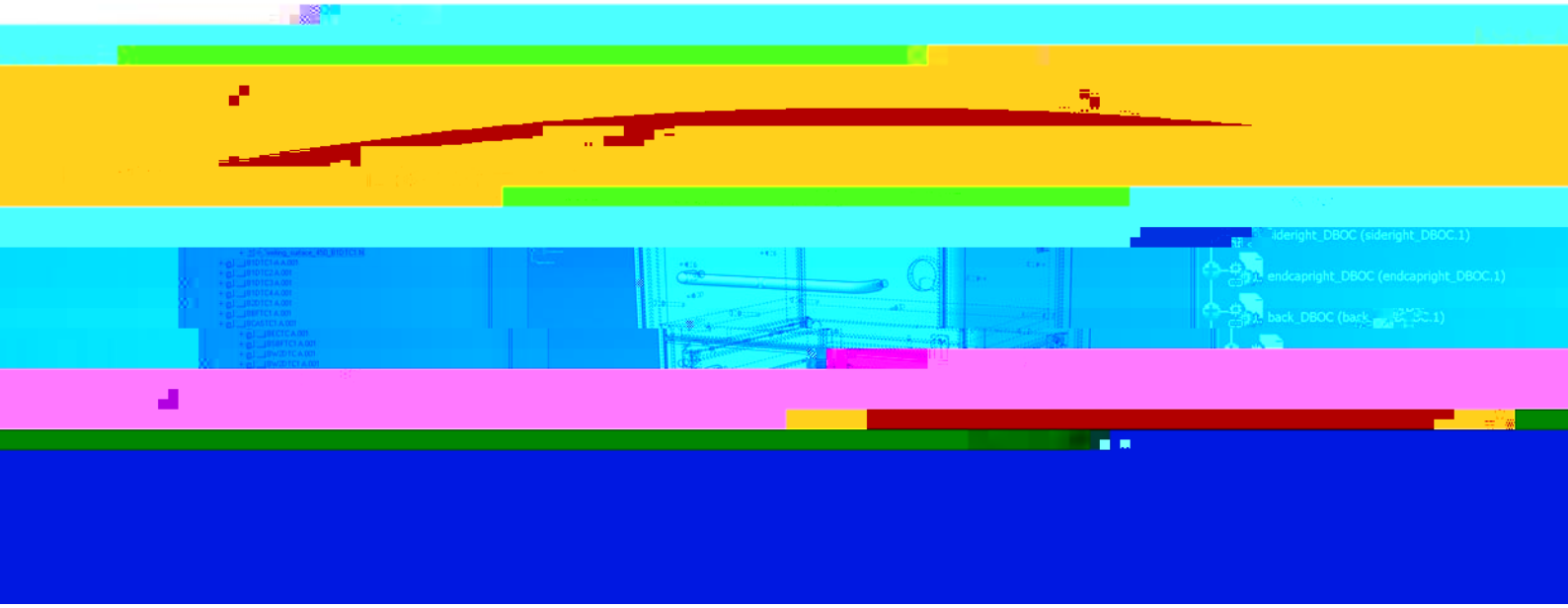
Designs created on 2D and 3D CAD systems were entered into the production system by programmers, not designers. Multiple rounds of physical prototypes were needed just to locate and eliminate the coding errors before production could begin. And as the order volume grew, the system began introducing errors of its own.

The product capacity limits of the legacy system caused A-dec to turn away requests for custom designs and new product offerings. To avoid disappointing its customers, A-dec needed a new approach – a system that could automate growing volumes of routine orders from design to production, giving designers more time to spend on custom orders and new product development.



Solution

When A-dec began looking for a new production system, it initially focused on solutions specific to the cabinetry industry, but then expanded the search to include knowledge-based 3D modeling solutions. A-dec narrowed the field to three competitors and ran full pilots to evaluate the finalists against A-dec's 34 requirements and 21 wants. V5 PLM from Dassault Systèmes, including CATIA V5 for 3D modeling and ENOVIA SmarTeam for data management, was the clear winner. The close links between V5 PLM and Microsoft technologies, including SmarTeam's use of SQL server and the ability to use the Microsoft .NET framework to provide system integration, offered additional value.



"3D XML took us all of about 30 minutes to set up. And Microsoft Sharepoint allows us to provide the visibility of 3D XML to anyone in the organization."

Chris Etzel, Staff Manufacturing Engineer, A-dec

CATIA V5 links design and manufacturing in one environment

CATIA V5's ability to integrate the design and manufacturing environment within a single platform was a key differentiator. "If the other systems offered parametric rules they were part of a different system, but they were built into CATIA," Snyder says. "CATIA V5 features parametric design capabilities driven by Knowledgeware, which allows A-dec to store its standard assemblies as design templates. When a customer's order is processed, CATIA V5 and an in-house control application automatically configure the templates to the right size, shape and color."

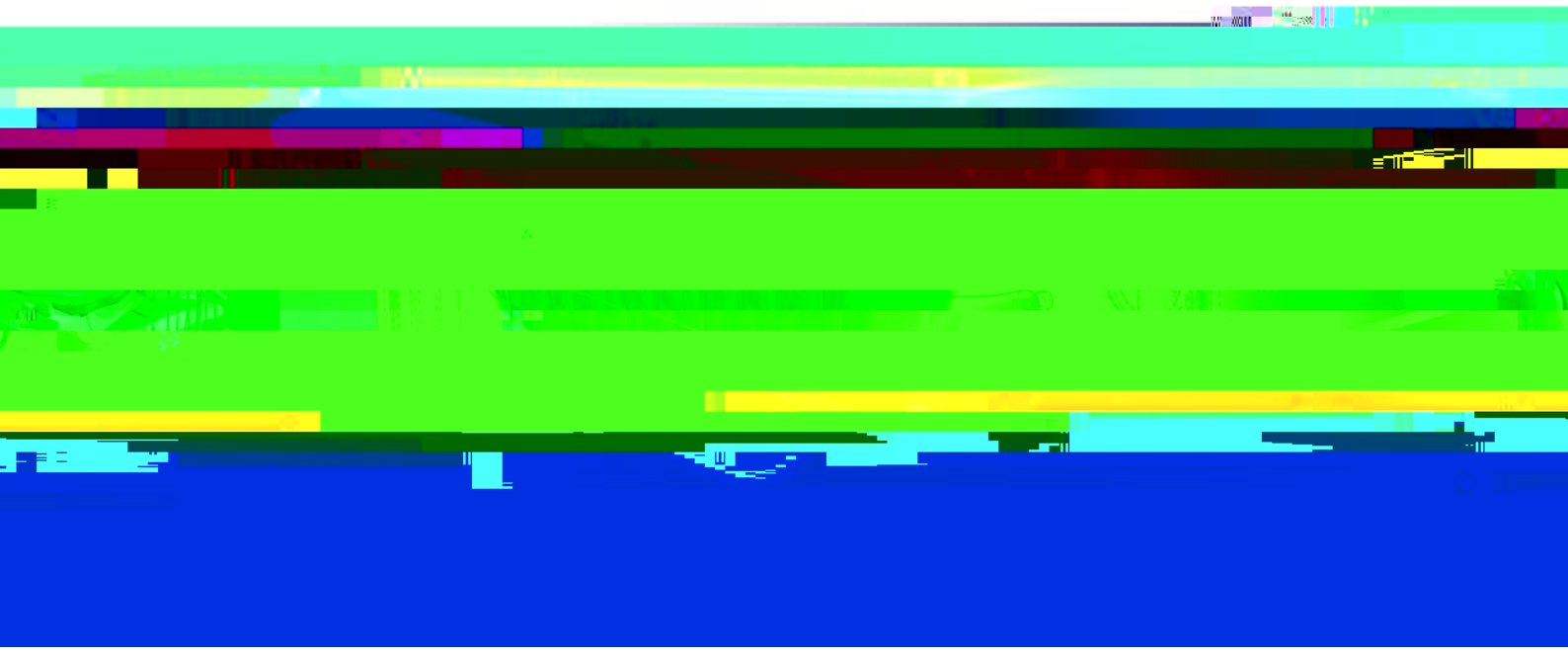
CATIA V5 generates the numerical control (NC) instructions to manufacture the components, outputting them to A-dec's milling and routing machinery directly from the 3D model. This eliminates data re-keying and its inherent potential for error.

"Designing the whole product in 3D and being able to see the results of what we were doing was another major differentiator," says Staff Manufacturing Engineer Chris Etzel. "CATIA V5 lets us see the product virtually in 3D, eliminating the multiple rounds of prototypes we needed to find the errors. Now we're virtually paperless."

ENOVIA SmarTeam and SQL Server manage the intelligence behind the process

ENOVIA SmarTeam, based on the Microsoft SQL Server™ database, serves as the data engine. It manages the intelligence behind the parametric modeling capabilities as well as the history of CATIA V5 designs. A Microsoft SQL Server database designed by A-dec stores the results of every project for future reference. "The ability to store design history, work in process and production data is the real power of the system," Etzel says.

A custom control application receives information from A-dec's order configurator, which resides in A-dec's ERP system and integrates with ENOVIA SmarTeam to relay information to CATIA V5. The control application then opens the appropriate



product models in CATIA V5, adjusts the parameters, and outputs the NC routing and milling instructions to Manufacturing. The result is a fully automated system that takes an order from the sales entry to the shop floor without human intervention, removing the limits on A-dec's production capacity and freeing its designers to focus on custom orders.

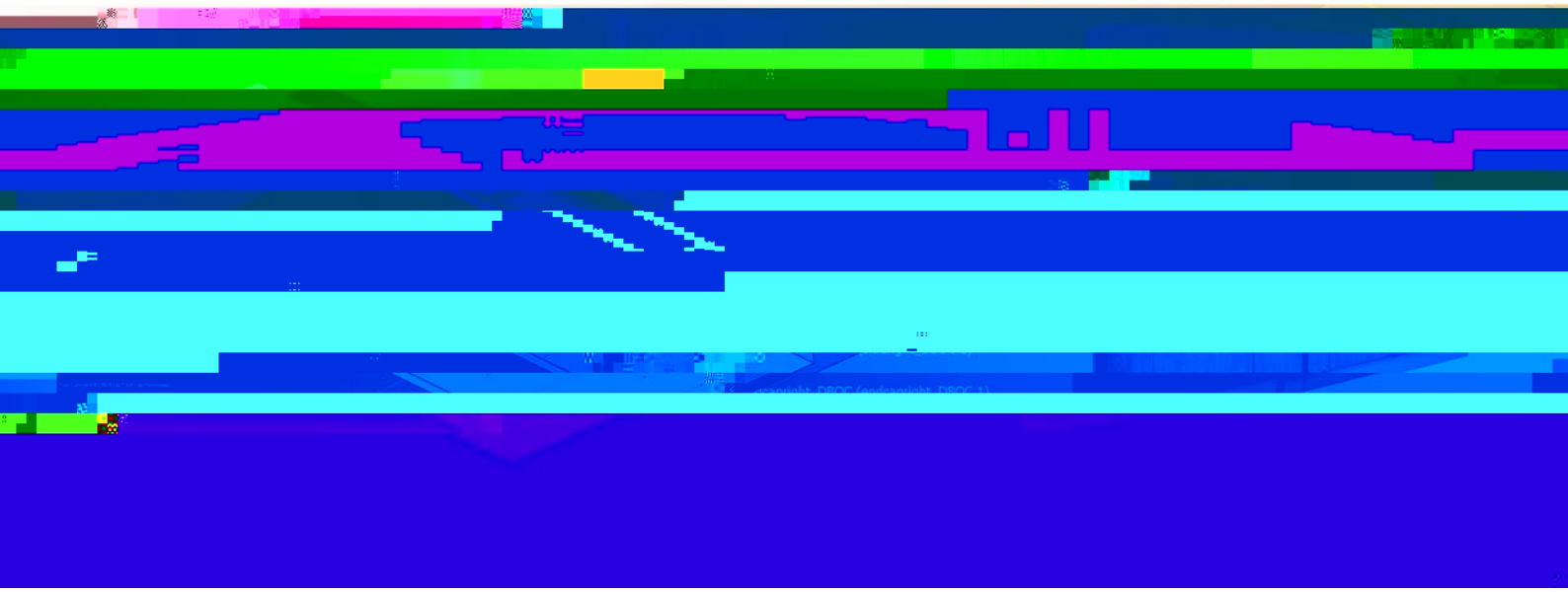
3D XML provides easy-to-use view of data with boost from Microsoft Sharepoint

3D XML allows Manufacturing engineers and assembly workers to resolve questions by viewing CATIA designs in 3D on the shop floor. As an intuitive viewing tool similar to an Internet browser, 3D XML requires virtually no training. "It's pretty quick for them to walk over, pull up the 3D XML, and get visual verification of what they're building," Etzel says. "It took us all of about 90 minutes to set up."

A-dec uses Microsoft SharePoint to make 3D XML viewing available to any authorized A-dec employee, regardless of whether they have access to a CATIA-enabled desktop. "It makes delivering information easy and lets us display it for each user exactly the way they need to see it," Etzel says.

Microsoft .NET simplifies maintenance of integrated applications

The control application that moves between the ERP system and CATIA V5 is built on the Microsoft .NET framework. The framework supported modular design based on standard interfaces, making it easier to update software packages. "Microsoft .NET makes it painless," Urwiller says. "We've



Results

Production capacity limits eliminated with no delivery impacts

“In the past, our capacity was limited to what our software could handle and to how many production planners we had working,” Etzel says. “V5 PLM allows us to do more with less. On a purely theoretical basis, our capacity is now infinite.” What’s more, the system went into production over a span of six months with no affect on product delivery or quality. “It was invisible to our customers,” Etzel says.

Physical prototypes for design “checking” reduced

Since data is never translated or re-entered, the errors that once made multiple physical prototypes necessary have been dramatically reduced. “Now, instead of building prototypes, designers sit in front of a CATIA screen making sure the design template configures and fits together properly,” Etzel says. “That is much faster and less expensive than repetitive prototyping.”

Fully automated manufacturing code generation

“In the past, every job on the floor required some intervention by our NC programmers,” Snyder says. “This has been eliminated by building the NC output into the models parametrically.”

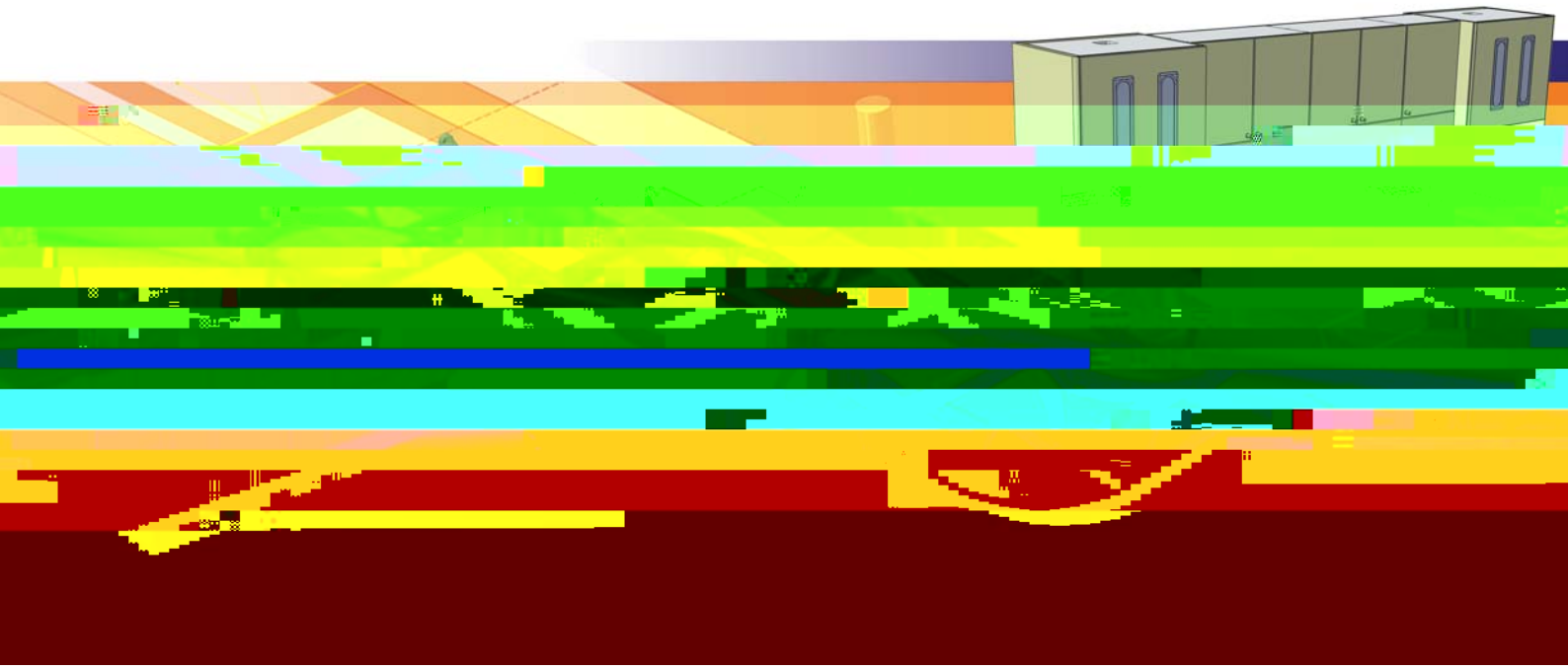
Greater capacity to accommodate special orders

Special orders are back on the menu since A-dec adopted V5 PLM. “We’re in a relatively small industry and we sell through dealerships that also sell products from other manufacturers, so we like to offer what our customers ask for,” Snyder says.

Increased design innovation to expand product line

Now that its product capacity limits have been eliminated, A-dec has the ability to develop new product offerings. A-dec also has significantly more designers who know how to use the system; hiring is simpler because CATIA V5 is so widely used.

Corporate knowledge capture



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