

# PRIME

"3D printers are going to provide manufacturers with a new kind of design freedom"

**Kimberly Knickle, IDC**



MICROSOFT TECHNOLOGY IN DISCRETE AND PROCESS MANUFACTURING

AUTUMN 2014



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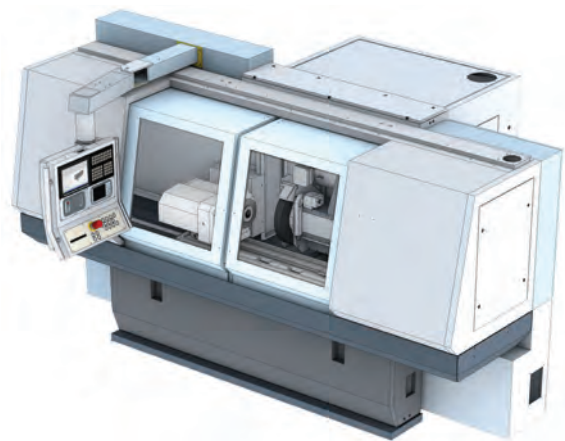
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# Welcome

Autumn 2014

## Collaborate to innovate

Welcome to the Autumn 2014 issue of *Prime*. As you'll hear from some of the world's leading industry thought leaders in this edition, the way we manufacture products and do business with each other is changing dramatically. Innovation to production cycles are getting shorter, yet at the same time products continue to grow in complexity.

As we explore the possibilities that the likes of the internet of things and 3D printing will bring to the manufacturing industry, we must not forget that it is how we collaborate and share information with each other across the supply chain that will ensure that the right decisions are made. By achieving truly connected systems, companies can ensure that the vast streams of data they have to deal with today are taken advantage of effectively and that the right information gets into the right workers' hands. So no matter how complex products get, companies know that their products will continue to be manufactured to the highest possible standard, in the most cost-efficient way and meet their customers' growing expectations.

I hope you enjoy the issue.



Çağlayan Arkan  
General Manager, Worldwide Manufacturing and Resources  
Microsoft

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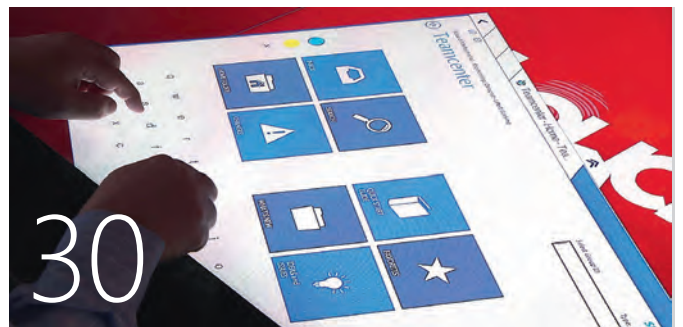


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3D printing has the potential to change the face of manufacturing as we know it, says IDC's Kimberly Knickle



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# PRIME

Issue 38, Autumn 2014



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# Marketwatch

The latest news in discrete and process manufacturing

## Strategy

# Microsoft debuts mobile-first, cloud-first strategy at WPC

Satya Nadella highlights Microsoft's aim to become a platform and productivity company



WPC 2014 was attended by more than 16,000 people

**Bold changes are coming to Microsoft to help it build productivity experiences and platforms for the mobile-first, cloud-first world, according to the company's CEO Satya Nadella.**

In his keynote address at the annual Worldwide Partner Conference (WPC) in Washington DC, US, Nadella explained that Microsoft will build on former CEO Steve Ballmer's 'devices and services' approach to become "the company and the ecosystem that is going to reinvent productivity for this new generation."

"While the devices and services description was helpful in starting our transformation, we now need to hone in on our unique strategy," said Nadella. "At our core, Microsoft is the productivity

"Microsoft is the productivity and platform company for the mobile-first and cloud-first world"

---

Satya Nadella

Microsoft

and platform company for the mobile-first and cloud-first world. We will reinvent productivity to empower every person and every organisation on the planet to do more and achieve more."

Over the next few months, Microsoft will streamline its operational structure, enabling it to focus on developing its cloud operating system (OS) and productivity solutions, as well as its devices OS and hardware products.

"Mobility for us goes beyond just devices and while we're certainly focused on building great phones and tablets, we think of mobility more expansively," said Nadella in the Microsoft Earnings Release FY14 Q4 conference call. "We think of the opportunity that comes from running our



# Hasco selects Siemens' Teamcenter for digital PLM

Chinese automotive components supplier Huaya Automotive Systems (Hasco) has selected Siemens PLM Software's Teamcenter solution as its digital product lifecycle management (PLM) platform.

The software, which leverages SQL Server and Sharepoint technology, will help Hasco enhance design innovation, improve production efficiency and streamline supply chain management.

"Siemens is a leading global provider of PLM solutions and has extensive experience in the automotive industry with impressive achievements in digital manufacturing," said Xun Yizhong, vice general manager of Hasco. "We are delighted to be working with Siemens to implement an integrated digital PLM platform and learn more about industry best practices from a global market standpoint to assist us in building our own R&D system and platform for automotive components. We hope this partnership will pave the way for Hasco's transformation and future development, further increasing our competitive edge on a global level."

As one of China's leading automotive components suppliers, it is hoped that Hasco's

partnership with Siemens PLM Software will help both companies contribute to the development of the larger automotive industry in the country.

"China is one of the fastest growing countries in the world and one of the most important regions we serve," said Chuck Grindstaff, president and chief executive officer of Siemens PLM Software. "The rapid development of the automotive industry in China is well recognised and extremely exciting. We are very proud to partner with Hasco and to share our global experience within the automotive industry, helping automotive manufacturers grow into world leading companies with strong R&D capabilities."

"As a strong pillar for the economy in China, we are committed to helping this industry create value through the effective use of PLM software applications and IT management," added Leo Liang, vice president and managing director, Siemens PLM Software Greater China. "With our vast resources, we will help Hasco build its own R&D system and platform for the automotive components industry in China and help them grow into a technology leader in automotive excellence."

productivity experiences – on Windows, iOS and Android devices. Office 365 and Dynamics software-as-a-service offerings are targeted here. We also see great opportunity in simplifying and managing the user experiences spanning multiple devices, ecosystems with our identity management, device management and data security."

To achieve its aims, the company will continue to evolve popular productivity products such as Skype, OneDrive, OneNote, Outlook, Word, Excel, PowerPoint, Bing and Dynamics, while the cloud OS will remain at the centre of all of its product offerings. The company will also continue to build its own hardware.

To align with the strategy, Microsoft's new unified phone business unit – formed of Microsoft's Smart Devices Group and the Nokia Devices and Services unit it acquired in April 2014 – will focus on driving Windows Phone volume across various markets. The unit will target the affordable smartphone markets with Lumia devices and intends to deliver new lower-cost Lumia devices by shifting select future Nokia X designs and products to Windows Phone devices.

"In everything we do with our Windows OS and first-party devices, we will light up our digital work and life experiences," said Nadella during the earnings call. "We are approaching the Windows OS business with a bold, challenger mindset and pushing both the product and business model forward. We're not in hardware for hardware's sake and the first-party device portfolio will be aligned to our strategic direction as a productivity and platform company."



Siemens PLM Software president and CEO Chuck Grindstaff with the Hasco executive team

## New Veeam Management Pack v7 extends Microsoft functionality

Microsoft partner Veeam Software has released version 7 of its Management Pack (MP) for System Center, which adds Microsoft Hyper-V support.

The solution now provides full app-to-metal visibility within Microsoft System Center for both the Hyper-V and VMware vSphere layers to proactively monitor and alert IT of issues before they affect operations. Veeam has also introduced the full-featured Enterprise Plus and the Enterprise edition to meet the different IT management needs and budgets of System Center users.

“By fully integrating Microsoft Hyper-V with Veeam MP v7 we now provide the rapidly growing Hyper-V user base with the same powerful management and monitoring tools that vSphere administrators have long enjoyed,” said Ratmir Timashev, president and CEO of Veeam. “This includes complete visibility of their critical virtual systems, risk mitigation, and proactive monitoring of Hyper-V from Microsoft’s System Center Operations Manager console.”

Veeam MP v7 extends System Center Operations Manager’s features to deliver complete visibility of virtual and physical infrastructures and their dependencies.

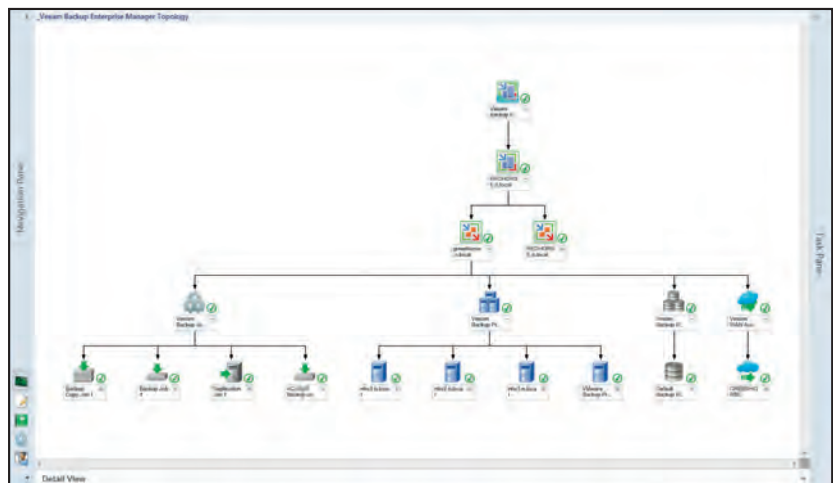
New features in Veeam MP v7 include real-time Hyper-V performance metrics which gives Hyper-V administrators detailed real-time insight into what is happening in their environment. Veeam Task Manager for Hyper-V displays real-time memory CPU consumption for the host and each associated VM.

Veeam MP v7 analyses on-premises virtual workloads and recommends the appropriate Microsoft Azure or VMware vCloud Hybrid Service resources so that IT can efficiently plan and budget for a hybrid cloud strategy.

vSphere host security profile reporting provides IT with visibility into vSphere security settings for firewalls and services.

And enhanced Veeam MP deployment automation reduces the time and effort needed to deploy Veeam MP to support the largest VMware environments by automatically deploying collection components.

### What’s new in version 7?



Veeam Management Pack (MP) v7 for System Center provides app-to-metal visibility of VMware vSphere, Microsoft Hyper-V and Veeam Backup & Replication environments. The latest version of Veeam Management Pack adds innovative new management features including:

- Support for Hyper-V, with the same functionality that Veeam MP has for vSphere
- In-context dashboards and a unique customizable widget library
- Capacity planning for hybrid cloud environments
- Host Security Profile reporting for vSphere
- Auto-deployment of Veeam Collectors for vSphere
- Veeam Task Manager for Hyper-V – real-time Hyper-V Host and VM metrics
- Monitoring and reporting for Veeam Backup & Replication for Hyper-V.

“We are pleased to see Veeam support System Center with the Veeam Management Pack v7,” said Chris Van Wesep, director of product marketing for cloud and enterprise at Microsoft. “With this latest release, Veeam Management Pack builds on Microsoft System Center’s unified approach to management for virtual and physical infrastructure across on-premises and service provider environments.”

Two licensing options are now offered with Veeam MP v7 – the Enterprise Plus edition and Enterprise edition. The Enterprise Plus edition provides full features for strategic

visibility of the app-to-metal stack and analysis tools needed for critical decision-making, planning, optimisation and right-sizing dynamic virtual environments. Current Veeam MP v6.5 customers with active maintenance can upgrade to Enterprise Plus edition free of charge.

The Enterprise edition is designed to handle tactical management tasks and includes monitoring and alert management, report templates, and sophisticated dashboards, along with a subset of the management features offered in previous versions of Veeam MP.



# Accenture works with Fiat-Chrysler on connected vehicles

Accenture is working with the Fiat-Chrysler Group to develop a new range of connected services for its Uconnect systems in Europe, Middle East and Africa region.

Powered by Windows Embedded Automotive, Uconnect systems are integrated into Fiat-Chrysler Group's vehicles and provides drivers with communication, entertainment and navigation features that allow them to focus on driving.

"Accenture and Fiat-Chrysler Group are jointly designing, building and managing the technology operations, the mobile platform, that will deliver the next generation of connected services for Fiat-Chrysler Group Uconnect systems in Europe," said Luca Mentuccia, global senior managing director, Accenture.

The implementation will use the Accenture Connected Vehicle Business Service, which provides onboard and connectivity solutions, a telematics platform and data integration, and end-to-end services to companies in the automotive industry.



The new technology will help drivers focus on driving

According to Mentuccia, the Accenture Connected Vehicle Business Service can "help automakers deliver the on-board and back-end systems necessary to create connected vehicles, as well as provide the integration with content providers, real-time vehicle diagnostic data and overall program management."

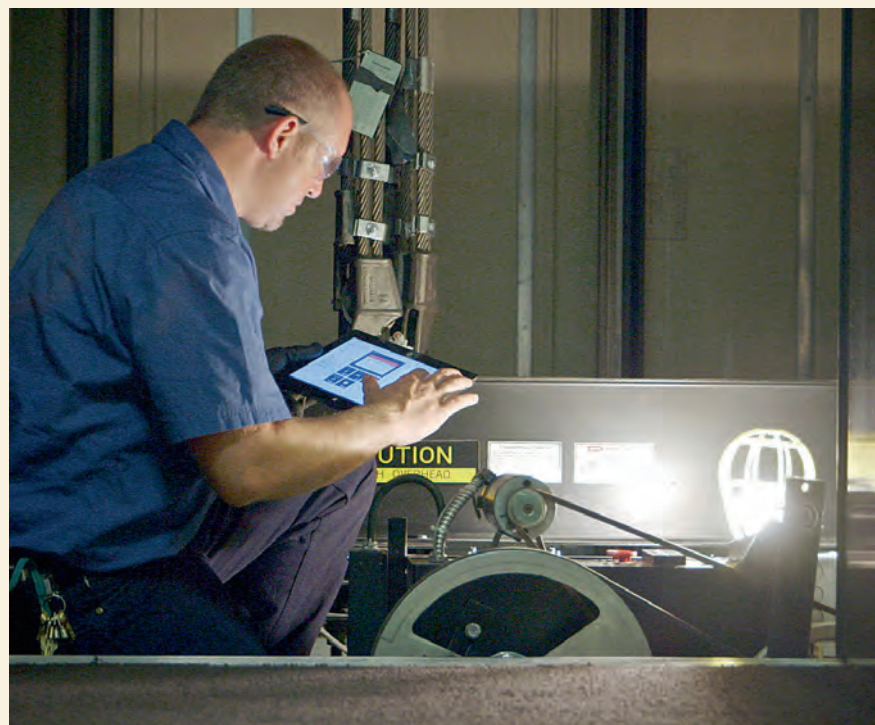
# ThyssenKrupp Elevator capitalises on the IoT

ThyssenKrupp Elevator, a leading elevator manufacturers, is using the internet of things to connect its elevators to the cloud, gather data from its sensors and systems, and transform that data into valuable business intelligence to make significant improvements to its operations.

ThyssenKrupp teamed up with Microsoft and CGI to create a connected line-of-business asset monitoring system that brings together the technologies of Microsoft's IoT platform.

CGI developed a solution that connects the thousands of sensors and systems that monitor elevator elements such as motor temperature, shaft alignment and door functioning. The systems also connects the data the elevators gather and the devices used by the company's technicians to the cloud using Microsoft Azure Intelligent Systems Service.

The company is now able to use the Intelligent Systems Service to capture vital data, transmit it to the cloud and combine it into a single dashboard. The solution also provides ThyssenKrupp's technicians with instant diagnostic capabilities thanks to Power BI for Office 365.



ThyssenKrupp's elevators carry as many as 3.5 million people annually

# Marketwatch

The latest news in discrete and process manufacturing

## Product launch

# Dell releases new data production bundle

Dell Software has released a new data production bundle providing customers with access to the company's full back-up and recovery software portfolio.

The Dell Backup & Disaster Recovery Suite includes AppAssure, NetVault Backup and vRanger, and delivers three variations of critical enterprise virtualisation back-up software in a single package. This helps customers create a resilient application environment across physical, virtual or cloud infrastructures.

The new suite enables customers to better align backup technologies with business needs by mixing and matching data protection technologies to quickly and easily create custom solutions, helping improve business resilience.

"When it comes to back up and recovery, customers are all too often forced to choose between overpaying or under protecting," said Brett Roscoe, executive director of product development, data protection, Dell Software. "Dell is eliminating this need to compromise. The Dell Backup & Disaster

Recovery Suite gives customers the flexibility to leverage our entire portfolio of backup software solutions by way of a single, capacity-based licensing model."

Users are able to classify the criticality of data and applications, and use specific products within the suite that best matches the recovery requirements needed.

Collectively, AppAssure, NetVault Backup and vRanger provides customers with a broad range of end-to-end backup and recovery capabilities in a single suite.

AppAssure helps customers back up entire applications and data in minutes and restore in seconds across physical, virtual and cloud environments.

NetVault Backup delivers enterprise-grade protection across platforms, while vRanger delivers scalable, agentless protection for both VMware and Microsoft Hyper-V.

"We continue to innovate and develop new capabilities and solutions, and with this announcement, we are assuring customers they'll have access to all of Dell industry leading backup capabilities," added Roscoe.

## Product features

**Versatile access:** Get what you need when your business needs it, at no extra cost for additional components. Whether your needs best fit the capabilities of AppAssure, NetVault Backup, or vRanger, you have complete access to them all.

**Flexibility based on priorities:** Classify your data and applications by criticality, RPO/RTO parameters or duration of storage, then use the product in the suite that best matches your classification.

**Scalable protection:** Protect thousands of VMs via agentless technology, active block mapping, compression and deduplication.

**High availability assurance:** Rely on capabilities such as 288 snapshots/day, virtual standby, and Live Recovery.

**Fast recovery:** Ensure that critical workloads are restored in minutes, not hours. Optimized storage use: Reduce your data storage footprint by up to 90% using NetVault SmartDisk with vRanger.

# GE brings industrial internet to its customers

GE Intelligent Platforms has upgraded its core automation software products to bring the power of the industrial internet to its manufacturing customers.

"The industrial internet is all about access to information," said Matthew Wells, GE Intelligent Platforms' general manager for automation software. "Access to accurate, timely production and process data is critical and that is what these solutions deliver. We leverage the latest technologies and listen to the needs of our customers to make the industrial internet real for them and their businesses."

Upgrades to GE's Proficy Mobile software solution include Proficy Mobile Tasks, which allows operators and technicians to view workflows and develop a dynamic task list with interactive, step-by-step instructions to drive plant operations. Integrated with GE's SCADA systems, Mobile Tasks provides all operators with real-time data about upcoming issues, enabling them to respond more quickly and mitigate risks before they occur. In addition to reducing downtime, this helps to increase operational efficiency and ensures regulatory compliance.



Operators and technicians can view workflows and develop a dynamic task list

GE has also updated its Proficy HMI/SCADA – CIMPLICITY platform, which monitors and controls every aspect of a company's SCADA environment. Version 9.0 features improved configuration capabilities, richer protocols, a new object library and an improved operator experience.

## Acquisition

# Dassault Systèmes acquires Quintiq

Dassault Systèmes has reached an agreement to acquire Quintiq, a provider of on-premise and on-cloud supply chain and operations planning and optimisation software.

250 customers at 1,000 sites in more than 90 countries use Quintiq's production, logistics and workforce planning applications and solutions.

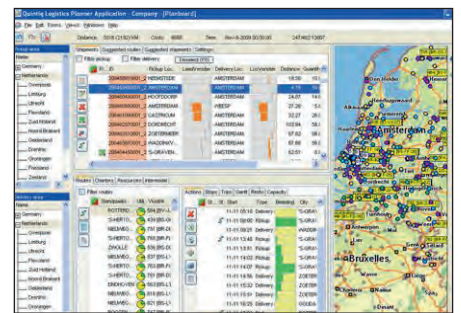
The acquisition extends Dassault Systèmes' 3DEXPERIENCE platform into business operations planning and will expand the company's DELMIA brand, adding the new product line of operations planning and optimisation to the existing ones of digital manufacturing and manufacturing operations management.

"3DEXPERIENCE is about the entire breadth of a business, beyond design, engineering and production," said Bernard Charles, president

and CEO at Dassault Systèmes. "With today's acquisition, thanks to Quintiq's highly talented team, we expand our capacity to provide a strategic business experience platform to our customers. 3DEXPERIENCE provides our customers a comprehensive environment to model, simulate and optimise their business, from strategic goals to the delivery of memorable experiences."

Quintiq's optimisation technology takes a platform approach and covers both long-term strategic and day-of-operation planning. The company's solutions and applications have been deployed in a range of industries, including metals, mining, oil and gas, rail, delivery and freight.

"The Quintiq team is excited and proud to join Dassault Systèmes," said Victor Allis, co-founder and CEO of Quintiq. "Quintiq brings record-breaking



decision support and optimisation technology to the most complex global business planning challenges. Now, in combination with Dassault Systèmes' leadership in the experience economy, we will bring our customers new levels of innovation, operational efficiency and performance."



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## Product update

# Aras Innovator enabled on SQL Server 2014

Aras has revealed that its Innovator platform and solution suite is now enabled on Microsoft SQL Server 2014.

The enterprise product lifecycle management (PLM) software company will leverage SQL Server 2014 to deliver a new level of enterprise PLM scalability for data centre, cloud and hybrid deployments.

“As global companies extend their PLM backbone through the organisation and across the supply chain, performance at scale becomes critical for effective collaboration,” said Robert Parker, group vice president at IDC. “Enabling Aras on SQL Server 2014 should provide the scalability necessary to compete for implementations that require global access for large numbers of users.”

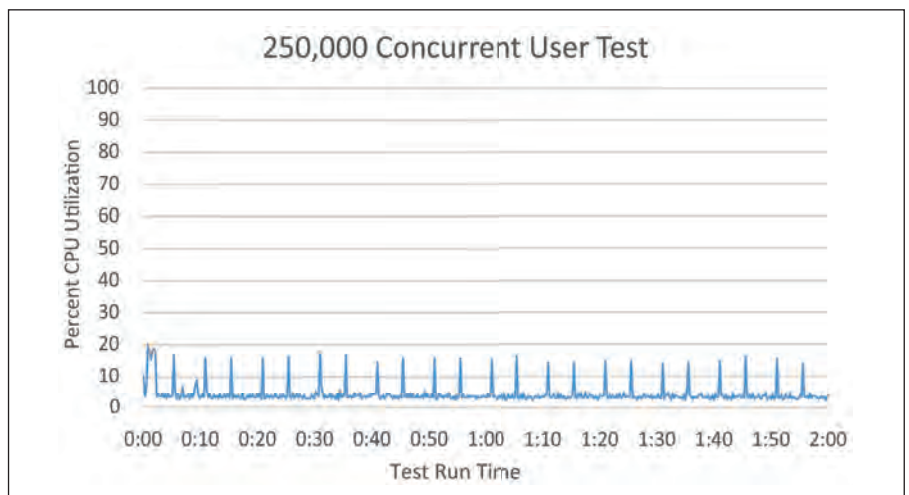
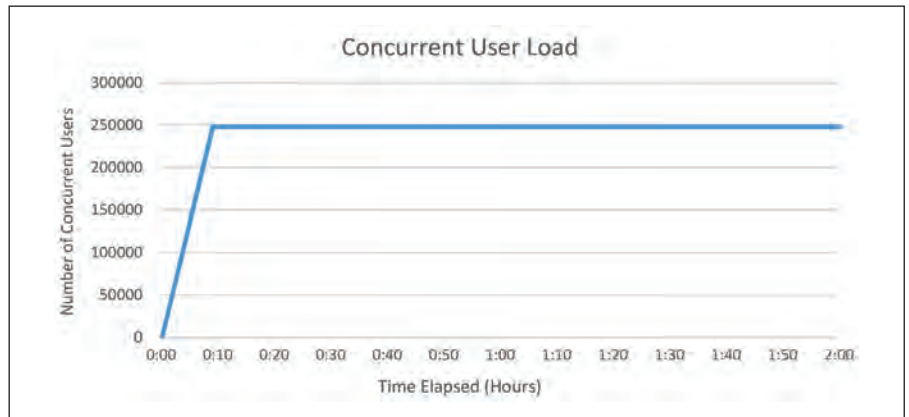
SQL Server 2014 Enterprise Edition has introduced a range of performance and scalability enhancements into the database engine, enabling greater support for demanding workloads and big data.

In-memory OLTP and buffer pool extension to SSD provide new levels of performance for mission-critical applications such as enterprise PLM. Other improvements include greater processing, memory capacity, and increased partition support.

Aras also recently unveiled the results of independent testing carried out by Logic 20/20 for the scalability of Aras Innovator 10 running on Microsoft SQL Server 2014 Enterprise Edition.

The results validate optimal performance and resource utilisation for a million named users with 250,000 concurrent users. This represents the largest testing conducted to date in the enterprise PLM industry.

“Testing validates that Aras Innovator 10 on SQL Server 2014 Enterprise Edition can handle an extremely high number of concurrent users and data when running on standard server configurations,” said Anders Westby, director of Cloud Services and Testing at Logic 20/20. “During testing the average response times were very fast, and no hardware bottlenecks were observed during any of the tests. Under the heaviest load average CPU utilisation was generally below 10% and was never higher than 20%.”



Logic 20/20's test results validate optimal performance and resource utilisation for a million users

Tests were conducted on Aras Innovator 10 running SQL Server 2014 Enterprise Edition with standard Microsoft recommended settings and best practices. Tests were also carried out on the HP ProLiant DL980G7 server alongside two HP ioDrive2 Duo IO accelerators.

“The world’s largest manufacturers are telling us that they need better PLM performance than they have been able to obtain from the other PLM systems,” said Peter Schroer, President of Aras. “With these tests we’ve publicly demonstrated a new high water mark in PLM scalability that the legacy software architectures have never been able to achieve.”

## Conclusions from Logic 20/20's tests:

- Aras Innovator 10 can scale to 1,000,000 named users and 250,000 concurrent users with fast and consistent performance
- During testing average CPU utilisation was consistently below 10% and was never higher than 20%
- Aras Innovator 10 running on SQL Server 2014 Enterprise Edition scales nearly linearly with hardware upgrades and is architected for a very high numbers of concurrent users.

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## It's time to transform

Manufacturing companies have a unique opportunity to seize the technology of today and transform the shop floor landscape, says Dell's Jay Monahan and Mike Gauthier

**Today's manufacturers have the world at their feet. The sheer amount of technology out there is immense, providing a universe of opportunities when it comes to transforming the shop floor.**

Unfortunately, however, many manufacturers are at a loss as to how to move forward from their current IT environment. It's common practice for them to have a vast number of disparate software solutions, resulting in inefficient manual processes, costly integrations and limited access to real time information.

But it doesn't have to be this way. Manufacturing Execution System (MES) systems have matured based on years of business process knowledge, across multiple industries. As industry requirements changed, software and hardware packages have adopted new technologies to provide flexible and sustainable solutions.

Indeed, today's software and hardware solution landscape provides a solid, robust toolbox of solutions, applicable to both small and medium size business, up to and including fortune 500 companies. With competitive price points and rapid deployments, technical solutions are now available to address common business problems that were once thought cost prohibitive.

Connectivity is king, and software and hardware solutions are no longer constrained by interoperability concerns, based on platform and software dependencies. Being able to see information in real time, via integrated work flow publishing information to mobile devices, can make a huge difference to the lives of every worker on the shop floor. At Dell we're working on achieving this for many different organisations in every manufacturing sector.



**New technologies can create a more efficient shop floor**

Recognising that there's no single solution that fits all, we take the time necessary to understand our customers' needs and then build wrappers around different systems so that everything interoperates. Using Microsoft technology helps enormously with this as the whole stack – from Office and SharePoint, through to business intelligence, customer relationship management and enterprise resource planning – is built to work together. Microsoft's communication platform enables tools such as SAP Manufacturing Integration and Intelligence tool (MII) to easily extract shop floor data and quickly integrate and display through Microsoft 365, providing access to real time manufacturing data.

Devices are now internet ready, pre-configured and interchangeable – the new standard for the industry is really how it applies to the internet of things mindset. With this in mind, we're focused on creating a shop floor strategy that will equip workers with everything they need.

Overall, technology made simple is great technology. Today's users demand the same positive user experiences contained on their cell phone as they do in their business. Paper- or spreadsheet-based processes are no longer deemed acceptable, as users challenge standard business processes.

Industry examples are varied, but customers can truly build anything with Dell Services to meet their current business demands. From enabling plant maintenance staff to view and record real time work orders on tablet devices, to empowering robust shop floor systems, empowering operators and supervisors to make proactive vs. reactive decisions. Companies are now able to tap the creative spirit of their employees to solve problems otherwise ignored with paper based processes.

*Mike Gauthier is practice lead for Microsoft Dynamics AX and Jay Monahan is global shop floor practice lead for SAP at Dell IT Consulting Services*



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The power to do more

# High definition collaboration in manufacturing

Jan Larsson explains the importance of enabling effective collaboration by creating intuitive user experiences that bring together the latest technological developments

**The best decisions are made when everyone can easily collaborate, share and engage with all the other stakeholders, and gain access to all the relevant data they need, in a way that makes sense to them.**

In all of the processes a company goes through to produce a product, thousands of decisions must be made, from the start to finish of the product's lifecycle. The faster these decisions are made, the faster each process is completed. And the more accurate these decisions are, the fewer the problems that occur downstream.

Fast, accurate decision-making is no easy feat, given all of the information that must be considered and the number of people involved. Information is usually spread throughout the company, its supply base, its joint-venture partners and its customers.

Up to this stage, product lifecycle management (PLM) has done a good job of helping people collaborate more (as long as they know who best to collaborate with), leverage information effectively (assuming they can find it), make complex product decisions (if they understand the context within the system) and make those decisions within time constraints (whether they're optimal or not).

But in an environment of increasing complexity, PLM needs to rise to the challenge and address these shortfalls. This is the objective of high definition product lifecycle management (HD-PLM). One of the core pillars of this approach is centred on the need to collaborate, and the technologies and trends that are shaping this.

Traditionally, design and development meetings have consisted of large amounts of paper, a projector and single presenter trying

to gather requirements, feedback, updates and comments from everyone else in the room. Once the meeting ended, the leader would then try to collate all this information and set about making the required alterations, and then commit those for testing before starting the process all over again.

But we live in an increasingly high-definition, touch-focused world. The ongoing evolution of smartphones and tablets has had a massive impact on application design, which now requires a visual and interactive approach.

Even modern desktop operating systems are incorporating touch into their layout and design. Similarly, advancements in multi-touch are being used to create new applications for engaging and collaborating.

When it comes to product design, we can harness these developments to enable more immersive and naturally collaborative platforms.

By scrapping the paper and projector approach, and opting for large-format touch-screen interfaces, companies can create a dynamic, immersive environment that enables much more effective collaboration.

This approach also means that everyone can get hands-on with the design process. By removing the single 'gatekeeper' it becomes possible to engage in parallel collaboration as designs can be passed from one person to another, suggestions inputted in real time, and then any changes can be viewed and discussed.

Taking this a step further – beyond just point, click and view – modern systems are powerful enough to render and even simulate, test and analyse suggested changes and ideas in real time.

So, in the first instance we have a laborious and manual process where one person

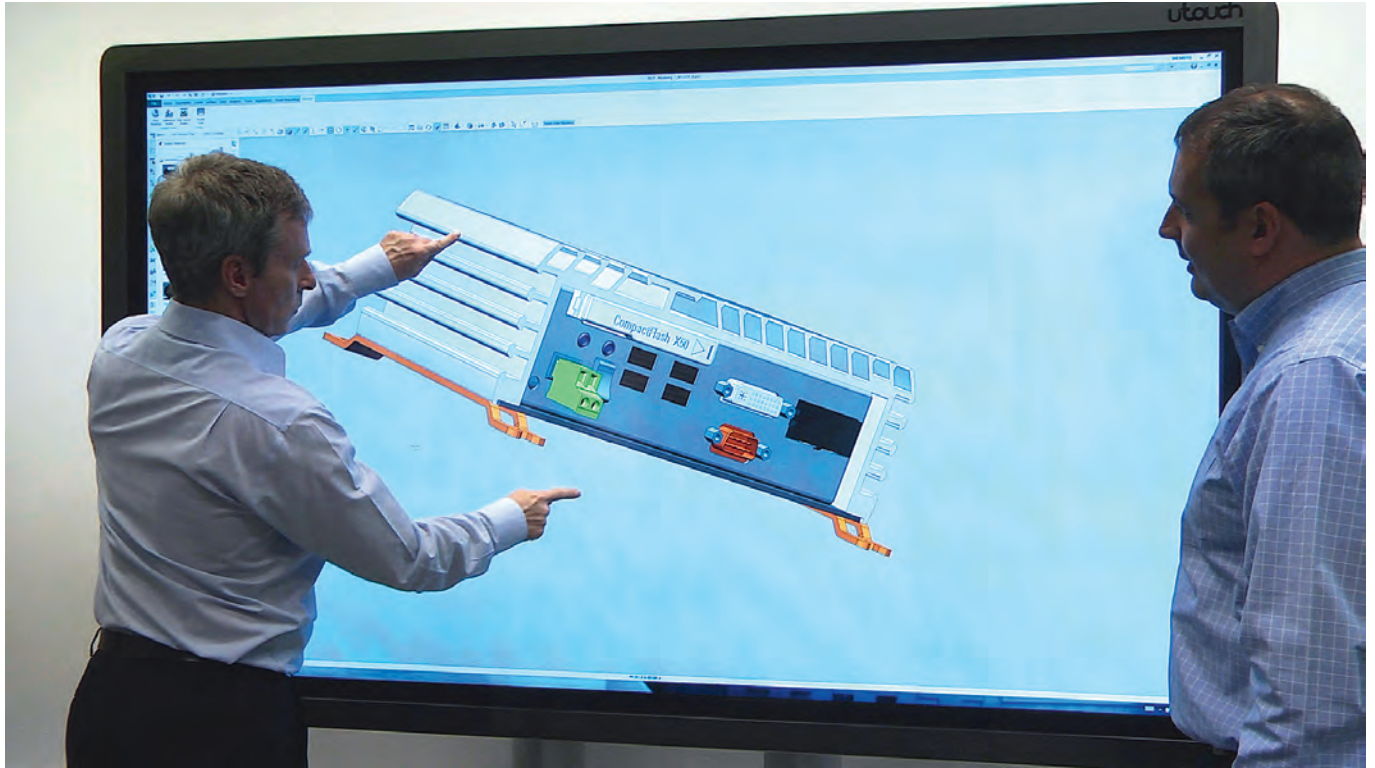


“We live in an increasingly high-definition, touch-focused world”

Jan Larsson

Siemens PLM Software





**Large-format touchscreen interfaces enable much more effective collaboration**

showcases a design on a projector and collects different types of feedback from a range of people. They then go back to their desk to incorporate that information into the design and test the results before starting the cycle again.

In the second case, we have all the relevant people gathered around a dynamic and responsive interface, where ideas can be bandied about, evaluated and tested, all in real time. The impact of this is magnified when every stakeholder can engage via the interface and context that makes the most sense to them.

Of course, different users interact with information differently. For some users, 3D product geometry is how they need to view information. Others prefer a spreadsheet view or perhaps graphs and charts. What 'intuitive' means depends on the person and the task being performed. To present information intuitively, it must be in the right format, the right context and at the right level of granularity.

But even within the context of in-room collaboration, a large-format multi-window display means every attendee can participate in the way

that makes the most sense to his or her role. Furthermore, when disparate business systems are tightly integrated as part of the platform, changes on one side can be immediately reflected in the other elements. For instance, updating one part on the CAD design can automatically feed through to the bill of materials and the enterprise resource planning system.

As a result, every person involved in the decision-making process can be engaged and their input immediately viewed, discussed and tested. This effectively makes it possible to capture the thought processes through which decisions are made and encapsulate them as best practice.

There are now more people who need to access PLM data and the audience for the software that creates and uses this data is expanding throughout the enterprise. These workers need to be able to search for things that are of interest to them, look at different configurations of the product, and do it all in a very intuitive user experience.

Collaboration is the key to how any successful, modern business should operate.

Having the right infrastructure is required to enable people to access and share information easily and effectively.

For manufacturers, PLM is the backbone that enables this collaboration, but it's only truly effective when it taps into the changing way we engage. In today's environment, this includes making data more visual, intuitive and touch focused.

Each of these elements already exists. We have high-definition displays, touch screens and collaboration tools, as well as the PLM framework for product design, testing and sharing. It's when we can combine these that we start to see a new level of intelligence emerge.

Once this can be integrated with other systems within the business and delivered in such a way as to enable parallel collaboration and deeper analysis, so the business can reap the rewards of faster and more agile product development.

*Jan Larsson is senior marketing director EMEA of Product Engineering Software at Siemens PLM Software*



# Is your PLM future-proof?

Peter Schroer discusses the options available to companies that need to modernise their PLM system to keep up with evolving business requirements

**New innovations in materials science, electronics and software mean that everything from missiles and motors to smartphones and stents are far more complicated than they were just few years ago.**

New product development, manufacturing and supply chain processes have never moved faster or been more complex than they are right now. Factor in the internet of things, big data and 3D printing/on-demand customisation and you quickly realise that complexity and the rate of change are increasing every day.

To be successful moving forward, IDC says that companies need a flexible, scalable and resilient product innovation platform that can handle today's complexity and adapt quickly to address tomorrow's accelerating pace of change.

"As global companies extend their product lifecycle management (PLM) backbone through the organisation and across the supply chain, performance at scale becomes critical for effective collaboration," says Robert Parker, group vice president at IDC.

If your current PLM/product data management system is not able to scale to manage today's requirements or change fast enough to keep up with the evolving demands of your business, then continuing with the status quo puts you at risk in terms of innovation, time to market, product cost and more. In short, you simply cannot be competitive if your technology is holding you back.

Instead of piecemeal PLM systems that rely on a myriad of different legacy technologies and only address part of the problem, you need a single, modern PLM platform that has the flexibility to change at the speed of business:

- To manage the complexity that comes with designing the next generation of aircraft, electronics and life sciences technologies
- Assure global regulatory compliance and protect critical intellectual property
- Deliver performance when tens of thousands of suppliers are working in the system at the same time
- Guarantee upgrades no matter how much you customise to support your processes
- Allow you to take advantage of the latest technologies.

There are far too many companies out there who have invested millions of dollars in a system that only gives them a fraction of what they need. Most of these companies think they are locked in to these systems and the limited functionality they offer because ripping them out and replacing them is not an option.

I'm here to tell you that you don't have to start over. It's not all or nothing. You have options.

Using today's powerful, light weight technologies you can:

- Complement and extend your existing system. Keep what works and federate to securely add new functionality without the rip and replace method required in the past
- Replatform incrementally as needed. Modernise specific divisions, select sites or individual product lines now and then move on to other areas, retiring outdated systems over time on your schedule and as your business permits.

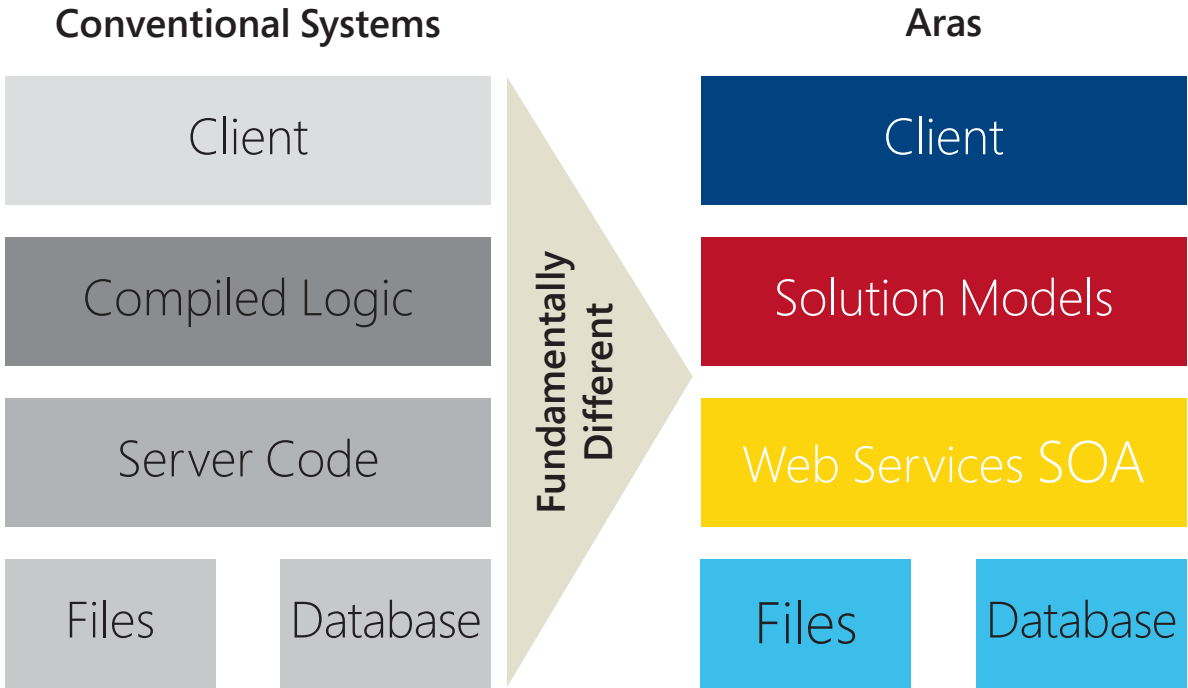
Together with Microsoft, Aras is enabling processes that continually adapt and scale to make big data accessible and understandable. Our solutions are designed to be highly



"There are far too many companies out there who have invested millions of dollars in a system that only gives them a fraction of what they need"

Peter Schroer

Aras



**Aras combines a web services SOA with solution models enabling graphical drag and drop real-time changes without complex programming. Technology separation enables quick and easy upgrades without impacting customisations**

scalable and resilient so you can customise our full suite of solutions and we keep you current with guaranteed upgrades no matter how much you customise. And you can always take advantage of the latest Microsoft technologies to gain new capabilities and competitive advantage, and transform your global product development operations to drive innovation.

The future is coming fast. You need a future-proof PLM platform that can support the needs you have today and can handle the challenges you'll have tomorrow, whatever they may be.

*Peter Schroer is the CEO and founder of Aras. He can be reached at [pschroer@aras.com](mailto:pschroer@aras.com)*

For more information, please visit [www.aras.com/resilient](http://www.aras.com/resilient)

## Reasons to upgrade your IT

Ripping and replacing or even upgrading IT is a big decision for any business to make, but sticking with what you know and choosing to stay with legacy IT can end up causing significant issues in the long term. Consider this. In the next five years will you:

- Go through an acquisition or merger?
- Change or add an ERP system, CAD or other?
- Add more sites to your network?
- Add new functionality, departments and workflows to your PLM system?
- Make mobile a reality?
- Enable cloud capabilities?
- Change or modify your vault file storage?
- Add, modify or update infrastructure hardware?

If you're planning to go ahead with any of these changes, it's important to consider whether your current PLM system can handle it.

# Why intelligent systems need MBSE

Cross-discipline cooperation and full contextual awareness leads to more efficient product development processes and effective decision-making, says Roman Dumitrescu

**New product and process innovations are increasingly reliant on the close interaction between various disciplines, such as mechanics, electronics and software engineering. Advances around IT and mechanical engineering are driving this change, creating a new generation of products that offer more intelligent and resilient functions, have dynamically networked subsystems and offer greater usability.**

These intelligent systems form the basis for a number of innovations that are often also collectively referred to as Industry 4.0. With more functionality and the ability to connect with other products and production systems, these innovations open up many new prospects for businesses and offer a multitude of benefits for users, but at the same time pose huge development challenges.

Industrial laundries, for instance, need to work quickly and economically to keep up with changing market and competitive conditions. Long-term savings on resources such as energy, detergent and water are essential. Currently, industrial laundry machines are set up individually and independently with all functions and controls focused on the user experience. Until now, there has been no systematic, mathematical analysis of optimum machine settings, nor have there been any approaches that take a holistic view of the laundry system as a whole. New modelling and simulation paradigms are necessary to identify sub-optimal conditions at an early stage in cross-system process planning, control and monitoring, and allow for targeted optimisation. The intelligent industrial laundry machine is just one example of an intelligent system which is

being developed within the Cluster Intelligent Technical Systems OstWestfalenLippe – an alliance of 174 businesses, universities and other partners known as ‘it’s OWL’ for short. The cluster is an Industry 4.0 pioneer and has won an award in the Leading Edge Cluster Competition run by the German Federal Ministry of Education and Research.

Established design methodologies for mechanical engineering as well as other disciplines do not meet the new product development challenges posed by intelligent systems on their own. Current methodologies and tools make it difficult for engineers that are involved in the process (all of which may have different disciplines) to work together effectively. This makes every process unnecessarily long and inefficient, and can lead to costly changes. Therefore, instead of carrying out problem solving across each of the singular disciplines, workers need to be able to access a common system, which enables cross-domain cooperation with a holistic view.

The results of the 2013 survey *Systems Engineering in Industrial Practice* by Heinz Nixdorf Institut, Fraunhofer-Projectgroup Entwurfstechnik Mechatronik and Unity, show that organisations already recognise these challenges in the product engineering process and they see “growing interdisciplinarity as the most challenging aspect in product engineering.”

Model-based systems engineering (MBSE) – which by definition is the formalised application of modelling to support system requirements, design, analysis, verification and validation activities beginning in the conceptual design phase and continuing throughout development and later lifecycle

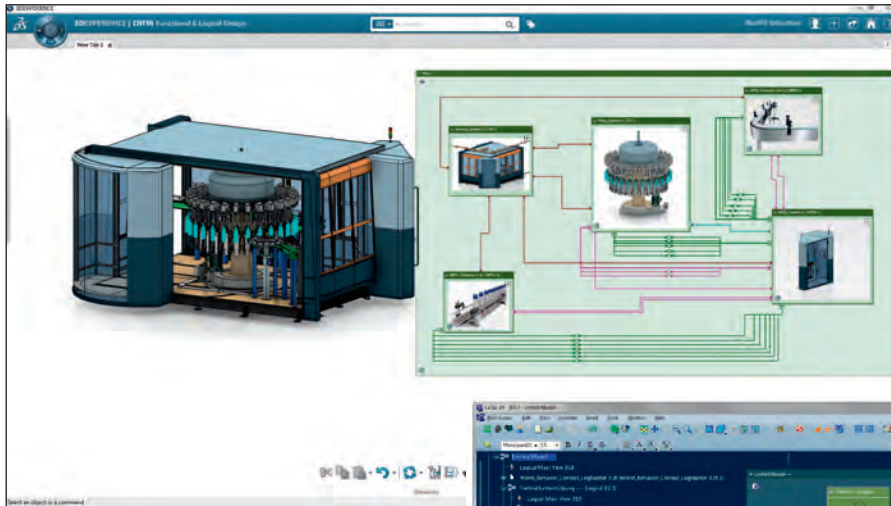


“Workers need to be able to access a common system, which enables cross-domain cooperation with a holistic view”

Roman Dumitrescu

it's OWL



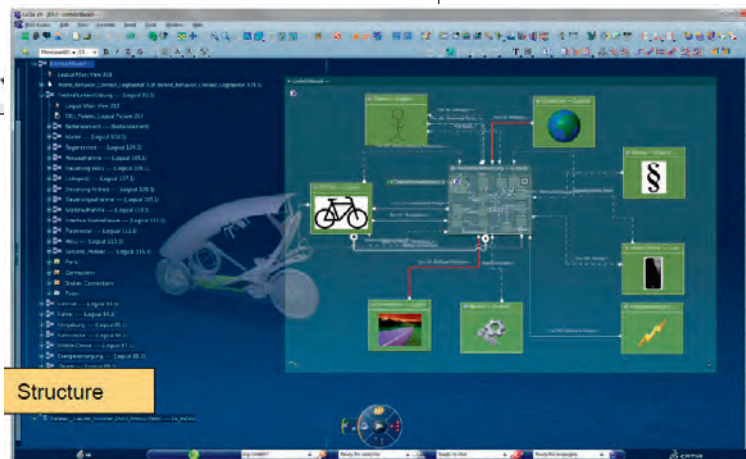


The objective of MBSE is to include the product's key requirements in the full system specification, right from the beginning

phases – is becoming increasingly important in the development of complex, intelligent systems. The objective is to create a superior system model that includes the product's key requirements as well as the full system specification. This means that anybody involved at any stage of product design and development has a common understanding and knows what is required of them.

This method is already well known and commonly used in the field of architecture, where a model of a building based on construction drawings is used to establish a common understanding between all stakeholders involved in the process, including the architects, civil engineers and building owners. MBSE goes far beyond this and provides different views of the system besides the design. So although 3D-CAD models remain an important and necessary part of the product development process, modern mechanical engineering requires even more information.

Despite the clear benefits of such an approach, many organisations do admit that they haven't yet sufficiently mastered MBSE. In many instances, the product engineering process is still too document-centred – the majority of information is provided in rigid development documents that are not changed once they have been created. This means that any updates aren't properly documented and, therefore, changes are not transparent or automatically communicated.



Interest in MBSE is, however, on the rise. The automotive sector, in particular, as well as the aviation and aerospace industries, are becoming increasingly reliant on MBSE-tools. In these fields, the system models also serve as a medium for coordinating with the management and sales teams as well as clients.

But still, there is no comprehensive application for MBSE. Instead, individual initiatives exist and this is mostly down to concerns around functional security and quality. In addition, small and medium-sized enterprises lack incentives to implement such methods and tools into their development processes. If their products are still characterised by mechanical parts, the benefits of MBSE are not so apparent. But as soon as they start to integrate intelligent mechatronic features into their products, then they will need to change their approach.

The aviation and aerospace industries were pioneers in the use of 3D CAD. They had complex products to develop and could see the benefits of creating 3D model prototypes. Large

organisations within the automotive sector were the next to introduce 3D CAD to improve their engineering processes. Today, these methods and tools have matured to a point where they can be used even in small companies. All signs point to the fact that a similar breakthrough will happen with MBSE in the next few years. Alongside the German research organisation Fraunhofer Society, it's OWL is committed to working closely with local companies and Dassault Systèmes as a leader in this field to ensure companies realise the full benefits of MBSE.

*Roman Dumitrescu is managing director of strategy and R&D at it's OWL. He is also head of the Systems Engineering Department at Fraunhofer Project Group Mechatronic Systems Design.*

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# Bernard Charlès

The **'experience economy'** is changing everything about the way we do business, says Bernard Charlès. Rebecca Lambert spoke with the inspiring CEO of Dassault Systèmes to find out more

**In his own words, Bernard Charlès is "obsessed with 3D." When he took the helm at Dassault Systèmes in 1995, Charlès worked with his friend Alan Mulally – the recently-retired CEO of Ford – on the first-ever digitally designed plane. The pair used Dassault Systèmes' CATIA 3D design software to create the Boeing 777. At the time, he says that many thought they were crazy, but they did it. Nearly 20 years on and Dassault Systèmes is entirely devoted to its position as a '3DEXPERIENCE Company', with Charlès' passion, energy and vision underpinning the organisation's strong culture of innovation.**

The day before we spoke, Charlès had delivered a keynote address to around 1,000 attendees at the company's first global 3DEXPERIENCE Partner Forum in Paris. He was sharing his excitement about the 'experience economy'. "We've reached a very special moment in time, not least because the economy is moving away from being product- and services-centric towards being experience-centric," he explains. "Consumers and businesses are now looking at the value of the user experience versus the value of the product or service itself. This is profound. It is challenging the way that innovation works."

It is this shift that led Dassault Systèmes and its partners to position themselves as new enablers to help companies change the way they innovate. "Across each world of the economy – whether you design, produce, sell or promote – there is a

different set of transformations happening, driven in particular by technological advances," says Charlès. "We at Dassault Systèmes have created an innovation platform for companies and people to take advantage of. And now we're working with our partners to deliver a new engagement experience to help our clients succeed."

When Dassault Systèmes made the announcement in 2012 that it planned to evolve into a '3DEXPERIENCE Company' over the coming decade, Charlès admits that a lot of what he said they wanted to achieve was aspirational. "We wanted to create a new ecosystem with all the elements in place to make our 3D vision a reality, but we knew we weren't ready yet; we knew it would take time," he says. But their pace of change has surprised even Charlès himself. "Two years later and I would not have thought in my wildest dreams that we would have customers implementing industry solutions such as MyStore, PerfectShelf and MyCollection. I am amazed with the progress we've made!"

From Audi to BNP Paribas to celio\*, businesses across multiple industries worldwide are choosing to put their trust in Dassault Systèmes to deliver truly amazing customer experiences. "In London, you can go to Audi City – the world's first digital interactive car showroom – and every virtual thing you see in that showroom is powered by Dassault Systèmes software," says Charlès. "And we could not have predicted in 2012, for example, that we would be announcing an innovation programme with BNP Paribas Securities Services to enhance its product management

and accelerate product development using Dassault Systèmes software."

At the heart of the company's success is the 3DEXPERIENCE Platform – "technology that's different from CAD, CAM and other traditional application portfolios that have dominated the market until now," according to Charlès. Available on premise and in public or private clouds, the platform combines 3D modelling, simulation and information intelligence applications to enable companies to build differentiating 3D experiences in a highly collaborative manner.

Launched in February 2014, the latest version, Release 2014x, is proving that the platform has already reached a level of maturity required to power the most complex designs and operations. "Today, an architect or designer anywhere in the world can use a Surface Pro 3 to do all their designs online, in the cloud, using Dassault Systèmes software," says Charlès. "A manufacturer can create a virtual 3D model of a plane and a retailer can digitally plan an entire store layout – it's truly phenomenal what people can accomplish using our technology."

Anyone keeping an eye on industry news would struggle to miss the raft of acquisition announcements that Dassault Systèmes has made in recent months – Exalead, Netvibes, Apriso, Accelrys, Realtime Technology – the list goes on. The company has also just bought Quintiq, a supply chain and operations planning and optimisation software provider, for €250 million.



“We, at Dassault Systèmes have created an innovative platform enabling companies to harmonise product, nature and life”

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“The acquisitions and developments we have made and are continuing to make are game changers,” says Charlès. Besides enriching the company’s product offering, Dassault Systèmes’ acquisitions are also enabling it to diversify and move into industries and solution areas it previously wouldn’t have served. GEOVIA, for example, which is built around the Gemcom acquisition announced back in April 2012, is aimed primarily at the mining industry. “I wouldn’t say that we’ve purposefully tried to expand our portfolio,” adds Charlès. “What we have done though is to look at the world in a different way, and that has taken us on a new path.”

He explains – without a hint of arrogance – that nobody else in the industry is doing

what his company is doing at present. “This is because we have made the bet that the world is going to be different,” he says.

“Everything we do supports our new school of thought, which is that everything should be seen through the eyes of usage in the age of experience.”

When asked where he believes the industry is heading, Charlès is convinced that cloud and mobile are game changers. “I think the real beauty of the cloud is going to be appreciated when you see the powerful apps you can run on it,” he says. “We can use the cloud to develop apps that have richer capabilities than ever before, and they can be offered at a price point that was previously unachievable. And then there are the social user experiences we have today, where you

can share anything you want – whether it be a 3D design of your home, office, or an entire manufacturing process. No matter where you are in the world, you can click on a link, type in a password and there it is! This is where the economic and social impact of the cloud and mobility is coming.”

And, like IT, which is moving towards a service- rather than a product-centric model, Charlès believes the future of manufacturing is heading the same way too. “The future is manufacturing as a service,” he says. “The logistics of the world are going to change, not just thanks to 3D printing, but also the internet of things. It is about providing manufactured products that are assembled at home or where you consume them. Welcome to the new world!”



# Aiming high

Lindsay James finds out how aircraft and industrial engine manufacturer ITP is relying on Siemens PLM Software solutions to meet its goal of doubling sales to reach a turnover of €1 billion by 2015

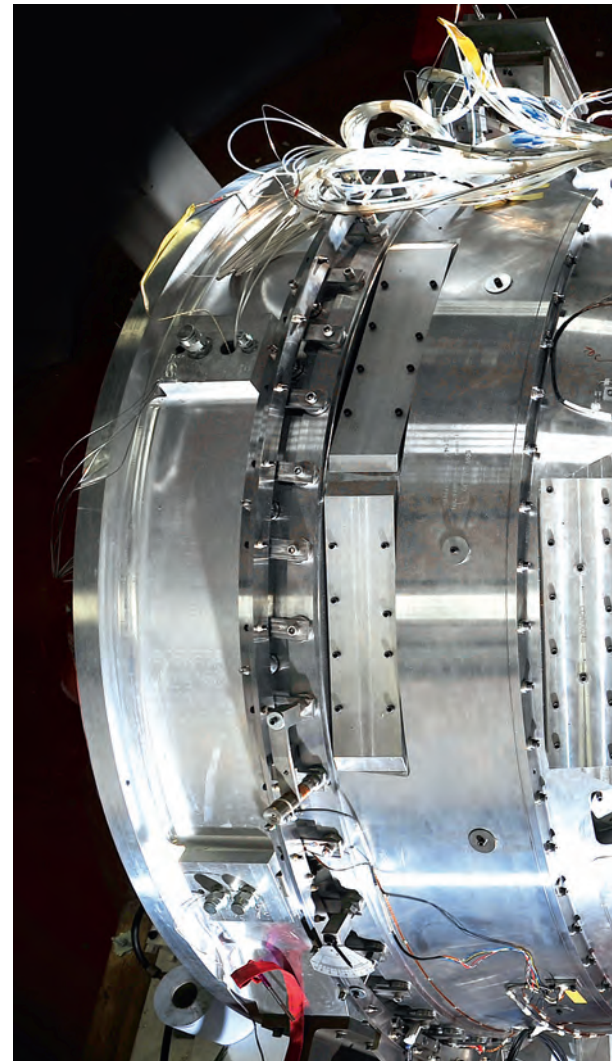
**Industria de Turbo Propulsores (ITP) has an enviable reputation in the aeronautical and industrial engine market, having become renowned for its distinctly innovative approach. Considered one of the most cutting-edge companies in Spain, it uses the most productive tools and state-of-the-art technology to anticipate trends and to deliver high-quality and environmentally-friendly products and services to some of the biggest players in the industry.**

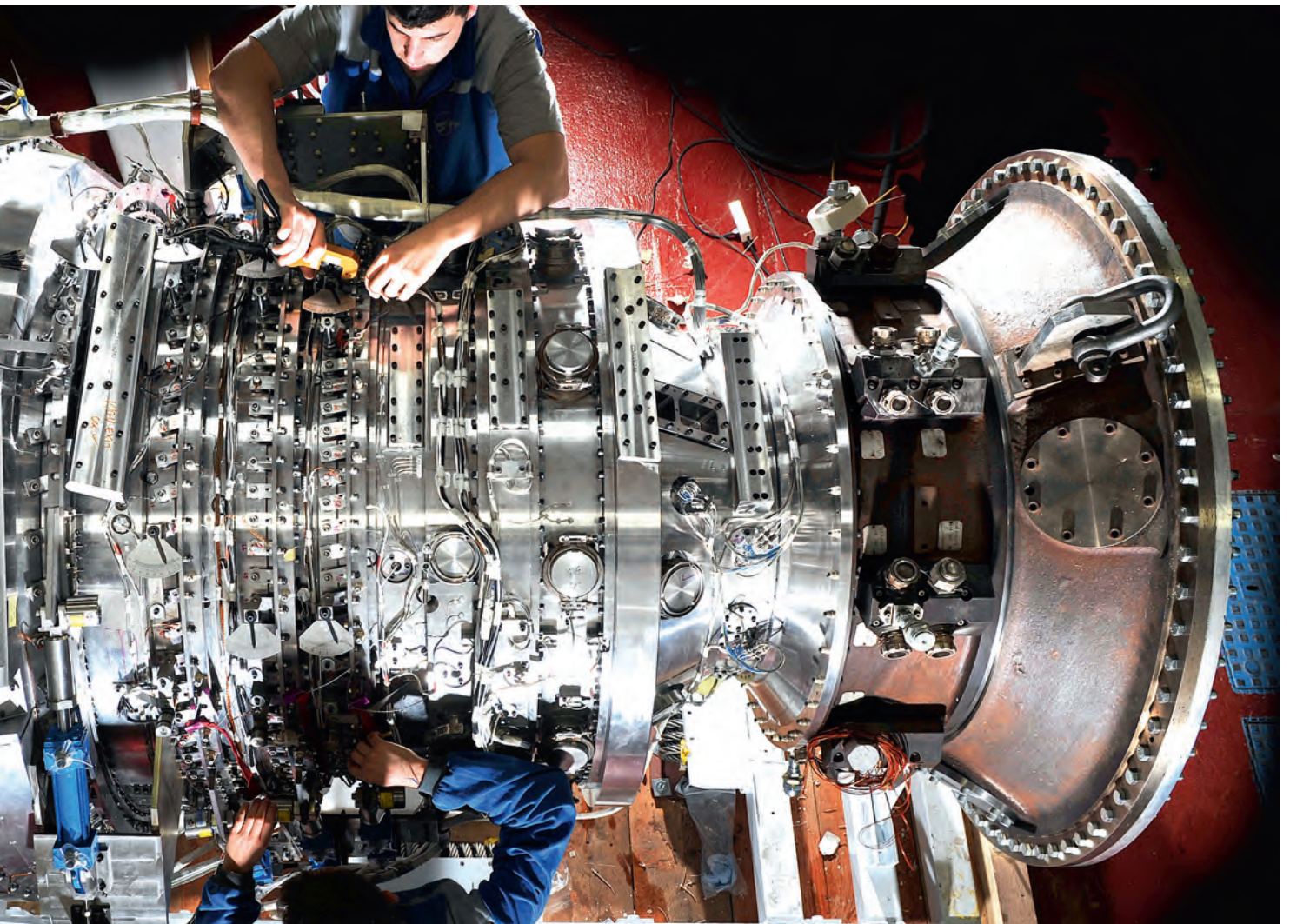
Founded in 1989, and owned by Spanish engineering group SENER and Rolls-Royce, the company employs 3,000 workers distributed over 18

operational centres located in Spain, the United Kingdom, Malta, the US, Mexico, India and China. From these locations, the company not only develops gas turbine components and modules in international programmes for military and civil engineering, but also offers its own in-service support, including maintenance, repair and overhaul (MRO) and high value-added services. ITP is also a partner in important civil aircraft programs and with the European Defense Consortium (EUROJET, EUROPROP, MTRI) with referenced partners such as Rolls-Royce, GE, P&W, Snecma and Honeywell.

“Our ambition is to become a first-rate engine manufacturer – a highly diversified, technological company providing services throughout the whole lifecycle of manufacturing and maintenance of products,” says Ignacio Mataix, ITP’s CEO.

Always with an eye on the future, ITP has ambitious plans, with the goal of doubling sales to reach a turnover of one billion euros by 2015. To meet this challenge, ITP is planning to make a significant investment over a five-year period, focusing on manufacturing new models. In this sense, its commitment to embracing new technologies is vital.





ITP has earned an enviable reputation in engine manufacture

“We are investing around 14% of our sales in research and development, which makes us, in relative terms, the Spanish industrial company with the highest level of investment in this specific area,” says Mataix. “ITP is a technological company with more than a thousand engineers who work with the most advanced tools. Innovation is based on new technologies in our centres that are distributed throughout the world.”

According to Mataix, there are four information technology pillars that underpin the company’s growth and expansion: enterprise resource planning (ERP); product lifecycle management

(PLM); design tools; and general tools such as Microsoft software.

One of the major competitive advantages of ITP is the integration of design and manufacturing. This is a management model that was instituted in 2007 with the creation of ITP’s Excellence Centers, in which engineers and manufacturing operators work together. “We have agreements to develop comprehensive turbine modules from the aerodynamic design of each one of its components through manufacture,” says Mataix. “For this reason, the role of PLM software is considered key. All of the information can

be traced using PLM software, which allows us to track and monitor it through the company so we can achieve our goal, which is to produce the most competitive, efficient design at the lowest possible cost.”

Iñaki Ulizar, manager of technology at ITP, agrees with this assessment: “The PLM system is vital for ITP because we have a very complex technological product and PLM is able to keep all the information up-to-date,” he explains. “A key aspect for us is the traceability and integrity of the data, because our products must be available for decades. In 15 or 20 years, someone might need this data, so we need a PLM system to



## Cover story

# Siemens PLM Software

ensure that we can deliver it. An ERP system doesn't do this."

For years, ITP was using two different PLM systems: Windchill software from PTC for engineering, and Teamcenter software from Siemens PLM Software for manufacturing. However, in 2010, with the aim of further developing its successful policy of integration between the two areas, ITP decided to use a single corporate PLM software to manage its organisational information globally, covering the entire product's lifecycle.

ITP determined that the PLM system needed to be an end-to-end solution, covering all the phases of the product lifecycle and integrating other software, such as computer-aided design (CAD), computer-aided manufacturing (CAM), computer-aided engineering (CAE) and manufacturing execution system (MES), so it could maintain traceability between the

engineering and production structures. It was also important that the solution had a user-friendly interface, which was essential to achieve higher productivity.

"We want our PLM system to become the backbone of our processes for design, development, manufacturing and service," says Ulizar. "The PLM system is our safeguard to recover all data. We need to improve our time-to-market process, which is a critical parameter. We would also like to increase our productivity in both design and production, and to ensure that all lean initiatives are implemented, and that we are able to standardise processes throughout the world.

"Another aspect is the geographical diversity: we needed a tool that would allow us to exchange data and flow charts in the design phases between Spain, Mexico and the United Kingdom so as to ensure there are no mistakes."

After a thorough market study, and based on the positive experience with Teamcenter and its good performance in the manufacturing area, ITP chose the Siemens PLM Software solution. "We selected Teamcenter as the tool best suited to our needs," says Bittor Olabarria, operations manager for the PLM implementation. "Teamcenter allows us to have unique and visible information across all the areas of the project."

Teamcenter proved to be easy to use as more than 300 employees were trained to use it in only one month. What's more, its multi-site capacity has been invaluable, as Ulizar explains: "Teamcenter is able to work internationally and rapidly move data from one country to another without delay and with the information in one piece."

Although the ITP centers were already working with solutions from Siemens PLM Software, choosing Teamcenter as the unique PLM system and the scale of this



Viewpoint

### Working together with SharePoint

#### Eduard Marfà explains the benefits of using Microsoft SharePoint Server to facilitate better collaboration

Collaboration is increasingly proving to be a key strategic advantage to quickly and securely deliver key product information across the entire value chain. To reduce costs and pursue global markets, leading companies are dispersing engineering, design and manufacturing, as well as marketing, sales and service activities to where it's most effective. This poses the challenge of keeping these teams in sync with one another and with up-to-date product information.

One way of meeting this challenge is through a scalable collaboration solution such as Teamcenter which facilitates PLM information sharing across the product lifecycle by using the industry-leading SharePoint platform from Microsoft. The platform includes a rich suite of collaboration tools to author and manipulate PLM information in a secure shared environment.

This type of platform enables external value chain participants (suppliers, partners, customers, etc.) to play active roles in product lifecycle planning and development processes. It significantly accelerates development activities and considerably reduces the travel costs associated with time-consuming face-to-face meetings. What's more, it enables people and their teams to work together, in real time, irrespective of their location. This significantly improves team productivity, performance and innovation.



*Eduard Marfà is marketing director for the EMEA region at Siemens PLM Software*





project – covering all ITP centers worldwide – reaffirmed the strategic partnership between the two companies. “Partnerships with high added-value providers are for life,” says Mataix. “This is an industry that is concerned with safety. The partnership is an important and long-term relationship in which the two companies invest to achieve greater business profitability.”

ITP established a number of objectives for the implementation of Teamcenter. “We wanted it to be a focal point of the entire product lifecycle and process, combining conceptual design, manufacturing and even service support,” says Gontzal Ruiz, head of engineering and projects at the Excellence Center of Frameworks and Structures. “Our goal was to have a comprehensive global response capability, which meant having specific systems in place at our international centers. And thirdly, to have standardised

“Teamcenter allows us to have unique and visible information across all the areas of the project”

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Bittor Olabarria

ITP

systems and best practices, corresponding to a single culture: the ITP culture.”

The aircraft and industrial engineering industries make technologically demanding products with significant security requirements. Therefore, the traceability of information is essential. Ulizar explains: “Our products must comply with international regulations and meet the requirements of global customers. PLM is crucial because it is able to make design, manufacturing, and assembly data flow until it reaches the final customer for decades. PLM also guarantees the security of information in relation to its availability to different users from different places.”

Traceability is also closely related to levels of product quality. “Quality processes are very demanding, so traceability must be ensured, and the best way to achieve this is through PLM,” notes José Luis Basabe, head of the PLM project.



The Teamcenter solution best suited ITP's needs



## Cover story

### Siemens PLM Software

In the same vein, Gontzal Ruiz points out, “PLM is very important to ensure that all the processes are aligned with customer requirements and the product is meeting specifications.”

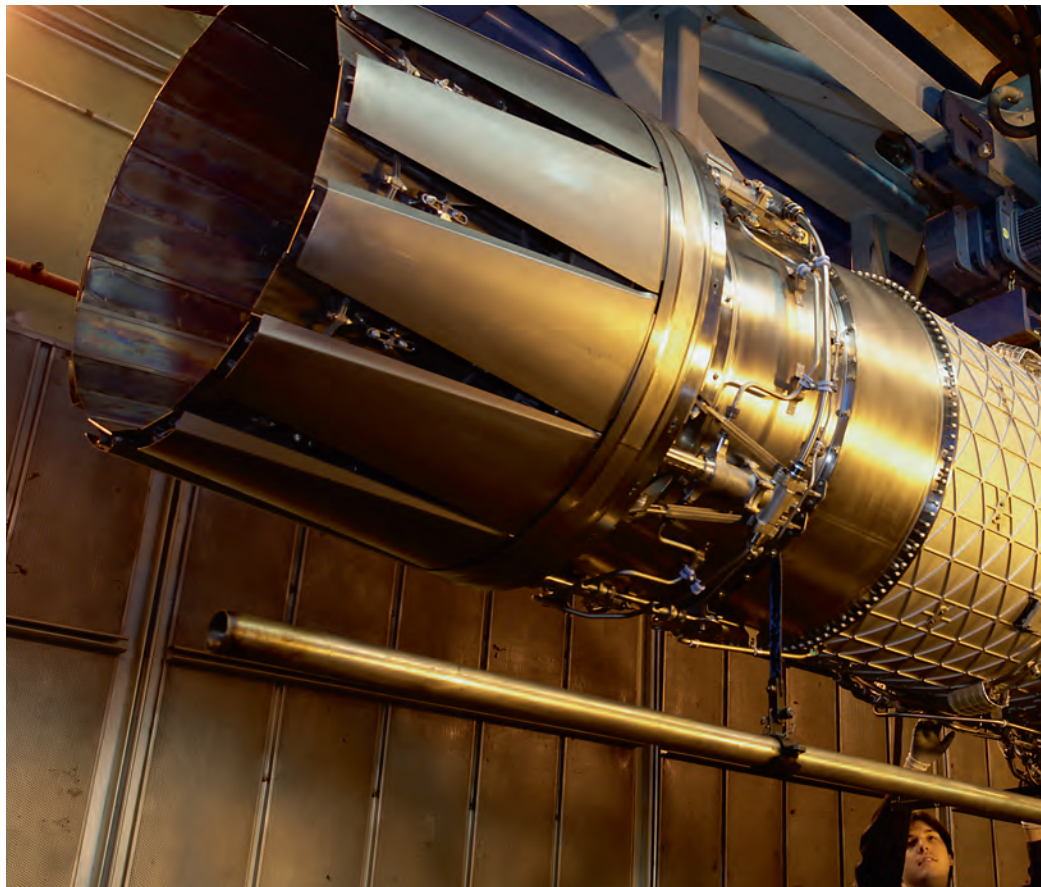
One of the highlights of the Teamcenter implementation at ITP was its integration with the tools involved in PLM. “The integration of all systems of information technology is key to ITP to offer global solutions in design and manufacture for turbine components and modules,” says Olabarria. “Getting a product to the market as quickly as possible gives us a significant competitive advantage.”

Alfredo Ruiz, head of the department of Engineering and Projects of the Center of Excellence of Turbine Bearing Housing and Airfoils, says: “At ITP we are now able to introduce the industrial foundations in the design, such as designing the parts with their subsequent manufacture in mind. So we consider the inventory we will have, how long it will stay in our facilities and what will be the flow of the parts in our factory. The development phase is essential since almost two years have passed from the first sketches of the product to the manufacture of the first materials. The PLM system is a big help because the design of the product and its manufacturing process are more related than ever and the connection to the supply chain is faster.”

As for the integration with other software, the managers at ITP emphasise the importance of the connection between Teamcenter and ERP. “We are collecting the core elements of the manufacture of the product in the ERP, so it needs to be closely related to design reports that support them,” says Basabe.

“Our goal is the integration of ERP with PLM to import and export the definition of any manufacturing process data to any of our subsidiaries, to develop processes in which knowledge can be found, and to share the best practices of the company,” says Iñaki Fernández Arza, manager of design integration.

Moreover, Teamcenter is connected to SIMATIC IT, manufacturing execution



**NX is helping ITP to meet the challenges of turbine design**

system (MES) software from Siemens, which was recently introduced to the centre in Zamudio. It has improved communications between departments and promotes a paperless factory, one of the big challenges facing ITP. “When it is necessary to transmit information from the engineering desk to the factory plant, it is the MES system that supports it,” says Basabe. “Therefore, the connection between MES and PLM is crucial. For this reason we have opted for SIMATIC IT.”

In the field of design, Olabarria notes that Teamcenter can work with different CAD systems used by ITP, with the company’s main CAD solution being NX software from Siemens PLM Software.

“NX allows us to significantly reduce the time it takes to handle big assemblies, a big challenge for us in turbine design,” says Ulizar. “We are seeing significant benefits in having NX as our main CAD system.

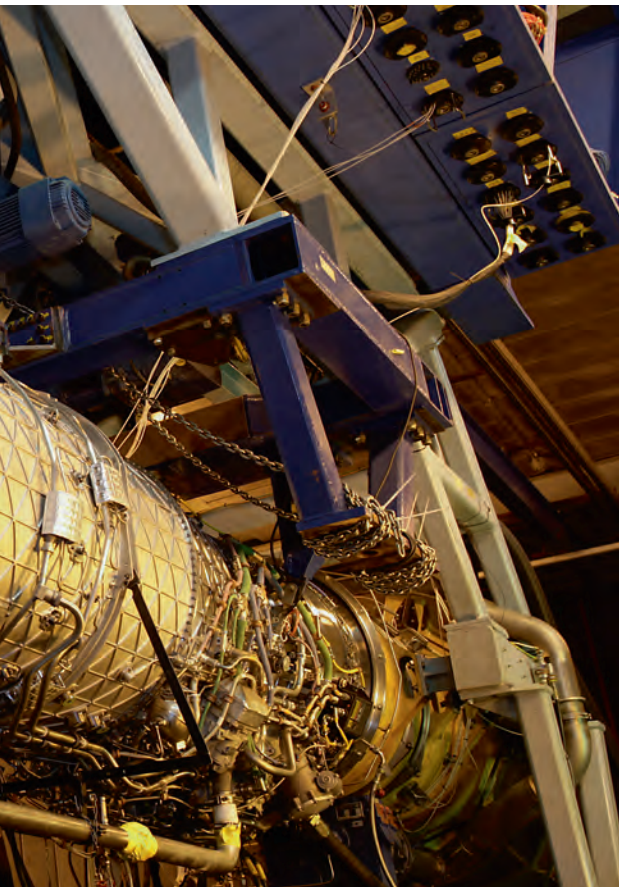
“The PLM system allows us to measure things, and all things you can measure are things you can improve”

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Alfredo Ruiz

ITP





Its ease of connection with Teamcenter is fundamental. Having NX as a design and editing tool has shortened the time it takes to launch our products.”

Finally, Basabe points out the connection between Teamcenter and the Microsoft technologies that form a collaborative environment in the ITP ecosystem: “The architecture supporting PLM is from Microsoft, and another important pillar is the SharePoint environment. The collaboration with suppliers, partners, subcontractors and clients is done through the Siemens PLM Software and Microsoft tools.”

Eduard Marfà, marketing director for the EMEA region at Siemens PLM Software, explains more about the PLM solution’s reliance on Microsoft technologies: “The solution relies heavily on SQL Server, which provides a streamlined, robust, scalable and secure database platform for Teamcenter deployments.



Meanwhile, SharePoint Server is absolutely fundamental to ITP’s ability to collaborate with its suppliers securely and in real-time,” he says. “It has proven to be extremely easy to deploy and allows the company to share the exact information that it wants to.”

After a year of work, the first phase of the PLM system was completed successfully. “The implementation requires us to think about how to improve the processes and to re-engineer them,” says Arza.

“The PLM system allows us to measure things, and all things you can measure are things you can improve,” says Alfredo Ruiz. “With PLM, we have no duplicate data, just unique data. Thanks to the integration of PLM with ERP we can enjoy highly arranged processes. Thanks to Teamcenter, ITP is improving its communication skills and effectiveness. The PLM system allows different areas to give their points of view. Therefore, when the product gets to manufacturing, this process is much faster, the time-to-market is reduced and the global process is more efficient.”

“With PLM, we improve the quality of the products because we have full traceability on the system processes. It also forces us to review the flow of our processes to make them more agile so as to gain a competitive edge,” adds Gontzal Ruiz.

After this first stage, the collaboration between ITP and Siemens PLM Software is

focused on expanding the use of Teamcenter to the engineering and assembly areas. In the future, Teamcenter will also be implemented at the company’s subsidiaries in Mexico and the United Kingdom.

“Change management involves many people,” says Olabarria. “The big challenge of implementing Teamcenter is to integrate and train everyone involved.”

Mataix considers the adoption of a corporate PLM solution as a strategic project for the company. “We are in the first phase of the exercise and we are pleased with the results,” he says. “But we still have a long path in front of us. Teamcenter is at the core of the business because it complements our products. We are expecting that results may be better than we initially expected.”

Ulizar summarises the positive outlook for ITP in relation to technological partnership with Siemens PLM Software: “When adopting a key tool like Teamcenter, the relationship with Siemens PLM Software becomes absolutely strategic. We hope to be able to transmit our needs to Siemens PLM Software. In exchange, we expect them to be able to understand these needs and bring on the best solutions. We know Siemens PLM Software is able to gather experiences from other industries to give us more added value regarding what we are looking for in terms of quality, integration, uniqueness of data and process improvements. We are talking here about a relationship likely to last years, if not decades.”



# Smart thinking

Jacqui Griffiths finds out how the latest technologies are enabling design teams to work together, wherever they are, and design smarter than ever before

**From vehicles to refrigerators, a growing number of products now include sophisticated software and electronics. At the same time, consumers are demanding more personalised products, based on their own specifications. For manufacturers, that means managing increasing amounts of data from different sources, bringing more skills into the supply chain, and coordinating design teams that may be dispersed across the world – all while meeting stringent time, budget and compliance requirements.**

“Designers who previously worked on something that was purely mechanical now have to consider software and electronics issues at the same time,” says Peter Schroer, CEO of Aras.

“Product lifecycle management (PLM) has become a global infrastructure with thousands of employees and suppliers needing to participate, often working 24/7 from different continents with diverse languages, processes and quality standards. That is one of the real design challenges of this decade.”

All this means that more data is entering the PLM process. “Nearly everything has a

small computer and an internet connection in it now,” says Simon Floyd, director of innovation and PLM solutions at Microsoft. “PLM needs to be able to manage and analyse data from customers, from global suppliers and design teams, and increasingly, as the internet of things (IoT) becomes a reality, data from the products themselves.”

In order to stay ahead, organisations need a sophisticated, scalable PLM system that is secure and accessible, enabling engineers to design on the move and to work together across geographical boundaries. That vision is being enabled through the industry expertise of technology providers like Aras, Dassault Systèmes, DriveWorks and Siemens PLM Software, and the enterprise-level capabilities of Microsoft technologies.

“The Siemens HD-PLM vision is focused on connecting people at a higher level and making all the information they need available in the context of their role,” says Paul Brown, senior marketing director at Siemens PLM Software. “There’s a real need for mobility in PLM and it’s crucial to be able to access the data and present it in a meaningful way. For example, an

engineer installing industrial machinery needs to be able to show customers on site how a suggested design change will work and feed back to the team. Technologies like Teamcenter and Active Workspace enable fast access to data with no need for complex searches, and mobile devices such as the Microsoft Surface Pro now have the power to access that data and deliver it in a meaningful way – either for CAD authoring in tools like NX or in viewer applications using the lightweight JT format. It allows our customers to get closer to the supply chain and to their clients, enabling more input into the process.”

As well as enabling mobility for engineers, customers are increasingly enabled to take part in the PLM process. “PLM has traditionally been about standardising, monitoring and presenting data so someone can make a decision,” says Glen Smith, CEO of 3D configuration and design automation specialist DriveWorks. “But by automating PLM, the data can make certain decisions for you, such as the best material to use for a certain strength requirement. It makes better use of that



Siemens' HD-PLM vision is to enable easy access to the information users need in a context they readily understand

data and normally, once people have automated, they spend more time creating new products, quicker. For example, one of our customers manufactures steel doors. By integrating its business systems using DriveWorks, it's pushed the data entry part of the ordering process to the customer, who fills out their specifications in the browser while the system generates the manufacturing data. The company has increased its production volume from 100 to 300 doors a day and reduced the amount of wastage on the shop floor, while its telephone staff now address specific customer issues instead of simply taking orders. The extra speed also means they can offer a premium service and free up engineers to come up with new conceptions."

For consumers, too, 3D visualisation and automation capabilities are enabling an increased level of input in product design – critical in meeting consumers' growing

"There's a real need for mobility in PLM it's crucial to be able to access the data and present it in a meaningful way"

**Paul Brown**  
Siemens PLM Software

demands for a personalised experience. "Companies are having to add more value around their products, modelling the product not only from a form and fit perspective, but also from a functional perspective – the experiences it can deliver which may not be related to its physical aspects," says Andy Kalambi, Enovia CEO at Dassault Systèmes. "With personalisation, every product coming out on the manufacturing shop floor may be different from the previous one, so you need to manage the front-end process to track and manage consumer behaviours and relate data from a consumer experience perspective."

With so many points for data to enter the PLM process, it's crucial to ensure that everyone is working with the same information – and technologies such as SQL Server and the cloud are central to enabling that. "Technologies such as SQL Server and the cloud, and office applications such as Excel really help to extend the PLM



## Feature

### Product lifecycle management

“Everyone can have access to that same information, in the context of their role, wherever they are”

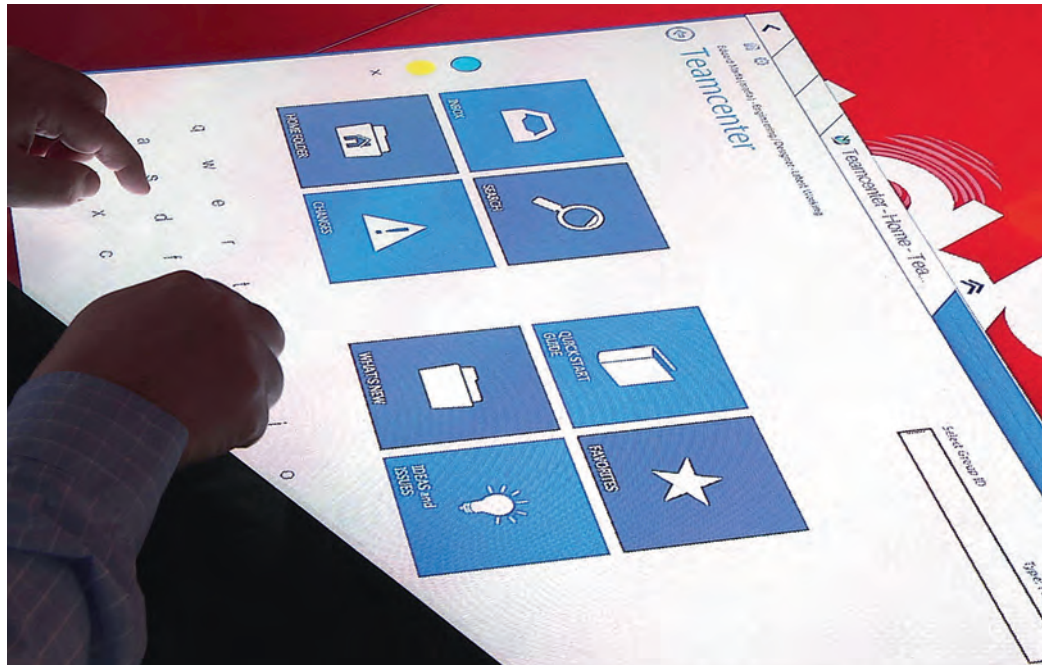
Jan Larsson

Siemens PLM Software

network and enable a dialogue through different media,” says Jan Larsson, EMEA senior marketing director at Siemens PLM Software. “Tools like Teamcenter on Microsoft SQL Server ensure that everyone is working from a single source of information which gives them the latest revisions, all the requirements and regulatory compliance issues, all in one central point. Everyone can have access to that same information, in the context of their role, wherever they are.”

“In order to reach across diverse teams and scale all that data and workflow processes, PLM has to be mobile, and the cloud is the only way to reasonably provide an IT infrastructure for such a large, distributed supply chain,” says Schroer at Aras. “In recent tests using Microsoft SQL Server 2014, Aras’s PLM technology had no trouble supporting one million named users with 250,000 simultaneous connections.”

“The cloud brings a different way of doing things – of accessing, caching and streaming data,” says Smith of DriveWorks. “It’s distributable and scalable, and that makes a big difference. Many of our customers have scaled out the DriveWorks automation server on private cloud, not only to create data but also to share it quicker.”



Tools like Teamcenter on SQL Server ensure that everyone is working from a single source of information

The possibilities are evident in technologies such as the Dassault Systèmes 3DEXPERIENCE platform, which can significantly streamline PLM processes. “One of our customers, SHoP Architects and SHoP Construction, needed to quickly design and deliver an innovative, modular residential home for an area hard hit by Hurricane Sandy,” says Kalambi. “Using the 3DEXPERIENCE platform enabled online collaboration among project stakeholders – from the owners to designers, engineers, and the fabrication and on-site construction teams – to accelerate the project schedule and maximise savings.

“All our brands applications – CATIA, SOLIWORKS, ENOVIA, DELMIA, to name a few – have moved to the 3DEXPERIENCE platform,” he adds. “The platform is based on the V6 architecture, which has currently over one million users. It enables manufacturers to do global product development in the cloud and have engineers around the world working on the same product model, as they would work today in an Office 365 environment. It brings a real-time, fully global product development environment that can deliver a 20% increase in engineer productivity.”

Today’s PLM challenges are being addressed through a combination of powerful, scalable infrastructure and sophisticated front-end interfaces that provide seamless access to data through a variety of devices. And with ever greater volumes of data set to flow from the IoT, the partners providing today’s capabilities are already looking at how they can support tomorrow’s innovation.

“With cloud and mobile, and technologies like Azure and the latest developments with .NET and Windows running on every platform, we’re building real solutions to today’s PLM needs,” says Schroer at Aras. “Now, right behind it comes the next challenge – the collection of all that IoT data. We need to help engineers balance all that data against things like compliance mandates, traceability and profitability. Microsoft is gearing up the technology with business intelligence tools and Azure to do that, and it won’t be long before we have very meaningful solutions to help customers achieve that.”

“The PLM backbone needs to be able to manage the systems involved in increasingly complex products, but you also need to be able to see how it’s actually going to work,” says Larsson. “You need to be able to simulate with the



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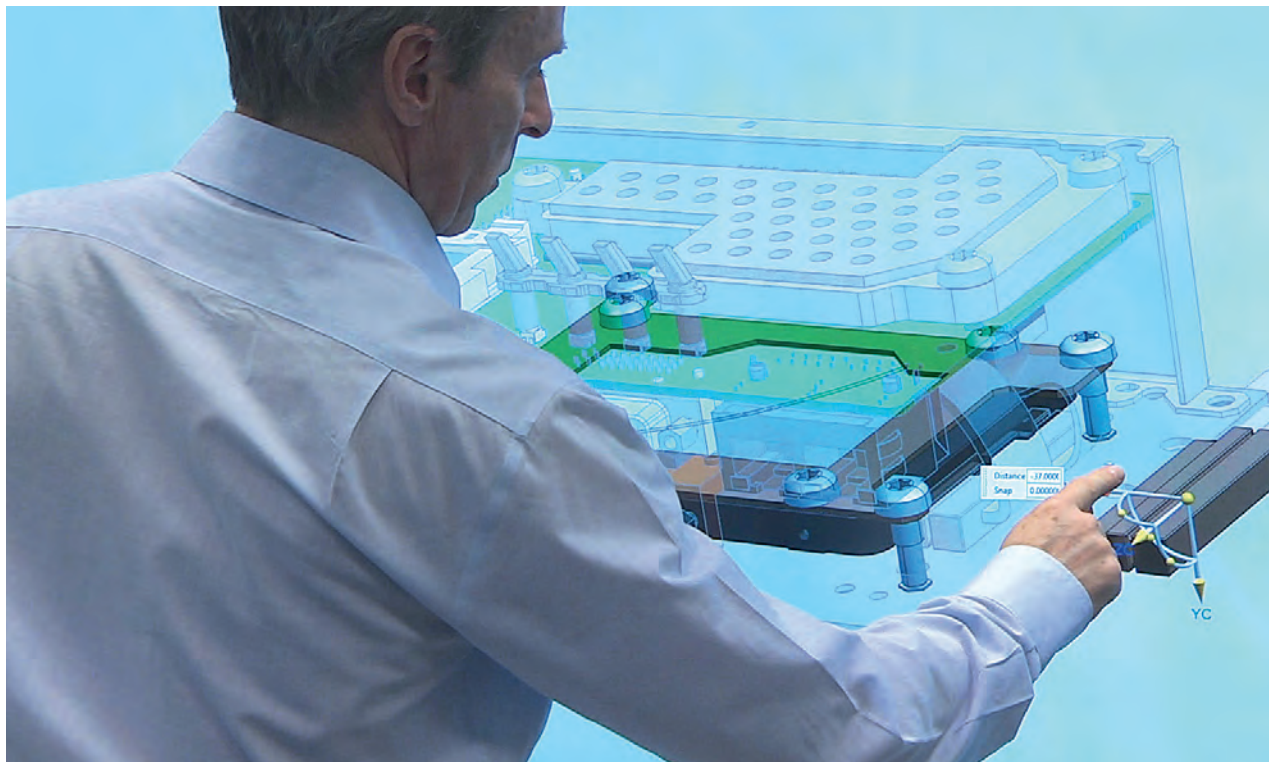
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## Feature

### Product lifecycle management



3D modelling and simulation are increasingly important features of the PLM platform

software, control systems and mechanical aspects running in a virtual environment so you know the product meets product requirements including customer needs and industry regulatory compliance before you manufacture it – to see, for example, how a car actually behaves on the road with or without the traction system on. We're going to see more of that evolving as part of the overall PLM platform.”

As PLM becomes increasingly connected, exciting possibilities lie ahead. “There is an unrealised potential for truly smart products,” says Floyd. “Windows Embedded is already a part of many products such as cars and household appliances. If those products provide real-time data about user behaviour, service and repairs, they could become more interactive, adaptive and personal in the future. We could move away from disposable goods toward platform products that can adapt to the way they're used and introduce new functionality or services through software updates – enabling a more sustainable, enriched user experience through connected product innovation.”



#### Solution profile

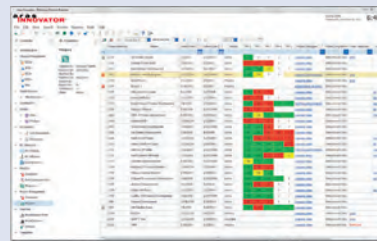
### Aras Innovator 10

#### Aras Innovator 10 optimises the scalability features of SQL Server 2014 to support large, distributed enterprises

As new innovations drive ever-increasing complexity in products and processes, PLM software has become critical for companies that conduct global product development with suppliers worldwide and manufacture at multiple locations.

To address the new level of scalability required in today's dynamic big data and mobile environments, Aras has introduced Aras Innovator 10 enabled on Microsoft SQL Server 2014 Enterprise Edition, to provide greater PLM platform scalability than ever for high-volume, high-user count enterprises.

Aras Innovator 10 is based on an innovative web-based, cloud-ready architecture which scales up and scales out, and was designed specifically for large, distributed enterprise scenarios.



#### The platform supports one million named users with 250,000 simultaneous connections

Independent benchmark testing conducted by Logic 20/20 validates that Aras Innovator 10 on SQL Server 2014 Enterprise Edition scales to one million named users with 250,000 concurrent users, while maintaining excellent performance on standard server configurations. Get the complete report at [aras.com/scalability](http://aras.com/scalability)



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# Innovation through collaboration

In an industry where time to market, profitability and meeting regulatory requirements is of paramount importance, new ways to improve working methods within life sciences are always being sought. Sean Dudley investigates how Microsoft is helping companies improve enterprise-wide collaboration to boost innovation

**The life sciences industry has reached an inflection point. Time to market, regulatory and profitability pressures have never been more intense, and companies need to enable their workers to get the right information and collaborate across the product lifecycle to help improve decision-making and speed innovation.**

“There’s no doubt that collaboration is a major driver for companies today,” says Egbert Schröer, worldwide managing director of process manufacturing and resources at Microsoft. “CIOs and CEOs recognise that the next big mega trend will involve social collaboration, covering factors such as mobility and the data centre.”

Andrea McGonigle, managing director of life sciences at Microsoft, describes her vision of collaboration in life sciences as

being the ability to communicate from ‘anywhere, anytime on any device’.

“Today more than ever, life sciences companies are collaborating with so many stakeholders to help bring drugs to market,” says McGonigle. “Many of these stakeholders are no longer within the four walls of the company – they could be a partnering company, an outsourced provider or an external sponsor.”

Wherever they are based, these diverse stakeholders need to be able to work together quickly and easily. This requires a communication platform that unites all involved parties and allows them to collaborate in the manner of their choosing.

“The faster a drug gets to market, the more potential revenue there is for the company,” says McGonigle. “They do not want to call IT

and wait days or weeks for a tool so that they can begin collaborating. With more people bringing their own devices into the workplace, we can no longer dictate what equipment and platforms they use. It is important that if someone wants to collaborate that they can do it from anywhere in the world, be that at home or in the office, at any time of day or night, and on any device.”

Today’s workforce is becoming increasingly familiar with new methods of communication, and their demands for the latest tools to help them work even more efficiently will only continue to grow. As a result, Schröer believes that companies must assess their work environment considerably when looking to enhance collaboration.

“Changing demographics have a direct impact on companies,” he explains. “As do



**With more people bringing their own devices to the workplace, companies can no longer dictate what equipment and platforms staff use**

concepts such as bring-your-own-device, which pose a range of challenges, but also a range of possibilities. Workers like to use the devices and platform they feel comfortable with. Even e-mail is beginning to become somewhat outdated, as new methods of communication gather speed. Companies are having to re-evaluate the ways in which they work and the ways in which they communicate. This is a great challenge but it is also a huge opportunity.”

While a flexible approach to communication is required, companies cannot afford to be careless when it comes to security and compliance, especially in such a highly regulated industry as life sciences.

“Compliance cannot be compromised or sacrificed in any way; that is not negotiable,” says McGonigle. “I do think, however,

people jump to use compliance as a road blocker to innovation. There is a way to do both. A good example of this is the cloud. At Microsoft, we understand the health and life sciences business and we worked with our product teams to ensure our cloud offerings are qualified so that they can be validated. It is important to work with partners and technology that understand compliance and address those needs as part of the offering.”

One example of a Microsoft life sciences partner offering compliant solutions in the cloud is NextDocs. Its regulated document management system runs on the Microsoft Azure platform, allowing a company’s customers and stakeholders to securely access information from wherever they are. At the same time, the business benefits from a lower total cost of ownership.

Developments around business intelligence and the internet of things are also having a major impact on enterprise collaboration.

“Organisations within the life sciences industry use so many ‘things’, from information systems to things like machines and pumps,” says Schröder. “By aggregating and analysing how these are used through the internet of your things, companies can enhance predictability by ensuring that valuable information is shared with the person that is in the best position to use it, who can then take a proactive approach and significantly improve operations.”

Going forward, companies will continue to invest in new collaboration technologies to help advance their workforces and find new ways of harnessing the latest and greatest ideas – inside and outside their organisations.

## Feature

### Collaboration in life sciences

“Collaboration can be used as part of the innovation process within companies,” says Schröer. “Through the sharing of ideas and knowledge management, the best ways to enhance working methods and processes can be identified.”

Social computing is just one area that is having a big impact on innovation in the industry, allowing people from all areas of the industry to communicate with each other across their own virtual worlds.

“Social computing is becoming part of the innovation process and is a great way to crowd source ideas,” says Schröer. “This is helped by technologies such as the enterprise social networking tool Yammer, which enables users to communicate in a more dynamic fashion within their own team, organisation or across the wider industry. These advances are pushing

“Social computing is becoming part of the innovation process and is a great way to crowd source ideas”

Egbert Schröer

Microsoft

companies to think about how to update and advance their business models.”

“I think virtual worlds will continue to make collaboration advances and really enhance the experience at another level,” adds McGonigle. “These spaces will be powered by the cloud that will allow people to access them anywhere, anytime, and scale up and down quickly.”

One company already capitalising on the possibilities of these virtual world offerings is PPD, a global contract research organisation. Serving clients in the biopharmaceutical industry, the company implemented a customised version of ProtoSphere, called PPD 3D, from Microsoft partner ProtonMedia. The platform is integrated with both Microsoft Lync and SharePoint, giving users access to a series of virtual spaces in which they are able to collaborate through

#### Interview

#### Michael Liscovitz, ArborSys Group

ArborSys Group is a business consulting and technology integration services firm that has done extensive work in the life sciences area with Microsoft. The company's managing director Michael Liscovitz spoke to *Prime* about how collaboration has become an increasingly prominent point of focus in the life sciences industry.

#### How do you think collaboration in the life sciences industry is evolving?

At ArborSys Group, we see that most companies today struggle with their rapidly growing volume of critical corporate knowledge, as well as the emergence of information available from external sources such as social media. A large amount of useful information is trapped in information silos, such as e-mail inboxes. There is also a gap in understanding and knowing where organisational expertise and talent resides in the organisation or tapping into external expertise and information.

There is however an increased dependency on information and knowledge technology for innovation and building value. The enterprise social media market has grown rapidly, and companies are adopting cloud technologies to reduce the costs of maintaining larger and larger sets of data. Cloud technologies also facilitate the use of mobile platforms and tablet devices, which are providing employees with unprecedented access to information.

It is this rapid pace of change, the need to innovate quickly, dispersed and remote workforces, and increased customer demands that makes capturing and using knowledge even more challenging. So it is in these areas that we see the use of emerging collaborative technologies playing a vital role in the success of life sciences organisations as they work to provide more effective therapies and treatments to their patients.

Knowledge management and collaboration are not just technologies. It's not about just storing documents. It is not just having an internal social media site or just using instant messaging. It is about sharing and collaborating in a more seamless manner than we do today.

#### How do your solutions and your partnership with Microsoft support companies?

At ArborSys Group we have seen Microsoft technologies become more mission-critical in life sciences, as companies are continually faced with the demands of having a relevant 'pipeline' of drugs and therapies, increased regulatory oversight and the challenges brought on by the globalisation of the industry. We see the ability to leverage Microsoft's integrated approach across their product line, especially in collaboration and knowledge and content management, as a strategic advantage for our clients in life sciences.



the use of 3D avatars, helping to improve clinical research associate trainee engagement and providing competitive differentiation through expanded services. Mike Wilkinson, PPD's executive vice president and chief information officer was quoted in a recent press release as saying: "Comprehensive employee learning and development programs allow PPD to deliver value and quality throughout the drug discovery and development continuum. PPD 3D gives clinical research teams a more engaging and productive way to communicate with colleagues and clients around the world."

With all the tools they need at their disposal, life sciences companies are taking impressive steps to improve collaboration and boost innovation across the enterprise, empowering their workers to share new ideas and take their productivity to the next level.



**Social computing is having a big impact on the life sciences industry**

This value not only lies in the cost of the actual product but with the ease of use in developing and maintaining solutions. In addition, we see Microsoft's 'mobile-first, cloud-first' approach as a new area of value creation for the industry.

We recently partnered with Sanofi, Microsoft and a Microsoft partner named DITA Exchange to develop an industry-leading structured content management solution. The solution leveraged Microsoft's Intelligent Content Framework for regulated industries and SharePoint. It addressed one part of the clinical documentation compendium, the creation of patient narratives, which summarise patient results in a clinical study, and resulted in helping the company save 22,000 hours of work on 4,000 documents.

**What do you think the next big development in collaboration will be?**

We are moving towards an era of 'enhanced collaboration'. It is one

in which organisations will work and collaborate seamlessly, far greater than they do today. It will be an environment that is process oriented, one that fosters collaboration within and outside the organisation and will be based on distributed interactions requiring advances in the use of workflow, social networks, and information and knowledge management. An organisation able to leverage these advances will gain strategic advantage over their competitors. More importantly, they will have the ability to deliver therapies and treatments in shorter timeframes with better patient experiences and outcomes.

In lockstep, we see moving beyond today's 'cloud-first' mentality to one in which the cloud is woven into the fabric of a company's collaborative business processes. This will lead to new operating models in areas such as R&D, data analytics and supply chain management.



"We are moving towards an era of enhanced collaboration"

**Michael Liscovitz**

ArborSys Group

# System integration requires a shared viewpoint

John Blyler explains why companies like Qualcomm are using Dassault Systemes' dashboarding tool to incorporate multiple design metrics from a variety of EDA packages

**The electronic design automation (EDA) tool market has longed talked about its need to expand beyond the creation of silicon-based system-on-chips (SoCs) to provide packages that integrate the larger hardware and software system. Specifically, the major tool vendors emphasized the need to move beyond EDA-centric issues like electronic system level (ESL) design, functional verification, design-for-yield or any similar so-called crisis issues. The goal has been to move beyond chip creation to system integration to deal with both hardware and software at the chip, board and end-user product levels.**

"It begins with a shift from design creation to integration in the electronic systems industry," states the Cadence's EDA Vision 360 report. EDA tool companies have had to expand their coverage into the larger system market, thanks to changes in the semiconductor supply chain.

Regardless of the drivers, the expansion from creation to integration tools for the larger system has not been an easy move for a variety of technical and cultural reasons. Consider but one aspect of the problem: how to provide higher-level integration when your customer uses a variety of internal and competitive tools? For example, most IDMs like Intel and Samsung, as well as fabless chip companies use a variety of EDA tools for synthesis, place and route (P&R), time and power closure, and so on. Further, many use a mix of internal tools that have been tailored to the needs of the customer.

To become a system integrator – at least from the chip design space viewpoint – tool providers will need a mechanism to gather, analyse and display useful data metrics

from a variety of EDA packages. One of the few companies that come close to such an application is not an EDA company at all, but rather comes from a higher-level, product lifecycle management (PLM) provider.

Global semiconductor company Qualcomm recently shared their challenges in integrating the metrics from a mix of chip design tools. Their problem was how to put together all of the disjointed design pieces for development of its Hexagon DSP-based multithreaded CPU architecture. With a global design team (San Diego, India and Austin), the company had to communicate all of the traditional design metrics like timing and area, with secondary metrics like power and signal integrity. Adding to this technical complexity was the diversity of professionals that needed access to these metrics, from system architects, register-transfer-level (RTL) coders to logical and physical designers.

The answer was simply to use dashboards to display data and metrics in such a way as to quickly show trends and trouble spots. Good dashboards highlight the metrics data in a graphical analysis format while also providing a transition from high-level to detailed low-level views. This abstraction-level zoom-in/zoom-out capability helps designers quickly spot trouble areas and then probe down into the details.

Dashboarding is nothing new. "Qualcomm has many internal dashboards," explained Dwight Galbi, principal manager of Qualcomm's physical design team at a recent Dassault Systemes' Customer Forum. "We have dashboards that cover some of the (design metrics) ... but not one that incorporated all of them." What was needed was a dashboard to

"Using a dashboard can provide a way for geographically dispersed teams to communicate via a common view of the design"

John Blyler

JB Systems



Using Pinpoint, Qualcomm is able to streamline the design of its chips, which are used in products such as Windows 8 tablets

provide design metrics from a variety of EDA tools throughout the chip design process.

That's where Dassault Systèmes' dashboarding tool called Pinpoint came to into play. In his presentation, Galbi listed the mix of lifecycle tools (albeit from one vendor – Synopsys) used in his recent DSP project. The list included Design Compiler for synthesis; IC and Talis for P&R; and Prime Time for sign off.

“The beauty here is that these are four different tools but you can incorporate all of the reports into the same web-based server,” said Galbi. Equally important (though not mentioned by Galbi) was that the tool provides a graphical visualisation of physical design, timing paths and more, without needing to reload the entire design block. This saves both time and money since the user

doesn't need to activate a license from the EDA tool vendors. Further, using a dashboard can provide a way for geographically dispersed teams to communicate via a common view of the design. This is a key requirement for any system integration. For example, the chip's RTL codes are often developed by teams in different geographic locations. Complicating the geographic challenges is the need to incorporate third-party IP and reused internal design blocks with the various RTL designs before the implementation process even begins. This is a problem since the physical layout and design team requires the RTL synthesised code (with all the IP), design planning and P&R data to decide if the primary chip design constraints can be met.

Getting the detailed RTL design team to work with the physical layout-design teams as soon as possible encourages communication and successful design practices. It helps mitigate the problems of siloed design activates. Also, a dashboard approach incorporates the essential data metrics from several different EDA tools into one place. This single, global view increases the likelihood of a successful SoC design as well as integrating that design – and the team – with the next level of system development.

*John Blyler is an author, journalist, professor and speaker. He is also the owner/president of JB Systems. This article was taken from a blog post, which can be found at <http://chipdesignmag.com/sld/blog/2013/12/17/system-integration-requires-a-shared-viewpoint/>*



## Trek Bicycles

Microsoft's integrated customer relationship management solution, Microsoft Dynamics CRM Online, is helping global bicycle product manufacturer and distributor Trek support its local sales reps

**Although it's a global leader in bicycles and related gear, Trek Bicycles maintains the spirit of a small company, from its close-knit, collaborative staff to the independent bike shops that sell Trek bikes and gear. Because it sells through a network of smaller, independently owned retailers rather than big-box sporting goods stores, Trek's success depends on close, supportive relationships between its local sales reps and the owners of the stores.**

Because these trusted partnerships are the backbone of Trek's business model, when an outside sales rep leaves or retires, it can take years to rebuild the rapport and depth of knowledge that the rep had established with the bike shops in his or her territory. To mitigate some of this risk – and to maintain continuity for the local shop owners – Trek sought a customer relationship management (CRM) system that could capture and retain account histories for distributors and retailers.

The company deployed Microsoft Dynamics CRM Online in March 2011, but many sales reps were reluctant to spend additional time entering data into the CRM system, and adoption of the new system was poor. When David Peterson, enterprise collaboration manager, took over Trek's CRM initiative, his goal was to find ways for the application to deliver real value to the sales reps, rather than simply add to their workload.

Peterson re-envisioned CRM not just as a means to collect data about Trek's retailers and consumers, but as a tool that would help people communicate, collaborate and achieve their goals. His efforts have focused on building connections between people, processes and

information, using Microsoft Dynamics CRM Online as a hub.

Peterson has a vision of CRM as a 'one-stop-shop' for information. "We want to get to a point where every retailer and rider interaction that Trek has is tracked and catalogued in CRM," he explains. "That's a pretty lofty goal for a global company."

Integration between Microsoft Dynamics CRM Online and other enterprise data sources, including Trek's JDE enterprise resource planning (ERP) system, has helped develop a more complete picture of Trek's dealers and customers, while the introduction of Yammer has enabled people to collaborate within Microsoft Dynamics CRM Online – replacing e-mail and instant messaging for certain workgroups.

With account histories, financial data and inventory aggregated in Microsoft Dynamics CRM Online, sales reps now use the system to prepare for meetings. Presenting all relevant information in one place saves reps valuable time and encourages them to engage with the solution. They now log event reports and weekly updates that had previously been transmitted by e-mail, ensuring the information is accessible to everyone.

Saving even a few minutes each day has improved acceptance of Microsoft Dynamics CRM Online among the sales reps. "We're trying to save people just a little time," Peterson explains. "If we can shave off a few clicks here and there, or save people from clicking through multiple screens, they will appreciate it. And over time, that's going to add up to big savings."

The ability to surface data from ERP and other systems in Microsoft Dynamics CRM Online has made the solution valuable to support

"All of a sudden it was like, boom – all of this information is all in the open, transparent"

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Steve Novoselac

Trek



**Microsoft Dynamics CRM Online enables Trek’s technicians to view a complete history of their bikes**

teams, as well. For example, to track service and repairs (every bike Trek sells is warranted for life), the system pulls product registration data from a separate database, matches it with case numbers and warrantee information from JDE, and displays customer and dealer data associated with that bike in CRM. As a result, technicians have a complete history of the bike, the problem it has, where it’s being fixed and who owns it, all in one view.

Trek has also connected Microsoft Dynamics CRM Online to its public website, where the system captures customer enquiries from a web form and routes them to the appropriate technical representative. The automated workflow attached to these forms has reduced response times from two weeks to only a few hours.

With Yammer feeds embedded in Microsoft Dynamics CRM, teams share ideas, collaborate on projects and make decisions more quickly. “All of a sudden it was like, boom – all of this information is all in the open, transparent,”

says Steve Novoselac, Trek’s business intelligence and .NET development manager, referring to his development team’s initial experience with Yammer. “Things were getting done because everyone had a new kind of awareness of what was going on in the group.”

“Achieving world-class productivity for the sales team is paramount for Trek,” adds Bill Moffett, Microsoft Dynamics’ global manufacturing industry senior product marketing manager. “With the broad solution base that includes Microsoft Azure, Microsoft Dynamics CRM Online, Office, Yammer and Microsoft SharePoint Server 2010, Trek is now able to deliver amazing customer experiences to close more deals faster.”

Looking ahead, Trek anticipates that Microsoft Dynamics CRM Online will play an important role in Trek’s initiative to standardise operations among its global subsidiaries. “There’s a push to be more consistent across job roles globally,” Peterson says. “We expect to roll out standard

processes and workflows through Microsoft Dynamics CRM Online and make them available to everyone. Because the tools are browser-based, we won’t need to worry about localising the tools; we can take the system global very quickly.”

	<p><b>Overview</b></p>
<p><b>Solution:</b> Customer relationship management</p> <p><b>Benefits:</b> Improved collaboration, better access to information, significantly reduced response times</p> <p><b>Technologies:</b> Microsoft Azure, Microsoft Dynamics CRM Online, Office, Yammer, Microsoft SharePoint Server 2010</p> <p><b>Partner:</b> Microsoft Dynamics</p>	

## Autotest

Injection-moulded components manufacturer Autotest is using Yaveon ProE-SCM to automate its supply chain, helping it to achieve significant time efficiencies and meet the tightest deadlines

Autotest, based in Lana, South Tyrol, specialises in the manufacture of high-quality injection-moulded components for the automobile industry. Over the last 30 years, it has supplied German automobile groups, especially in the premium sector, with finished bumpers, motor controls and armatures from its factories. Be it the Audi RS6 or Porsche Carrera GT – components for these and similar models are produced just-in-sequence and delivered to the production lines of the automobile manufacturers, allowing them to produce individually configured automobiles without additional warehousing and provisioning costs.

As a supplier particularly of small-scale series, Autotest is frequently called on to adapt to new specifications regarding labelling, data formats and logistical processes. Using its previous IT environment this caused considerable expense, since these modifications always had to be programmed ad hoc. Likewise the data collection for the fine and production-synchronous calls and further contracting of subcontractors required several hours of manual work per day. Some customers also need detailed information on the supervision of sequence planning (pearl chain monitoring, for example) in assembly so as to recognise deviations early and optimise serial planning.

“We were looking for an electronic data interchange (EDI) and supply chain management solution that minimises these programming expenses and largely automates manual activities”, says Günther Klotz, head of IT at Autotest. “With Yaveon ProE-SCM we’ve found exactly the integrated sector solution for the automobile supplier industry that we need.”

YAVEON ProE-SCM, based on Microsoft Dynamics NAV, imports and exports the

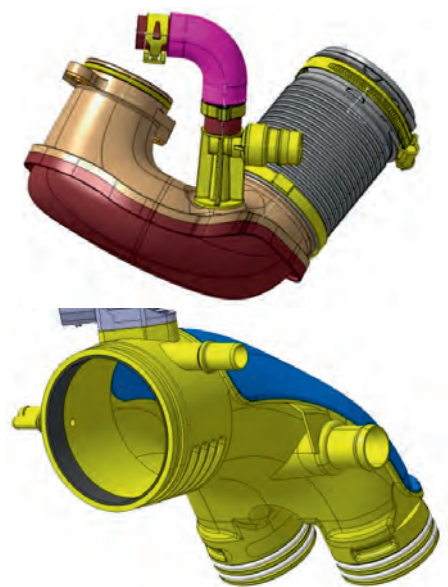
documents for delivery schedules, just-in-time deliveries and production-synchronous calls according to the VDA 4905, 4915, 4916 and EDIFACT standards. Moreover the calls are read automatically and the internal logistical chains are triggered in the workflow. Thus the software automatically generates and sends orders for coating to subcontractors and initiates production planning. If there are errors or delays, the people responsible are informed and notified of the specific problem.

Finally ProE-SCM continuously generates the correct shipping labels and the loading proposal for the sequential unloading logic on the line. This means that Autotest can reliably keep up with product-synchronous calls with just six days’ lead time. It can also introduce large-scale automation to communication protocols with automobile manufacturers.

“We save two hours’ work every day in data collection and have succeeded in boosting process reliability”, Klotz says, emphasising the solution’s specific operational advantages. “What’s more, the cost associated with adapting software to new customer specifications has been drastically reduced.”

Autotest can parameter smaller modifications itself. But even larger ones are configured to the standard very quickly, even if this requires a specialist from Yaveon as well.

“Besides the quality of the software it was the sector know-how that was decisive for us,” adds Klotz. “For the first time in Yaveon, we’ve found advisers who really knew what the automobile industry demands. Every SME supplier gets good advice from Yaveon ProE-SCM. With this industry solution you can meet even the tightest deadlines.”



Using Yaveon ProE-SCM, Autotest can now quickly modify component production orders and keep them for similar requirements in the future



### Overview

**Solution:** Integrated EDI and supply chain management system

**Benefits:** Automated workflows, significant reduction in the cost associated with data collection, faster modifications for new production orders

**Technologies:** Yaveon ProE-SCM, Microsoft Dynamics NAV

**Partner:** Yaveon





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# In practice

Product lifecycle management

## Norican Group

Engineer-to-order company Norican Group has improved its IT system and increased collaboration between its global engineers by implementing Bluestar PLM for Microsoft Dynamics AX

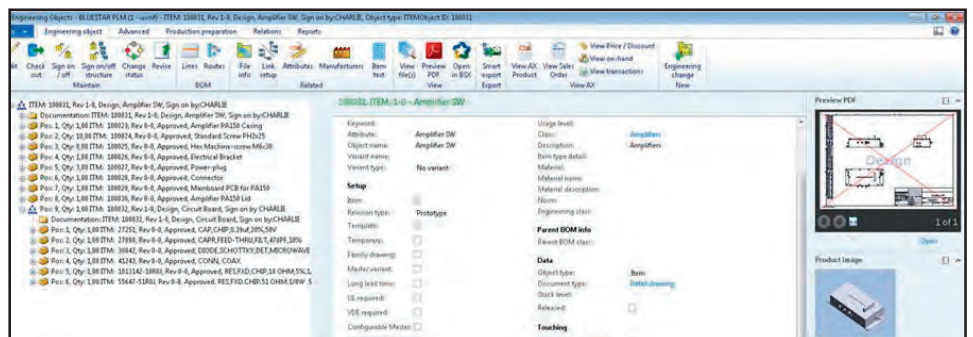
Engineer-to-order company Norican Group was formed in September 2008 when moulding technology company Disa merged with Wheelabrator, a worldwide surface preparation technology provider. Today the company has more than 2,500 employees in five continents.

Over the years, Norican Group has acquired various companies, each operating on their own enterprise resource planning (ERP) and computer-aided design (CAD) systems. This made it difficult for employees to collaborate on projects and share drawings and other resources with each other.

“Norican Group and its subsidiaries have produced numerous CAD drawings, which were stored in various disparate archives and were hard to access,” explains Anette Olsen, vice president of global business systems for Norican Group. “We also needed to improve the way we managed the different versions of the drawings to ensure that people were working with the most up-to-date designs and specifications. The ERP and product lifecycle management (PLM) systems are one of the most valuable components of our company so we really wanted to create one common, well-managed business tool containing all of our data.”

To ensure its employees could access a single set of version-controlled product data, Norican Group implemented Bluestar PLM, a Microsoft Dynamics AX-based PLM solution from PDM technology in 2007. Bluestar PLM was initially rolled out to Disa employees and after the merger with Wheelabrator, it was deployed across Norican Group’s global R&D teams.

“Bluestar PLM integrates the design, engineering and manufacturing systems, providing Norican Group with a complete PLM and ERP system as a global platform for collaboration,” explains Troy Norgaard, business



Employees can now access both engineering and operations data from one centralised system

development manager at PDM Technology. “Providing a single set of reliable data is important in any global manufacturing company as it enables them to perform predictably and efficiently.”

Since implementing Bluestar PLM, Norican Group has streamlined its ERP systems, creating a centralised, reliable and easily accessible tool for its data. The company can distribute synchronised data around the world in real time, while its engineering and manufacturing teams can automatically exchange designs, bills of materials and 3D models between their various CAD systems via the Microsoft Dynamics AX platform. This has increased collaboration and ensured that data is instantly accessible across all departments.

“Now that our teams can access the same PLM system and share reliable data regardless of their location, they can collaborate on various projects, which helps to reduce engineering cycle times,” says Olsen. “For example, our China-based engineering team can take a machinery design produced by our Danish team and adapt the parts to suit the needs of the local Chinese market. Other teams can then trace the original design and reuse it to develop products for different markets.”

Each piece of data is version controlled, and Norican Group manages the engineering changes from the PLM system with workflow automation, which ensures that operations and engineering teams always work with correct data.

“Bluestar PLM has greatly improved our company’s operational efficiency and we benefit from having implemented the system across all of our global offices,” concludes Olsen.



### Overview

**Solution:** Product lifecycle management

**Benefits:** Consolidated systems and data, increased engineering collaboration, improved multi-CAD use and data-sharing

**Technologies:** Microsoft Dynamics AX

**Partner:** Bluestar PLM



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## Design freedom

IDC's Kimberly Knickle explains how 3D printing is going to give manufacturers a new type of design freedom which has huge implications for the future

**I've recently returned from a week long class on 3D printing, and it's easy to see that 3D printers are going to change the way we think about and enable design freedom and flexibility in the creative process.**

The one week class was part of a Cornell Adult University programme in Ithaca NY, taught by Hod Lipson and Melba Kurman. We spent several hours in the morning learning about 3D printers, a few afternoons in the computer lab creating designs that were 3D printed, and one afternoon touring a manufacturer that uses traditional CNC machining and 3D printers for prototypes and final parts.

Back in September 2013, I wrote about some fascinating MIT research about the critical connection between manufacturing or production and innovation. As the designer, I was able to see this connection fairly quickly once my design was printed. Several of the vertical pieces on my design broke off in the first few hours, and I quickly learned how I needed to modify my design if I were to manufacture it. With literally just a few hours separating my design and my ability to test my final product, I can keep innovation and production tightly connected and go back to the design tool to make the necessary modifications, regardless of whether or not I'm going to send my design to a manufacturer down the street, in my own building, or across the world to be made in large scale production.

In a world where manufacturers increasingly need to be able to efficiently and quickly tailor or modify designs to smaller and smaller markets, 3D printing could support a level of design freedom we can't achieve today with most traditional production tools. This takes advantage of a combination of 3D printing principles which Kurman and Lipson describe

in their book *Fabricated*. The crux is that manufacturing complexity is free, (product) variety is free, and lead time is virtually zero. Need to serve a customer's request to change the colour or a dimension of a part? No problem. Just go back to the design, modify it and resend it to the 3D printer.

These may be simple examples, but I do believe that the adoption of 3D printing is going to escalate dramatically in the manufacturing industry and have serious repercussions for how we connect design to manufacture and in the manufacturing itself. But there are some hurdles we need to get past, with the most significant including delays in the availability of production-quality 3D printers and technicians to repair them if necessary. There's also a need for better understanding of the material science and structural performance of 3D printed products.

I do think manufacturers need to be exploring this technology now though, and even if you don't think 3D printers aren't going to be part of your production line, it's worth purchasing a few low end 3D printers and studying how they work or could work in your organisation, considering the implication for the design and innovation process as well as the production process. I also recommend you train employees outside of the design and engineering department on design tools that are available for the casual user or non-expert for free or at low cost, and let them print their designs with 3D printers.

Overall, 3D printers are going to provide manufacturers with a new kind of design freedom that delivers shorter, more flexible design cycles and an easier connection between innovation and production.

*Kimberly Knickle is practice director at IDC*



“The adoption of 3D printing is going to escalate dramatically”

Kimberly Knickle

IDC



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