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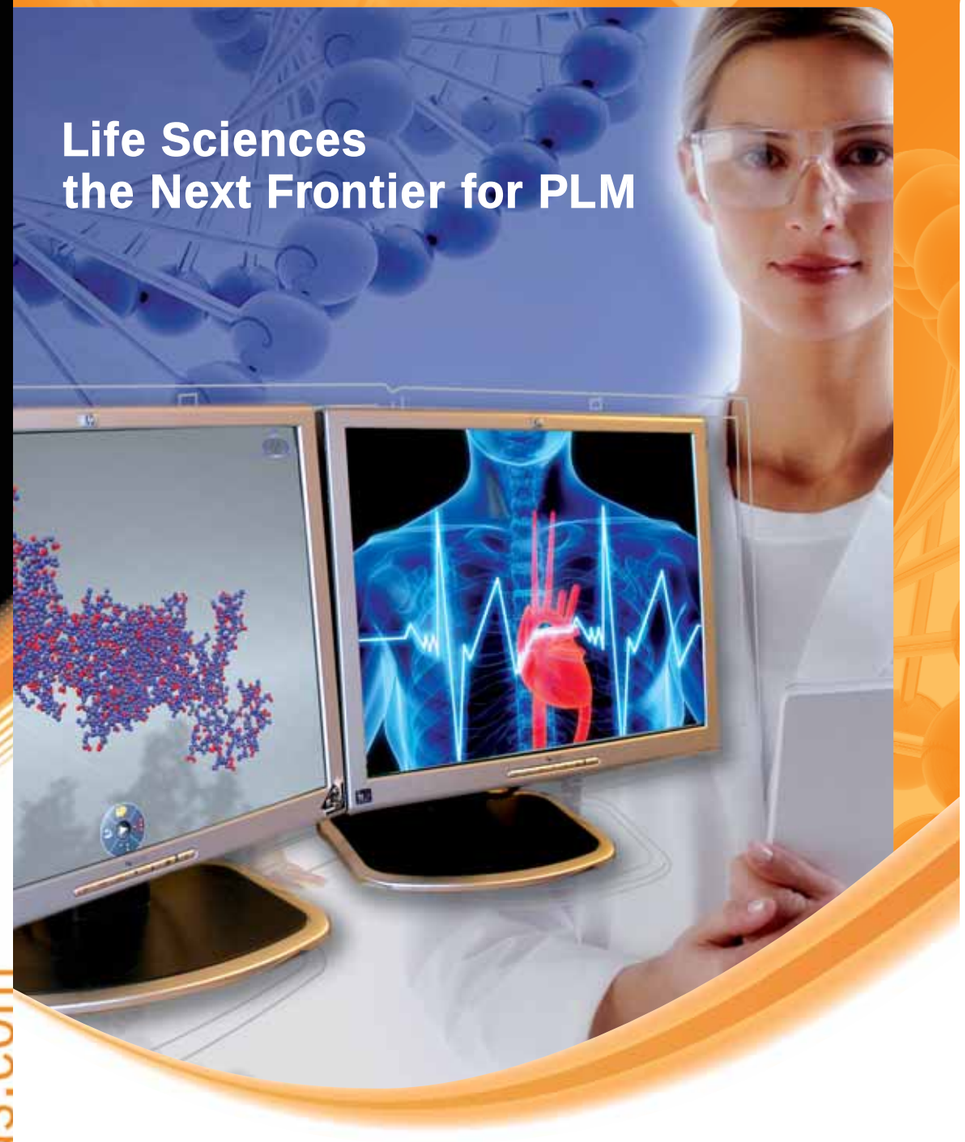
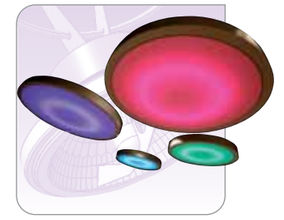
The PLM Magazine



Life Sciences the Next Frontier for PLM

Renault
Partnering for Tomorrow's Automotive PLM Solution



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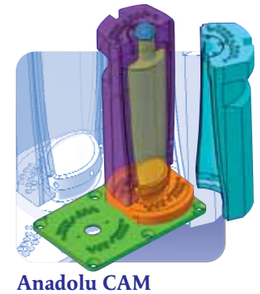

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Editorial

Adopted by every player in the automotive and aerospace sectors, Product Lifecycle Management (PLM) has become a catalyst for innovation and sustainable development in a growing number of industries. For the life sciences industry, faced with unprecedented challenges, the potential of the virtual world is enormous, and PLM in particular, offers companies the ability to reinvent themselves. A certain number of players in the sector have already understood this.

While increasing life spans and changing behaviors are giving rise to new illnesses, R&D costs per drug have increased over the past 20 years from $250 million to $1 billion. The complexity of treatment targets, demand for absolute quality, exponential jump in information generated by scientific progress, and increase in regulatory constraints due to security concerns make scientific research more difficult.

Has discovering new treatments at the lowest cost while managing risk become an unattainable objective?

At Dassault Systèmes, we do not think so. Digitization of complex phenomena, tests on virtual models, and an entirely new form of treatment called cyber therapy, offer promising perspectives in the 3D virtual universe.

The ability to collaborate, adhere to regulatory constraints, and capitalize corporate IP - all possible with our solutions - are already invaluable assets for optimizing new drug creation, establishing new medical protocols, and rendering patient care more efficient. The first results are already in. Four of the six largest medical device manufacturers are our customers. One of the world's leading pharmaceutical companies is also on board and several others are betting on the power of the BioIntelligence research platform as a catalyst for new discoveries.

We still need to adapt our tools to meet the needs this industry to serve it better. But we are at the threshold of a new era with "Bio PLM".

Pascal Daloz
Executive Vice President,
Strategy & Marketing,
Dassault Systèmes

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Renault Mégane Coupé

Courtesy of Renault

Partnering for Tomorrow's **Automotive PLM Solution**

Serge Passolunghi
V6 Program Director, Renault

Renault and Dassault Systèmes (DS) are moving ahead to develop V6-based PLM solutions for automotive digital processes. After an evaluation period of approximately one year during which Renault benchmarked V6, the company became the first to choose the entire V6 portfolio thus becoming a global reference in the industry.

According to the partnership agreement announced June 29, 2009, DS will benefit from Renault's expertise to design the auto industry PLM solutions that focus on sustainable innovation. Renault, in turn, will deploy the V6 solutions worldwide by mid-2010 for the development of its future powertrains and vehicles.

By teaming up, Renault and Dassault Systèmes are pioneering a revolutionary approach to increasing innovation and design productivity through on-line collaboration on a global scale. "V6's integrated PLM environment brings our international teams closer," said Odile Desforges, EVP Engineering and Quality, Renault. "V6 PLM will help Renault engineers collaborate wherever they may work throughout the world, which will improve engineering productivity and vehicle quality. It will contribute to making Renault stronger and ready to face present and future market challenges."

Renault – 3D virtual car with V6

Renault chose V6 to improve its efficiency and the quality of its products. According to Renault management, DS is the first solution to have a single, global workflow, and collaboration tool offer. One of Renault's objectives is to unify its three engineering organizations, each currently with its own processes and data management tools, into a unified collaborative platform using a single, standardized PLM environment. Adopting a full V6 solution will enable Renault to unify all data under a unique reference and make it accessible in real time to employees as well as external partners and suppliers.

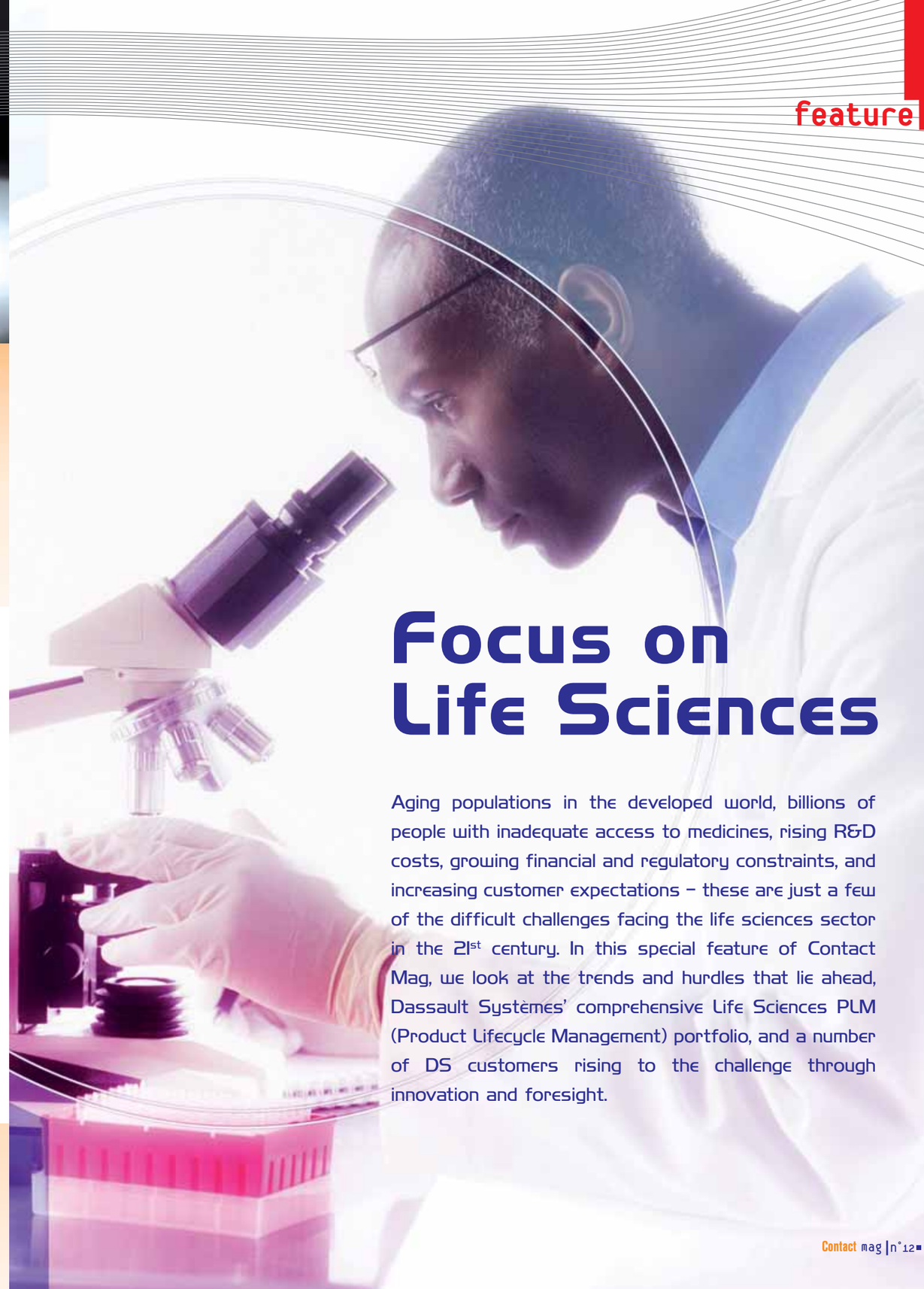
With V6, Renault aims at reducing the development timeline of new cars and increasing their quality level, reducing costs, increasing engineering resources, optimizing production facilities and developing an overall systemic approach based on security, synchronization and performance. V6 will considerably facilitate decision making between the different actors throughout a product's lifecycle.

> V6's integrated PLM environment brings our international teams closer.

Renault has already started to implement the ENOVIA V6-based collaborative platform, and will move to the full DS V6 portfolio to enable the company and its suppliers to collaborate on the creation of new product designs in real time. "The objective is to be ready in mid-2010 to design new models, including electric vehicles," said Serge Passolunghi, V6 program director at Renault •)

Share your perspectives on DS blog!

The official Dassault Systèmes blog is called 3D Perspectives. It is a place to connect with the people behind DS online and join conversations about 3D, PLM, sustainability, manufacturing, engineering and more. Please visit, subscribe to and share your perspectives on www.perspectives.3ds.com.



Focus on Life Sciences

Aging populations in the developed world, billions of people with inadequate access to medicines, rising R&D costs, growing financial and regulatory constraints, and increasing customer expectations – these are just a few of the difficult challenges facing the life sciences sector in the 21st century. In this special feature of Contact Mag, we look at the trends and hurdles that lie ahead, Dassault Systèmes' comprehensive Life Sciences PLM (Product Lifecycle Management) portfolio, and a number of DS customers rising to the challenge through innovation and foresight.

Life Sciences the Next Frontier for PLM

By Lisa Roner

John Blanchard
Analyst, ARC Advisory Group

John Blanchard is a principal analyst with ARC Advisory Group, which specializes in manufacturing and supply chain issues. His focus is on advanced control and enterprise integration and regulatory compliance in the process industries, reinforced with 25 years of experience in the food, beverage and pharmaceutical industries. Contact Mag spoke with him about the trends and challenges in the life sciences industry and the role PLM can play in it.

Contact Mag: In what areas do life sciences companies stand to benefit from PLM?

John Blanchard: Basically, there are four main areas.

The new commercial manufacturing paradigm
Manufacturing has become critical to improving margin and growth, which it never was in the past. Most pharma companies are faced with manufacturing not only branded products, but generic and over-the-counter versions of products as well.

Drug development – It's clear that the speed, innovation and success rate of drug development needs to be improved dramatically. And that, in great part, relies on improving both clinical data and project management, which both closely fit the capabilities of PLM.

Increasing regulatory pressures – The FDA's (Food and Drug Administration) new risk-based approach to regulating the industry comes down, quite simply, to the fact that they want everything done electronically. So new drug submissions, which were already closely scrutinized, require more data than ever and must be electronic – and that's a step beyond clinical data management.

Shorter lifecycles and tremendously increased competition – Because many therapeutic areas are packed with a range of similar products, the FDA and others are starting to balk at more "me too" entries. And that's bringing new pressure on the industry in both manufacturing and drug development in terms of product innovation and increased speed-to-market.

C.M.: How do challenges in the medical devices industry compare to those in pharma?

J.B.: Although medical devices makers aren't as impacted by the shorter lifecycles pharma is seeing, they face plenty of competition and have other unique challenges. They have to keep a tremendous design document and they have to track the product clear to the end of its lifecycle. So in some ways, I consider many medical devices pretty much the same as the discrete industries. The difference is that medical devices makers are not highly automated. Many of their products can't be manufactured with mass customization (for example, prostheses), so keeping close track of suppliers when it comes to design criteria and the quality of the product becomes very important.

C.M.: New drug development is slowing. Fewer blockbuster drugs are being developed, and the ones that are take longer and cost more. How can PLM help pharma companies find effective drugs more quickly and efficiently?

J.B.: It comes down to managing clinical data on a per patient basis in clinical trials, analyzing the data and making decisions through project management on whether to hold a drug, send it forward or discontinue. Until quite recently – the past six or seven years, really – pharma hasn't had any structure to this. It's all about managing the whole thing: getting closer to patients, collecting better data and keeping them in the trials to get drugs through the approval process faster and with a greater success rate – and PLM can have a major role •

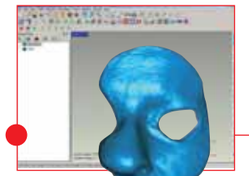
More About Arc Advisory Group:
www.arcweb.com

Winning the Battle against Cancer

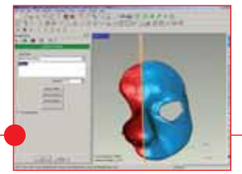
Prevention is better than cure, but when cancer does strike, revolutionary 3D technology can help reduce further damage.

A patient has to undergo the surgical ablation of most of her nose due to a skin cancer. If no prosthesis is placed during the healing period following the surgery, she risks tissue sagging or permanent deformation of the surrounding tissues - which might be irreparable with plastic surgery.

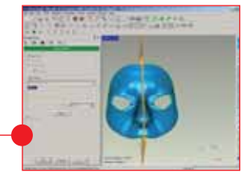
Creaform, world leader in 3D technologies, comes into the picture to build a customized prosthesis with the Handyscan 3D line-up of laser scanners, employed to scan existing objects to generate digital files that can be modified in various post-treatment software. The first step is to create a silicon mold of the patient's nose before the surgery. Then, thanks to the ERGOscan laser scanner, Creaform's specialists scan the silicon imprint to create an accurate digital image of the mold.



STL file of the silicon mold



Removal of the affected part of the nose



Creation of the symmetrical image of the healthy side of the nose

HALF AN HOUR TO CREATE HALF A NOSE

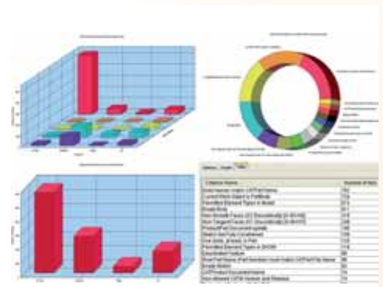
Creaform's CAD Department uses a post-treatment software to modify the STL file of the silicon mold. First, the affected part of the nose is removed and replaced by the symmetrical image of the healthy half side. Ultimately, the 3D model is prepared for rapid prototyping by adding thickness. Overall, the process required about half an hour of work. Efficiency like this speaks for itself! •

For more information:
www.creaform3d.com
sauclair@creaform3d.com

Process Compliance in Life Sciences

Complex product design requires rules and methodologies to support collaboration. More than 1,500 PLM customers in various industries use Q-Checker to enhance the process readiness of their design data.

Product Data Quality strategies accelerate the development of innovative products such as medical technology solutions. Seamlessly integrated into CATIA V5, Q-Checker offers off-the-shelf quality rules and delivers a ready-to-use set of checks able to ensure the compliance of CATIA data with geometry quality standards as well as company-specific methodology rules. Checks are launched interactively by designers or automatically triggered at significant process steps from any data management or data exchange system. As a vehicle for methodology and data quality strategies,Q-Checker ensures compliance throughout the PLM process.
Transcat PLM is a fully-owned subsidiary of Dassault Systèmes. Transcat PLM's software solutions support the design process with CATIA, ENOVIA, 3DVIA and DELMIA. Companies around the world optimize their processes and enhance their products with solutions from Transcat PLM. Q-Checker, CAVA, myV5 and XFileV5 are helping users in the context of a global development process •



Monitoring check results to continually improve Product Data Quality

For more information:
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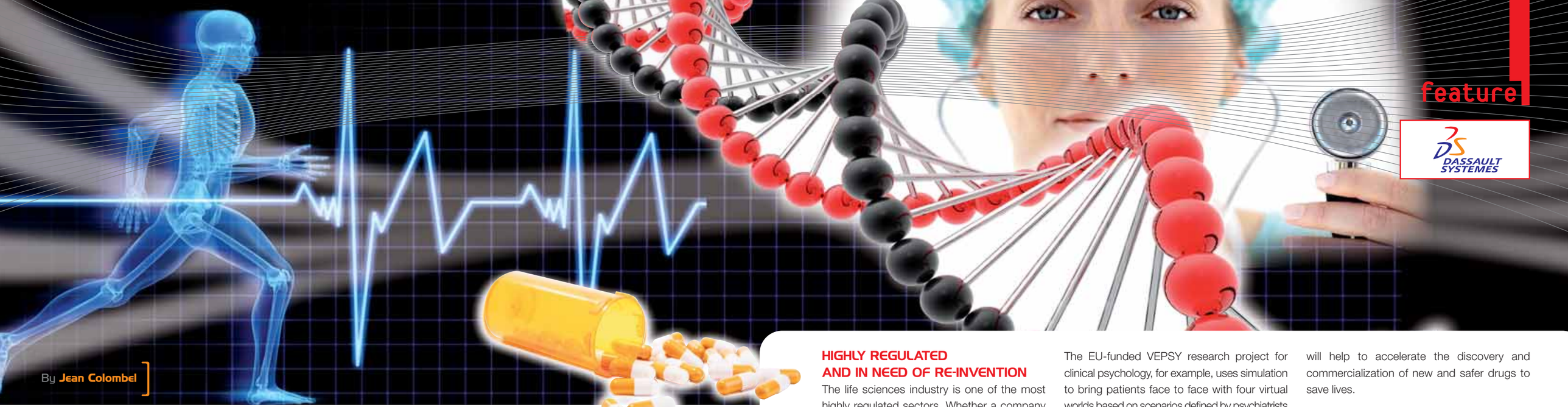
Q-Checker@transcat-plm.com



By **Jean Colombel**

The Evolution of Life Sciences

The life sciences industry is moving toward connected communities of patients, doctors, researchers, pharmaceutical and medical engineering companies, working together with regulatory agencies to develop products where drugs, medical devices and services merge into a single combined product. This community approach will promote information sharing and capitalization. Among the challenges ahead – giving these communities the tools and technology to shrink distances and grow collaboration.

In the discovery-driven world of life sciences, a profound transformation is afoot. Gone are the days when research, development, and commercialization teams operated in isolation. The hallmark of tomorrow's life sciences sector will be a comprehensive-care approach where diverse teams work in concert to improve life for patients through innovative therapies supported by new drugs and medical devices.

A clear illustration of this transformation is a major trend called "combined product." While pharmaceutical researchers work to develop the best drug, others actively explore how to combine drugs with medical devices or other therapies into a single, integrated treatment to provide new, innovative patient services. To achieve this vision, however, requires unprecedented collaboration. It will only occur if all actors can share information and build upon a common foundation.

Therein lies the challenge. The life sciences industry has myriad specializations, job profiles and processes. Laboratories and development sites span the globe. The diversity of patient profiles and needs is staggering. The only way to ensure that a comprehensive-care approach will succeed is to create a collaborative knowledge and know-how-sharing environment capable of pulling down isolated information silos to allow a free flow of knowledge and ideas.

Profile

Jean Colombel has more than 20 years experience in the software industry for life sciences, where he held executive management positions for sales and marketing in Europe, the USA and Japan. He is currently Director Life Sciences Industry for Dassault Systèmes. He is responsible for defining, coordinating and promoting Dassault Systèmes' offering and market positioning for the Pharmaceutical, Biotech, Agrochemical, Medical Devices and Patient Care markets.

WORKFLOW IS GOOD, PLM IS BETTER

Software can be the bridge that makes comprehensive care a reality, bringing together the molecule-driven care (pharmaceutical, phytosanitary, cosmetic), medical device, and patient care domains – the three pillars of life sciences – to the profound benefit of patients and physicians. Software, as well as access to public and private research data, already plays an important role. Initially, 3D emerged as a powerful modeling tool for molecular structures, medical equipment and as a way to illustrate how drugs interact in the human body. Today, however, managing the entire product lifecycle is essential. Product Lifecycle Management (PLM) provides precisely the collaborative data engine needed to drive the next great wave of patient care innovation.

HIGHLY REGULATED AND IN NEED OF RE-INVENTION

The life sciences industry is one of the most highly regulated sectors. Whether a company develops pharmaceuticals or designs and manufactures medical scanners, respecting an ever-increasing number of regulations chips away at productivity and forces companies to reinvent their ways of working. The goal is to reproduce the same phenomenal leaps in productivity and innovation in the life sciences sector that PLM brought to the automotive and aerospace industries.

SOLUTIONS FOR MEDICAL DEVICES

Dassault Systèmes has solutions to address the three life sciences pillars. For medical devices, DS offers an entire portfolio for a process-driven development approach. To address the industry's strict regulatory constraints, DS has developed life sciences accelerators in the ENOVIA product line that help companies adhere to quality criteria. The ENOVIA Life Sciences Accelerator for Quality Issues focuses on four high-profile, regulated business processes within the Quality Management System: Corrective and Preventive Action (CAPA), Nonconformance Reports (NCRs), Product Complaints, and Quality Audits.

SOLUTIONS FOR PATIENT CARE

In patient care, cybertherapy offers tremendous promise, from helping devise new therapies for phobias to designing more effective operating rooms. With virtual reality, highly personalized treatments become more cost effective and pervasive, and investments in facilities and equipment can be optimized through superior design.

The EU-funded VEPSY research project for clinical psychology, for example, uses simulation to bring patients face to face with four virtual worlds based on scenarios defined by psychiatrists specialized in treating a variety of social phobia. 3DVIA Virtools development tools enable all those involved in the research project to actively collaborate at a distance during simulation.

SOLUTIONS FOR MOLECULE-DRIVEN CARE

Molecule-driven care covers all the diverse areas where the molecule is the kernel of the industry: it ranges from the pharmaceutical industry to the phyto-sanitary sector to the cosmetics world.

While demand for new drugs continues, the molecule-driven care industry's current business model, often characterized by isolated research and development teams, is increasingly unsustainable and unable to produce treatments demanded by the global community, despite being feasible due to scientific progress.

Optimizing enterprise processes to facilitate new discoveries and increase business competiveness through PLM is the goal of the DS molecule-driven care portfolio. It ranges from the BioIntelligence research project, designed to advance the biological dimension of the PLM, to solutions to optimize the regulatory process like drug labeling, allowing drugs to become available to patients sooner. A long-term objective is to complement current in vivo and in vitro processes with computer-driven in silico R&D. Again, the goal is to spark the same productivity revolution that occurred in other industries with the introduction of PLM. Among other things, in silico R&D will help to accelerate the discovery and commercialization of new and safer drugs to save lives.

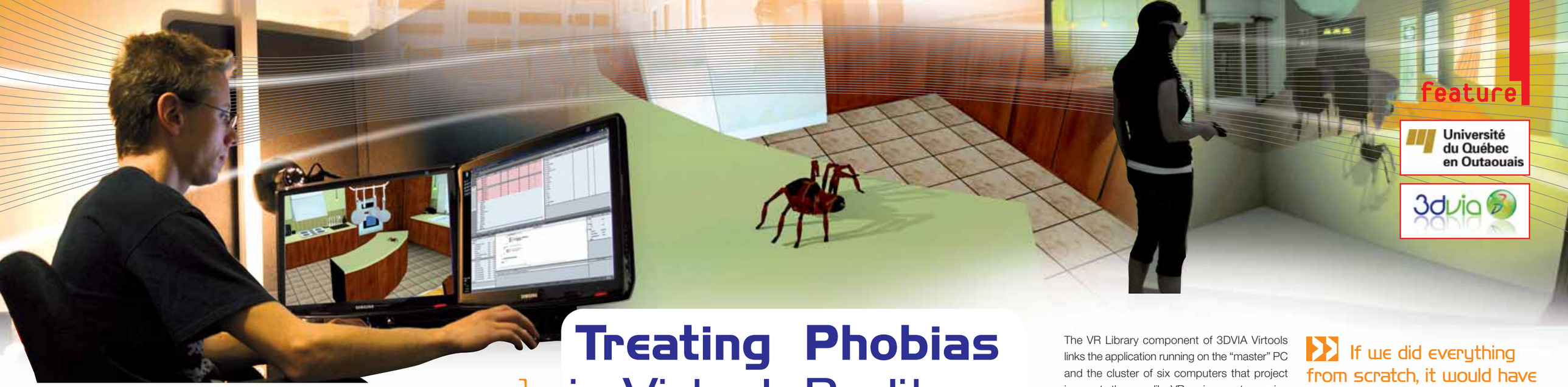
CONNECTING COMMUNITIES WITH V6

The life sciences industry is an aggregation of multiple communities, sometimes linked by the same science (medical, biology, chemistry, mechanical), sometimes by the same goal (availability of a new drug, a new device). These communities generate and manage fantastic amounts of data in multiple formats every day around the globe.

Connecting these communities and opening up silos of information is possible thanks to Dassault Systèmes's V6 integrated platform, the company's next generation PLM 2.0 environment that enables users to create and collaborate on-line in real-time via an immersive, lifelike experience. V6's enablement of this new community strategy is poised to become a catalyst for innovation and discovery in an industry faced with some of the biggest challenges facing humankind •

For more information:
Jean-Colombel@3ds.com
www.3ds.com/solutions/life-sciences

Elekta imaging tool



Treating Phobias in Virtual Reality

By **Lisa Roner**

Stephane Bouchard
Director, Canada Research Chair - Clinical Cyberpsychology, UQO

Cyberpsychology researchers from Université du Québec needed to quickly and easily create and deploy effective treatment scenarios in virtual reality (VR). They chose 3DVIA Virtools on a Microsoft development and operating platform to develop stable and reliable virtual environments, and use them to treat patients.

The six-wall immersive room requires 6 projectors RGB and 8 computers to maximize the image quality, allowing the user to feel fully immersed into the virtual world.

Patients with anxiety disorders must face their fears to conquer them. But putting patients in close proximity to what they fear can be difficult. Patients who fear flying, for example, cannot change their minds about a flight once the plane is airborne – unless their experience is a virtual one.

HELPING PATIENTS FACE THEIR FEARS VIRTUALLY

Researchers in the Cyberpsychology Lab and the Canada Research Chair in Clinical Cyber-psychpology at the Université du Québec in Gatineau, Canada, are leveraging virtual reality environments using 3DVIA Virtools on the 64-bit Microsoft Windows platform and customized with Microsoft Visual Studio.Net to help patients with anxiety disorders face and manage their fears in a safe, controlled environment.

Immersive treatment conditions are created by projecting the virtual environments on the walls, floor and ceiling of a "CAVE-like" room, or by using special 3D goggles referred to as head-mounted displays (HMD). Everywhere patients look, the environment surrounds them, changing as they react to the scenarios – much as a video game changes based on the choices players make. The applications are being utilized to treat patients with conditions ranging from phobias and Alzheimer's disease to addictions. The success rate with virtual reality is equivalent to that for traditional treatments – around 75%.

With 3DVIA Virtools, we knew we would be able to quickly and easily create any virtual environment and have it work on any multiple display system.

"With 3DVIA Virtools operating on a Microsoft platform, our researchers can focus on developing applications quickly and that connect easily with a VR environment," says Dr. Stephane Bouchard, director of the Canada Research Chair in Clinical Cyberpsychology at UQO.

SEAMLESS AND REALISTIC

Although phobias and anxiety disorders can be treated effectively using traditional approaches, virtual reality environments offer a more practical approach in a clinical setting. It may not be possible for every clinic to keep spiders, snakes, high places, tight spaces and other common fear-inducers on hand to treat patients – but they can all be made available in VR.

3DVIA VIRTOOLS: OUT-OF-THE-BOX EASE

With a grant for infrastructure development, Dr. Bouchard's team acquired 3DVIA Virtools, which gives life to 3D objects and allows control in real time. "3DVIA Virtools was the best choice," Dr. Bouchard says, "because it is quick and easy to learn, supports rapid development of new environments, and allows us to use our environments both on the CAVE-like and HMD platforms."

To create virtual reality environments, the first step is to develop assets or 3D objects in a specialized DCC (digital content creation) or CAD software. Once models are optimized for 3D Real Time, they are imported into 3DVIA Virtools to create a full real-time 3D application. Finally, with the 3DVIA Virtools VR library, users can easily publish applications in different types of Virtual Reality environments. 3DVIA Virtools' use of VRPN, an open source protocol, allows its environments to be projected or displayed using virtually any hardware on the market. "All of the hardware we need is already compatible with 3DVIA Virtools, so we can just buy a piece of equipment and plug it in," says Bouchard.

Cyberpsychology Lab reasearch team

Apartment in 3D, aerial view

The VR Library component of 3DVIA Virtools links the application running on the "master" PC and the cluster of six computers that project images to the cave-like VR environment, ensuring the image is seamless where different surfaces meet. Once the geometry of the room has been input into the system, 3DVIA Virtools makes all of the necessary adjustments. With perspective matrixes, 3DVIA Virtools changes the point of view or stretches the image to show it properly as images are distributed on the surfaces of the room, saving months during design. "If we did everything from scratch, it would take many years to get to the level that 3DVIA Virtools gives us right out of the box," says Christian Villemaire, programmer and computer section team leader for Bouchard's research group.

CUSTOMIZATION WITH MICROSOFT

Villemaire says 3DVIA Virtools was chosen for its ease of use, and it has not disappointed. "3DVIA Virtools is flexible, allowing the team to use the building blocks section for adding more functions and creating new building blocks," Villemaire says. "Or we use Microsoft's Visual Studio.Net to alter the code of existing building blocks in 3DVIA Virtools." Visual Studio.NET gives the lab the power to modify standard blocks of source code in 3DVIA Virtools to create customized objects quickly and easily.

If we did everything from scratch, it would have taken many years to get to the level that 3DVIA Virtools gives us right out of the box.

The lab runs 3DVIA Virtools on the popular Microsoft XP Pro operating system. The team's new development workstations feature Windows Vista 64-bit technology, which delivers the high levels of random access memory (RAM) needed to create more powerful scenarios, launch multiple applications simultaneously, and handle large VR environments.

SPEED AND DEPENDABILITY

"Because we are funded by research grants, if we needed to spend three years just to develop the backbone and all of the codes for the virtual environment, we would be out of cash," Bouchard says. "Speed is absolutely key, and showing progress on our research is important for securing the next round of funding. You also can test everything directly in 3DVIA Virtools. If it works in 3DVIA Virtools, it will work in the VR environment."

Bouchard says 3DVIA Virtools is the dream solution for a research environment. "We're the ninth cave-like environment in the world and the only one dedicated to mental health, and it's because we're using 3DVIA Virtools," he says. "We wouldn't be able to do it otherwise" •

For more information:
w3.uqo.ca/cyberpsy

With Abaqus FEA software from SIMULIA, GN ReSound can simulate the realistic behavior of its hearing aid devices thus improving hearing aid performance while shortening development time.

By **Dora Lainé**

GN ReSound Uses SIMULIA to Optimize Product Performance

The rate of hearing loss in the global population is estimated at between 1.5 and 5 percent, depending on the definition of "deafness." Total lack of hearing is actually rare, but when hearing loss occurs within the normal frequencies of human speech, it can create significant challenges at any age. Most cases of hearing loss can be improved with externally worn, behind-the-ear (BTE) hearing aids. But designing high-tech hearing aids that are light, comfortable and stylish can be a challenge for BTE hearing aid design engineers.

HEARING AID SPECIALISTS

The GN ReSound Group is one of the world's largest providers of hearing instruments and diagnostic audiological instrumentation. GN ReSound engineers perform design analysis and testing in a high-tech acoustics laboratory at the company's corporate headquarters in Copenhagen, Denmark. Just a few years ago, hearing aid prototypes were physically tested in the lab, and modifications in their design and composition were made according to the results. But now GN ReSound uses Abaqus FEA software from SIMULIA to test its designs thus reducing the number of prototypes needed and significantly shortening development time.

FINITE ELEMENT ANALYSIS FOR ACCURATE RESULTS

"Before simulation, we were limited to a trial-and-error approach for all our hearing aid design and testing," says Morten Birkmose Sondergaard, Senior Acoustic Engineer at GN ReSound. "With Abaqus we can accurately evaluate and alter the behavior of a hearing aid in the early design stages making the device more stable and improving its performance."

MODELING THE HEARING AID

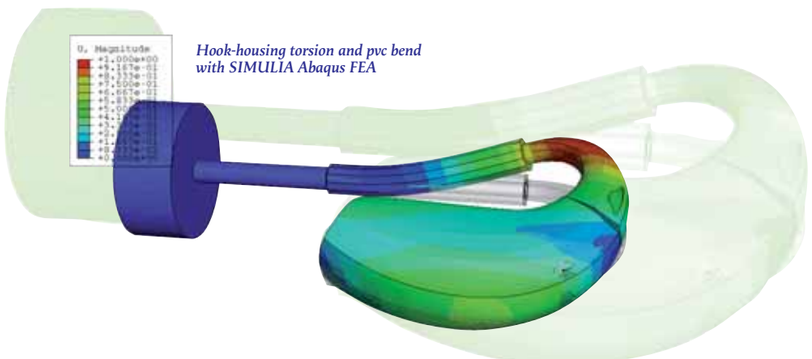
Abaqus software enables GN ReSound engineers to make computer models of all the critical elements of a hearing aid. They run their models through virtual vibration and sound pressure stresses that approximate real-world conditions, assess performance, and then validate the results with laboratory tests of actual units.

Within Abaqus, models of critical connections, such as that between the steel receiver housing and the rubber tube that goes over the receiver sound port, are a particular focus for simulation. Abaqus' "shrink-fit" function is used to model the important pre-tension in the part of the rubber tube that stretches over the underlying receiver sound port. Acoustic resonance frequencies are also studied using an FEA modal analysis, which incorporates both natural vibration frequencies and the specific vibration patterns of the structure being studied. And with Abaqus' multiphysics capabilities, engineers can analyze the air that conducts the sound as well as the interaction between the air and the unit itself.

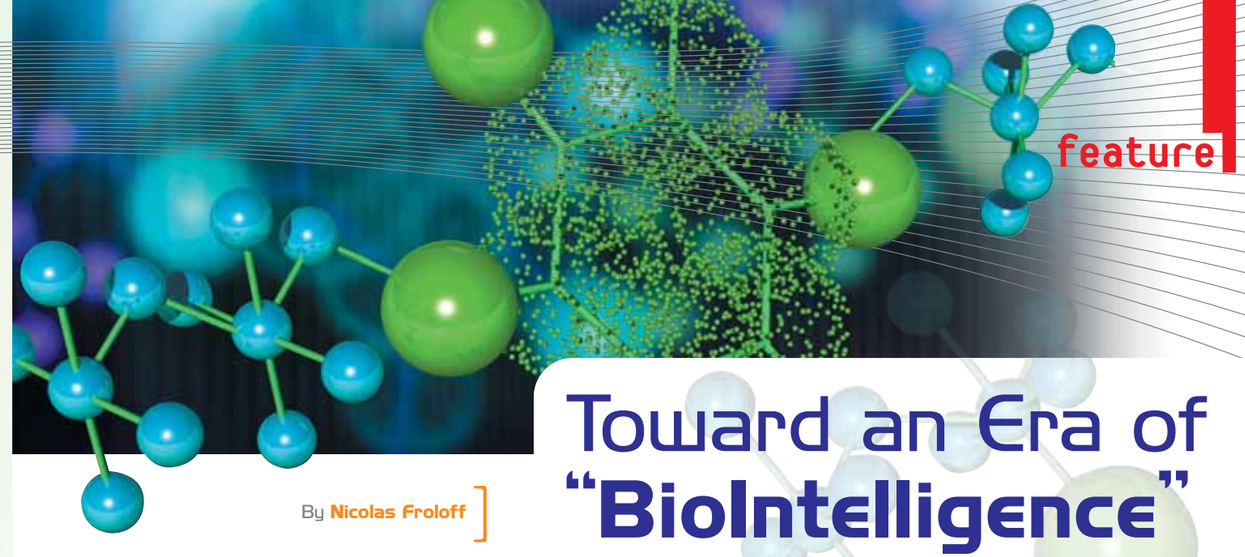
VIRTUAL TESTS VALIDATE REAL-WORLD RESULTS

Virtual test data and real-world results are in close agreement. Consequently, materials and components can easily be adjusted to produce a device that provides maximum sound with no "squeal"."We now have a greater understanding of what causes instability so we can eliminate these causes in the early design stages," says Sondergaard. "Thanks to SIMULIA we can optimize designs for all our hearing instrument products" •

For more information:
www.gnresound.com



Hook-housing torsion and pvc bend with SIMULIA Abaqus FEA



feature

Toward an Era of "BioIntelligence"

By **Nicolas Froloff**

Life sciences is the next frontier for PLM and Dassault Systèmes (DS) is driving several initiatives to provide answers to the growing complexity in biological and medical research and development.

R&D spending in healthcare is more than that of the automotive and aerospace industries combined. The sheer complexity of drug development, scientific research and patient care, combined with the siloed nature of pharmaceutical activities, prompted DS to consider the benefits that a PLM approach could bring to this sector. Although PLM is not yet the norm in life sciences, this market offers promising opportunity.

After several contacts with a number of pharma companies, DS realized that potential significant synergies could be achieved through collaboration with key partners aimed at addressing the many and varied requirements and challenges facing the pharma industry. Among a number of initiatives in progress is BioIntelligence, an innovative and ambitious long-term R&D project whose objective is to bring together a DS-led consortium of industrial firms, software companies, and academic and government research labs. The goal is to create a "BioPLM" platform dedicated to the discovery and development of new and improved biological products in the life sciences sector, and in particular, in the pharmaceutical, biotech, and phyto-care industries.

The project is viewed positively by the European Community. EU Competition Commissioner Neelie Kroes said: "The systemic modeling and simulation tools in this particularly innovative program will substantially improve the efficiency of biological research. BioIntelligence and the BioPLM platform that will be developed by it are entirely consistent with key objectives in European research."

There is a revolution sweeping life sciences. The industry is at a turning point and ripe for dedicated solutions that will transform its processes and help meet the increasing demand for new drugs and treatments. The potential impact on drug research and development of a PLM platform that fosters new collaborative practices between research labs is huge. Applying PLM "next" practices should enable life sciences organizations to optimize their research phases, improve the efficiency within their supply chains and help companies comply with increasing regulatory constraints. And this is just the beginning! •

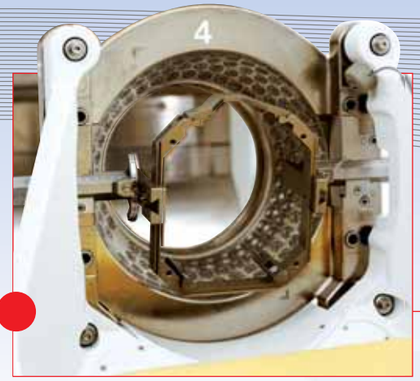
Two questions to Patrick Johnson, head of research at Dassault Systèmes:

Contact Mag: Dassault Systèmes has made a name for itself transforming manufacturing industry processes thanks to PLM. What will PLM bring to the sector of life sciences?
Patrick Johnson: We believe that there is a real potential for PLM to transform the life sciences industry with collaboration, modeling, and simulation. Due to its innovative cross-disciplinary collaborative approach, Dassault Systèmes' V6 platform is expected to be the foundation for BioPLM and aims at going past what people thought they could do. Given the silos of information in sectors like agrochemicals and pharmaceuticals, V6 can offer a unique framework for managing intellectual property and scientific knowledge as well as promoting collaboration between different research entities. It therefore can help companies manage the complexity of data and adapt their logistics along the product development pipeline.

C.M.: How will PLM have to evolve in order to adapt to the needs of this sector?
P.J.: In industries such as pharma or cosmetics, we are facing new challenges. With life sciences, we are challenged to embrace the complexity of nature. We therefore need to extend PLM as a means to understand this new scientific data in its full variety, scope and size, and to leverage the discovery process of our customers by enabling simulation, analysis, and collaboration on top of it. We are therefore considering a new horizon for PLM 2.0 extending from product to nature and life and fueling our passion for innovation in this new sector.

Elekta Neuroscience continues to advance significant innovations for treating cancer and brain disorders.

The non-invasive treatment is shaped by beams of ionizing radiation that have sufficient penetration to reach even the most deeply seated tumors.



The system delivers prescribed doses/shots of radiation in compliance with a pre-prepared treatment plan, to the exact site of the target, sparing the surrounding tissue.

Collimator close-up

Ensuring Regulatory Compliance with ENOVIA

By **Erik JOHANSSON**

Elekta relies on ENOVIA to consolidate all engineering data and processes across the product lifecycle and to provide its 2,500 employees and partners with a single digital source of information. With ENOVIA, Elekta can manage vast amounts of product data and easily locate documents and process information for audits.

Elekta Synergy®, the first advanced multi-functional linear accelerator with intensity modulated radiation therapy and image guided radiation therapy

Elekta is a pioneer in innovative clinical solutions for the treatment of cancer and brain disorders. Based in Sweden and with approximately 2,500 employees worldwide, Elekta is the global leader in image guided and stereotactic clinical solutions for radiosurgery and radiation therapy, giving radiation oncologists and neurosurgeons an unprecedented capability to aggressively treat tumors with ultra-high precision without damage to nearby healthy tissue.

Introduced in 1972, Elekta's solutions in oncology and neurosurgery are currently used in over 5,000 hospitals worldwide that each day provide more than 100,000 patients with diagnosis, treatment or follow-up thanks to Elekta's advanced technology.

COMPLIANCE TO REGULATIONS - A PREMIUM CONCERN

Companies in the life sciences industry face a unique challenge that sets them apart from other manufacturers – the high degree of regulation imposed by governments used to ensure product quality. A crucial part of Elekta's activities is monitoring and adhering to regulations established by the U.S. Food and Drug Administration (FDA) as well as other international regulators. These regulatory bodies expect Elekta to master vast amounts of data. During an audit, for example, the company must be able to quickly provide any document related to its products and development processes. Elekta realized that its former paper-based data management system was unworkable and turned to ENOVIA five years ago for product development and compliancy.

EXTENDING COLLABORATION WITH ENOVIA

With ENOVIA, Elekta has a flexible, enterprise-wide PLM solution that covers all areas of product development including administration, security, workflow and integration. It provides a single digital source of information, consolidating all engineering data and processes across the product lifecycle. "Even at an early stage, our management had big plans for ENOVIA," says Bo Nilsson, R&D manager, Eletka. "A global company like Elekta requires a robust PLM system."

> We have a very intuitive user interface and a smarter view of our work. Thanks to ENOVIA, we can ensure that everyone looks at the single version of the truth.

Elekta has design centers in Sweden, the UK and China. Each office is responsible for designing different parts of a treatment system. Elekta uses ENOVIA Engineering Central to facilitate communication and collaboration among these teams, as well as its sales, service, production facilities and external resources. It also uses Engineering Central to manage parts and bills of material (BOM), and drive its global product development and change processes. "We have a very intuitive user interface and a smarter view of our work," says Christian Rossby, Designer Engineer, Elekta. "Thanks to ENOVIA, we can ensure that everyone looks at the single version of the truth."

The company uses ENOVIA Designer Central to integrate its CAD data. In addition, Elekta is planning to expand global collaboration between offices through PLM and integrate more partners in the system. "It's a big advantage for our purchasers to work with subcontractors who are already integrated in the system," says Nilsson. Elekta also plans to link its ERP system and ENOVIA so that data can be transferred between the different systems seamlessly.

SUCCESSFUL AUDITS

ENOVIA has helped Elekta to better adhere to FDA regulations and provide auditors with the information they require immediately. A recent FDA audit was a total success. "The inspectors were very satisfied with our system, which gave them a clear and honest view of our operations," says Nilsson. "Authorities don't have any reason to question anything since transparency in the system helps avoid mistakes and misunderstandings. As a matter of fact, the FDA praised us by saying that we have excellent control over our information."

> We're looking forward to V6 so that we can benefit from even more efficiency thanks to a faster system, better maintenance, and a solution that is more adjustable to our needs.

In January 2006 Technia became the official PLM partner to Elekta. "Technia is a proactive and valuable partner to us that provides support and other application management services in the best possible way by constantly challenging our thoughts of how to use PLM. They also provide a network of customers within the life sciences industry, which makes it possible for us to benchmark and gain knowledge about system validation and other important aspects of PLM," says Bo Nilsson.

Elekta will transition to ENOVIA V6 in the near future. "ENOVIA has saved us a lot of time," said Nilsson. "It's now much easier to find a particular document or plan than it was before. We're looking forward to V6 so that we can benefit from even more efficiency thanks to a faster system, better maintenance, and a solution that is more adjustable to our needs," he says •)

For more information:
www.elekta.com
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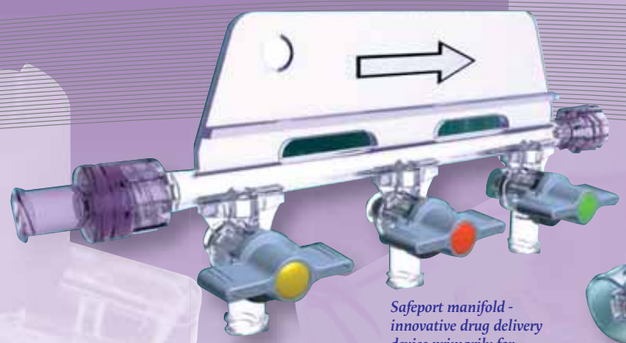


Safeport manifold - innovative drug delivery device primarily for anesthesia procedures

Disposable pressure transducer

Slit-septum and cannula line Needleless components for intravenous applications

By **Shelli Zargary**

Validating Innovation at **Elcam Medical**

Ori Ziv, PLM Project Manager, IT Dept.

Mid-sized manufacturer of injection-molded disposable medical devices, Elcam Medical needed a collaborative product data management and process validation solution to comply with regulatory standards. By selecting ENOVIA SmarTeam, the company has improved production efficiency while ensuring product quality.

Elcam Medical is proof that a small company that combines ingenuity with product and process knowledge can succeed in the challenging medical device market. The company capitalizes on its product design and production procedure know-how by executing a smart business methodology supported by ENOVIA SmarTeam PLM. As a result, the company can offer a broad scope of validated medical products and services far beyond the capacity of most companies its size. With ENOVIA SmarTeam, Elcam Medical ensures regulatory compliance and product quality while increasing design and manufacturing process efficiency, saving time and money.

FROM IDEAS TO SOLUTIONS

The world's third largest supplier of disposable stopcocks, valve-like devices used for a variety of clinical applications such as measuring and administering drugs, Elcam Medical today delivers a broad range of fluid management, drug delivery and vital signs monitoring systems and devices to customers and OEM suppliers worldwide. In addition to its many products, Elcam Medical also offers full medical product development services "from Idea to Solution for the End-user", with particular expertise in high-volume precision molding, high-speed assembly and laser applications.

Elcam Medical selected ENOVIA SmarTeam to both organize its validation documentation, working with a comprehensive and easily accessible repository of all its validated product and process data, as well as to enforce these documented, standardized production procedures. This structured access to its knowledge has empowered Elcam Medical engineers to agilely and efficiently reuse validated designs to more rapidly develop more products, as well as to capitalize on its technological and production capacities by selling turnkey services to third parties with ideas for new medical products.

Saving time and preventing errors when building new product structures.

"To strictly comply with FDA (Food and Drug Administration) and ISO (International Organization for Standardization) standards, the medical device industry requires comprehensive tracking of development and manufacturing processes, forcing engineers to employ standardized procedures," explains Ori Ziv, PLM Project Manager in the IT Dept. "ENOVIA SmarTeam facilitates easy, complete implementation of such procedures. In this way, each engineer working on a drawing uses the latest, most accurate version, eliminating data duplication and human error."

LEVERAGING DESIGN REUSE

As a small manufacturer, Elcam Medical also needs the PLM system to enable design reuse to efficiently and concurrently manage its broad product configuration portfolio. According to Ziv Naftalovitz, R&D Leader, "The job of the design engineers is to translate specifications of customer requirements from the marketing department to SolidWorks 3D models. Receiving a new customer request, the engineer looks for relevant existing designs in off-the-shelf products that meet the specifications and copies them into the new product."

Project Leader Danny Moshe explains, "We try to avoid having to carry out a long, expensive validation process for a new product that involves only a small design change; we produce a huge volume of parts and sub-assemblies, therefore our documentation has to be very accurate and we must be very precise in design storage and reuse. ENOVIA SmarTeam has rapidly accelerated searching of design data. Efficient access, finding and reusing validated parts in new designs saves time and assures quality. Design engineers attach drawings to every work order that goes to production, and thanks to the system, production staff can print the correct drawings without involving the engineers."
In addition to tracking of product histories and enabling design reuse, the system facilitates collaboration via secure access to authorized users, with full transparency and measurability of all processes. "The main users are the product design and manufacturing engineers, QA and production planning," says Ori Ziv. "ENOVIA SmarTeam allows transparency in the interface between departments, so that, for example, the production team with one click, sees the right design data they need, and only this data. In the future, the Marketing and Business Development departments will also have access."

With one click, the team sees the right design data they need, and only this data.

THE KEY: A METHODICAL APPROACH

"To comply with FDA regulations, medical device manufacturers must perform process validation for all products, which requires adherence to strict methodologies, involving a very high volume of documentation," says Danny Moshe. "There are four stages in the validation process – Risk Analysis, Installation Qualification, Operational Qualification, and Performance Qualification. All of them must be fully documented. We automatically create process validation templates on top of the ENOVIA SmarTeam platform, saving a lot of time and preventing errors when building new product structures. Then the SmarTeam integration to MS Office enables efficient transfer to MS Word forms." He adds that they use SmarTeam Integration when designing equipment in SolidWorks, entering metadata into the ENOVIA SmarTeam profile cards. This correct data is then automatically featured on the drawing templates, saving a great deal of time and errors.

Moshe explains that the experiments they run during their production processes, involve several lots of tests with statistical information and voluminous documentation. In the future, they plan to use SmarTeam Workflow to automate the procedures.

By organizing the validation documentation, ENOVIA SmarTeam helps Elcam Medical improve knowledge management, moving them towards their future vision of running a paperless office. "ENOVIA SmarTeam protects and enables collaboration around all our valuable corporate knowledge," concludes Lior Izenberg, Elcam Medical Engineering Manager •

For more information:
www.elcam-medical.com

More about Elcam

With over 25 years experience in the medical device field, Elcam Medical develops precision injection-molded disposable medical devices for a variety of clinical applications: IV Therapy; Anesthesia; Patient Monitoring; Cardiology & Radiology and Endoscopy/ Laparoscopy, as well as drug delivery devices such as auto-injectors. Elcam is the premier provider of stopcocks and manifolds to the US and European OEM markets, supplying over 30% of their stopcock needs.

3dvia

Valmet Komatsu Forest

Komatsu Forest Increases Production Quality with 3DVIA Composer

With a passion for technology and a product development approach that merges productivity, ergonomics and environmental strong points into cutting-edge advantages, Komatsu Forest sought a way to improve product assembly and avoid recalls.

Interactive 3D Documentation in use at Komatsu Design department

Sweden's Komatsu Forest manufactures machinery under the mechanical forestry brand Valmet. In the Umeå Komatsu factory, production staff used to work with two-dimensional images as the basis for the assembly work. The production work is complex and the company experienced challenges in achieving a consistent level of high quality assembly work. The introduction of 3DVIA Composer has allowed Komatsu Forest to create comprehensive, interactive 3D work instructions on the shop floor. This superior communication is helping to reduce errors significantly.

> 3DVIA Composer is empowering users to revolutionize their businesses by leveraging the universal language of 3D in their everyday work.

Komatsu Forest uses the interactive 3D documentation capabilities of 3DVIA Composer across their entire production process, including assembly instructions, equipment maintenance, and spare parts documentation.

"It can be quite complicated to set up our machines. With moving images instead of the previous sketches on paper, the production process becomes much easier and leading to much better results", said Maria Larsson, CAD manager at Komatsu Forest.

Komatsu Forest, striving to increase productivity while lowering energy consumption and limiting mechanical damage to the forest, already uses Dassault Systèmes virtual product design solution CATIA. It was easy to re-use CATIA information directly in 3DVIA. "We saw the direct benefits we could achieve with the solution. 3DVIA Composer is fully integrated with CATIA. Prototype work, where you still make several changes during their development, is much easier. Everyone who is involved has always access to the latest information," said Maria Larsson.

In the long term, Komatsu Forest sees the possibilities of using interactive 3D information within marketing materials, and also for the training of dealers and users. The next step is to integrate Komatsu Forest's design and product data into ENOVIA SmarTeam.

"The improvements in productivity and overall results experienced by Komatsu Forest are happening with other companies across the globe," comments Garth Coleman, Director Product Marketing, 3DVIA, Dassault Systèmes. "3DVIA Composer is empowering users – outside of engineering – to revolutionize their businesses by leveraging the universal language of 3D in their everyday work" •)

For more information:
www.komatsuforest.com
www.3dviacomposer.com
www.3dmojo.com

More about 3DVIA Composer

Change forever the way you create, update and distribute rich product documentation! 3DVIA Composer quickly and easily automates creation of assembly and disassembly procedures, technical illustration, interactive 3D animations, training materials, marketing materials, sales tools and more. Based on a light-weight, open XML-based architecture, 3DVIA Composer allows non technical users to create associative 2D and 3D product deliverables directly from CAD data. 3DVIA Composer supports users in sales, marketing, customer service, training, support and manufacturing.

CATIA V6 - Industrial Design

Car seat - FEA simulation

© Under Armour

V6R2010 Brings PLM 2.0 to Mid-Market and Non-Expert Users

By Fabien Fedida

With a new offer specifically tailored for mid-market businesses and small teams, plus groundbreaking direct-modeling capabilities and realistic simulation solutions for non-experts, V6 release 2010 helps to deliver on the promise of PLM 2.0 - PLM online for all - for a broad new spectrum of users.

V6 PLM Express, a key component of V6R2010, is the first set of V6 solutions specifically tailored for mid-market businesses. Designed for rapid deployment, V6 PLM Express is offered as a prepackaged, ready-to-use environment.

eMedia designed with CATIA V6

PLM 2.0 FOR THE MID-MARKET

V6 PLM Express benefits from more than a decade of DS experience in providing leading mid-market PLM solutions and builds on key V5 PLM Express values, including ease of use, deployability, low cost of ownership and mid-market, role-based functionality.

DS took the needs of mid-market users into consideration from the beginning of V6, serving various types and sizes of customers by combining the best of ENOVIA MatrixOne, VPLM and SmarTeam on a single, open, scalable platform with a web services architecture. Implementations can literally start with a handful of V6 users engaged in design and grow seamlessly to more than 100,000 users in a broad range of functions – from design and simulation to requirements management and sourcing.

V6 PLM Express leverages the single-platform approach to open up key PLM 2.0 values to mid-market users, including real-time seamless collaboration, online-enabled design-anywhere functionality, and global collaborative innovation. For example, online-enabled design makes it possible for a designer to log into a central office database from a remote location and edit a model directly over the web. Global collaboration makes it possible to do so in real-time with co-workers located anywhere worldwide.

V6 PLM EXPRESS: EASY, RAPID DEPLOYMENT IS BUILT IN

V6 PLM Express solutions have been engineered from the ground up for rapid deployment. For example, V6 PLM Express is easy to buy, with a role-based packaging that allows mid-market users to quickly and easily identify solutions that match their needs. Out-of-the-box configurations make V6 PLM Express easy to install and implement. Because the offerings of V6 PLM Express are a tailored subset of the larger V6 portfolio and use the same interface, paradigm and data model, they also are easy to grow to a full range of V6 applications.

Dassault Systèmes brings V6 to new communities: advances simplicity, accessibility and readiness of PLM 2.0.

The solutions are easy-to-use, thanks to the intuitive, award-winning V6 interface and full integration with the familiar Microsoft environment. Users can manage PLM objects and documents within V6 using the “cut and paste” and “drag and drop” functions of Microsoft Windows, or save, browse and navigate product content from within the Microsoft Office suite of applications. Users also benefit from design methodologies consistent with those in V5, making them more productive more quickly with minimal training.

All V6 solutions share the same interface and data model, enabling easy supply chain integration between mid-market suppliers and OEMs. Finally, lean solution packaging by role ensures that V6 PLM Express is priced to fit the needs and expectations of the mid-market.

EXPERT TECHNOLOGIES FOR NON-EXPERT USERS

Revolutionizing the user experience is a key value of V6. V6R2010 delivers, bringing the power of expert technologies to new communities of non-expert users with key features of CATIA Live Shape and SIMULIA DesignSight Structure. Now even non-CAD users can quickly create or modify design concepts in 3D as if they were working with modeling clay – even if the designs were created in a non-DS CAD system – for viewing and editing in CATIA Live Shape or CATIA workbenches. Meanwhile, SIMULIA DesignSight Structure makes advanced simulation technology for non-linear finite element analysis accessible to non-expert users, including designers. Also, DS Dymola technology and component libraries allow CATIA Systems users to easily simulate the dynamic behavior of systems.

Within its customer base, DS directs this first mid-market release to its CATIA file-based users. Future releases will be designed to address the needs of existing ENOVIA SmarTeam users. ENOVIA SmarTeam V5 will continue to be sold, supported and enhanced. No “end of life” is planned for V5 in general or ENOVIA SmarTeam V5 in particular. DS will continue to invest in, maintain, enrich and sell V5, and remains committed to its more than 8,000 ENOVIA SmarTeam customers worldwide •)

For more information:
www.3ds.com/products/v6

The Growing V6 Family

The Dassault Systèmes V6 collaborative platform has been adopted in a wide range of industries, including Apparel (Guess, Under Armour, Trent Ltd.); Consumer Packaged Goods (Procter & Gamble); Life Sciences (Beckman Coulter); High Tech (Lexmark International, novero); Semiconductor (Dialog Semiconductor, INSIDE Contactless); Energy (Oceaneering, Stork GLT); Aerospace (Piaggio Aero Industries, Eaton Aerospace); Automotive (Eaton, Great Wall Motors, Johnson Controls, Renault); Business Services (TÜV Rheinland); and Construction (Skanska).

Business Process Accelerators Deliver Rapid Return on Investment

By Cédric Bellanger

Business Process Accelerators address customers' needs for industry-specific solutions that help increase productivity while eliminating the cost of developing and maintaining tailor-made solutions of their own. Dassault Systèmes recently released four new BPAs in the area of documentation management and animation.

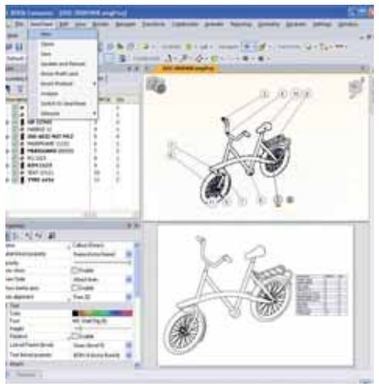
For three years, Dassault Systèmes (DS) has been providing specialized solutions that were developed thanks to its extensive experience gained by working with customers and understanding the specifics of their professions. These solutions, called Business Process Accelerators, or BPAs, are ready-to-use packaged offerings of industry-related processes and methodologies. They are aimed at customers seeking productivity gains but who want to avoid going through the tedious process of developing and maintaining in-house solutions. BPAs are packaged so that they can be used in different industry situations. They are easy to implement, DS-certified, supported, maintained and up to date. Rapid ROI guaranteed!

Thirty BPAs are available in V5 and one in V6R2010. They cover a variety of domains: system engineering; software interoperability; collaboration and even some that pertain to specific industry processes. And now, just released: 3DSmartDocCreator and Animation Importer / Exporter.

IMPROVING TECHNICAL DOCUMENTATION MANAGEMENT

Lack of collaboration between design and documentation departments is a stumbling block to productivity. Design changes that are not included in the documentation, or additional requests from the documentation team to designers are just some examples that lead to project delays, errors, and low quality.

Dassault Systèmes recently released two new and complementary BPAs, 3DSmartDocCreator Client and 3DSmartDocCreator Server, to help streamline the design-to-documentation process. 3DSmartDocCreator Client allows the 3DVIA Composer user to manage and store 3D documentation created with 3DVIA Composer in ENOVIA SmarTeam. Some advantages include automatic update of changes in a 3DVIA Composer project after a design change and direct creation of 3DVIA Composer projects based on existing SmarTeam Objects.



3DVIA SmartDocCreator

3DSmartDocCreator Server provides the ability to use important ENOVIA SmarTeam features to create and manage a document's lifecycle. It enables automatic conversion of 3DVIA Composer metafiles and geometry that are based on existing ENOVIA SmarTeam Objects. No need to spend time converting data on the client workstation.

EXPERIENCING MOVEMENTS IN CONTEXT

There is an increasing need for solutions that enable users to experience the virtual products and their kinematics in their environment and to present this experience using a web-based application with a user-friendly interface.

DS has developed two new BPAs that deal with experiencing movements.

Deplacement process with 3DVIA Virtools

BPA Animation Importer enables users to retrieve, in 3DVIA Virtools, the exact movements originally defined in the CAD system complete with kinematics constraints and definitions. Users can import, in one shot, the 3D model, motion and reference points from CATIA V5 or DELMIA V5. No need to re-define the movements, already designed in the CAD system. With this BPA, you can directly experience the CAD-defined movements in 3DVIA Virtools for a realistic experience.

BPA Animation Exporter exports the realistic manikin movements of a 3DVIA Virtools character to DELMIA. This is especially helpful when checking for collision and clearance of people when they move in a specific environment. The movements can either be directly defined in 3DVIA Virtools or by importing, in 3DVIA Virtools, data collected while recording real human body movements using a motion capture system

For more information:
Cedric.Bellanger@3ds.com

Student project body design

Prototype of a body for a model car

CATIA workstations in four modern classrooms

Manufacturing of the vehicle model

Jan-Georg Schröder
Department Leader GDS1

Jörg Jud
Senior Teacher GDS1

CATIA Gives German Apprentices a Competitive Edge

By **Thomas Otto**

At the heart of the German dual education system, the Gottlieb Daimler vocational school provides its students with CATIA training. Graduates are professionals equipped with much demanded new skills that help them land better jobs.

Preparing students for the challenging task of finding employment is a key objective of the Gottlieb Daimler School 1. Located in Sindelfingen, near Stuttgart, the school is named after one of 19th century's most influential inventors. GDS1 is an exemplary player in Germany's dual education system, which enables students to combine apprenticeships in a company and vocational education. Its mission: to train young people for metallurgy and technical jobs.

Students enrolled in professional curricula use CATIA for training and project work. "We are among the few vocational schools in Germany to use CATIA in our courses and projects," said Jan Georg Schröder, department leader at GDS1. "We not only teach geometry creation, we also focus on CAM, namely milling machines or production of STL data for our rapid prototyping equipment."

SKILLS THAT RIVAL THOSE OF ENGINEERS

Mechanical designers with CATIA knowledge are in high demand. GDS1 graduates compete for the same jobs as engineers who come from universities of applied sciences. "Our technicians, who often complete their education with work experience at OEMs, automotive suppliers, machine manufacturers or medical equipment makers, are in big demand on the market," said Schröder. GDS1 graduates have industry know-how, project organization skills and are, above all, proficient in CATIA.

CATIA - A STANDARD ACROSS INDUSTRIES

"CATIA is the standard in the industry and this includes suppliers many of whom in the Stuttgart area use this solution," commented Schröder. "This is why providing CATIA training to our students puts them at a considerable advantage when looking for employment. We reproduce real industry conditions here at school. For example, we distribute different development tasks of a vehicle to several teams, and their objective is to seamlessly reassemble the data in one model."

Design methodology is part of the core program provided to first-year students. "Since 40% of our graduates work in the automotive industry, mostly as designers, their CATIA training gives them a significant advantage," said Jörg Jud, senior teacher, GDS1.

The school's commitment to CATIA is illustrated by the number of workstations that has continued to increase over the years bringing today's total to 68.

A solid CATIA training for technical product designers

> It's important for students to acquire autonomy when conducting a cross-disciplinary project. A part designed in my class can be used in my colleagues' class to program the machining.

AN INTRODUCTION TO THE CAD CAM CAQ PROCESS CHAIN

CATIA training begins with the design and drawing of parts and assemblies. In their second year, students receive training on Generative Shape Design, a more sophisticated surfacing application. With respect to additional learning subjects, Schröder said, "As part of their final technical project, second-year students also have to define a development plan and do a cost analysis. Their acquired knowledge of CATIA and project management skills are often the silver bullets that help land the desired job."

Of course, during their project, students are eager to build something. Sometimes they like to add detailed features that turn out not to be manufacturable. Jörg Jud explained, "I sometimes have to dampen their enthusiasm and ask my students: can the part be machined? Can it be assembled? Does its design render production too expensive?"

"It's important for students to acquire autonomy when conducting a cross-disciplinary project," explained Jud. "A part designed in my class can be used in my colleagues' class to program the machining. The result can be used in a post-processor and sent to the cutting machine. Finally the quality of the produced part can be measured with a 3D laser scanner."

PARTNERING WITH COMPANIES AND SCHOOLS

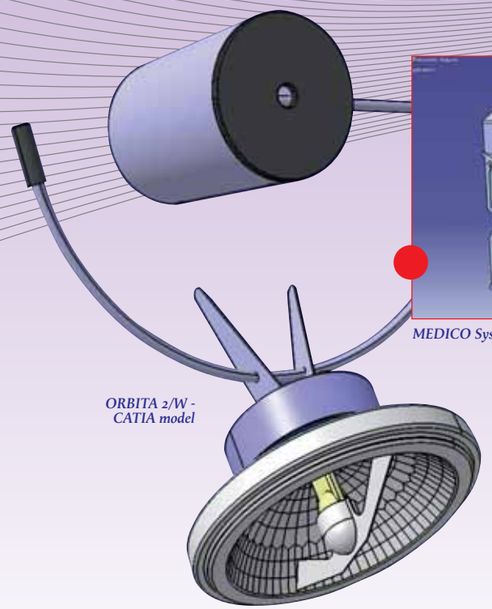
"At every step of the way, we have received excellent support from DESYS, a Dassault Systèmes business partner in Böblingen. And it's lucky for us they are around and readily available to lend a hand," said Jörg Jud. The school is currently planning the next steps in its CATIA education program. With the help of DESYS, all students have been able to acquire a powerful laptop with a one year CATIA license at a very affordable price. Jud added, "At the start of the current school year, our students will be able to use CATIA on their laptops anywhere, anytime."

This will benefit ongoing school projects. One example is a mandatory course called "product design", which is a joint effort with the Tamiya Company to develop and produce the prototype of the body of a remote-controlled car model. The students are also working on the design and manufacturing of a glider with a partner school in Singapore. This involves a great amount of engineering creativity, which quickly and more reliably is transformed into reality thanks to CATIA •

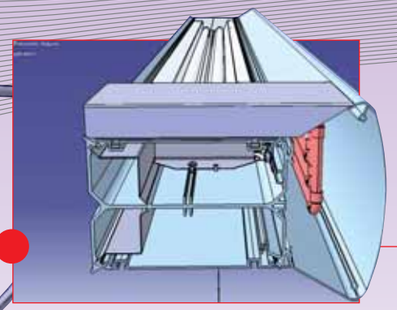
For more information:
www.gds1.de
www.3ds.com/education

CATIA for education

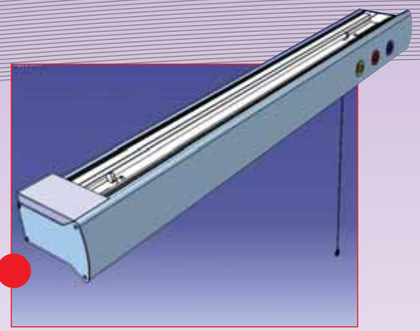
Dassault Systèmes' academic offering is designed to create opportunities for academic innovation for students of all ages, from secondary school to the PhD level. It guarantees the most affordable and broadest digital environment for future technicians, engineers and researchers. It provides a wide range of educational material to inspire educators and ensure best practices. This content is available for free to registered educators at www.Campus.3ds.com.



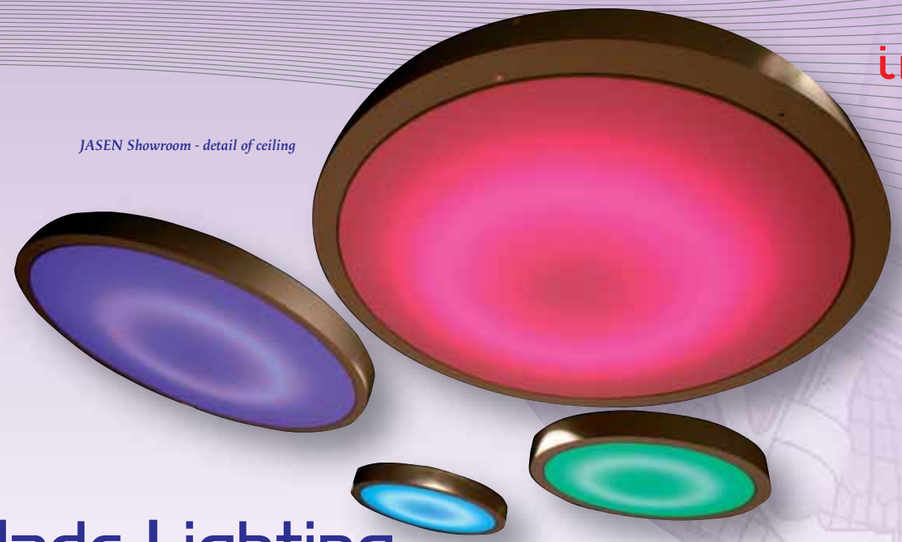
ORBITA 2/W - CATIA model



MEDICO System Inside - CATIA model



MEDICO System Outside - CATIA model



JASEN Showroom - detail of ceiling

Miroslav Zivanovic
R&D Manager, Buck

By **Miroslav Zivanovic**

Quality Custom-Made Lighting

BUCK's success lies in its ability to design innovative lighting solutions that are both functional and aesthetically pleasing. Thanks to the talented designers it works with and its use of CATIA, BUCK produces quality lighting that has made it a respected player on the international market.

Who would have thought back when the company was founded that BUCK would be the first Serbian company to win the prestigious "red dot award for product design" 17 years later? After all, red dot is the most renowned design award in the world and an internationally recognized label for design excellence. Thanks to BUCK's Medico Hospital Lighting and Supply Unit, an integrated lighting solution for intensive care units that combines lighting with medical gases, the company has gained membership in the select club of what internationally renowned designers and design experts consider the best in design and business.

Telekom - Office building

CHANGING TRENDS IN LIGHTING NEEDS

Cooperating and maintaining a close relationship with its 600 or so clients requires a flexible approach to lighting design. Designers create complete lighting systems in response to the changing trends in the European and international market. They incorporate modern technology in their designs that increase lighting efficiency hence reducing energy consumption. BUCK also demonstrates its eco-friendliness by using materials that respect the environment.

CHALLENGES THAT REQUIRE FLEXIBILITY

Architects are often faced with numerous challenges that include technical as well as aesthetic considerations. "Architects want to work with us because our solutions are flexible and this enables them to accomplish what they have in mind. Thanks to the support of a 3D solution like CATIA we can easily develop original designs that include sophisticated technical and technological solutions," said Darko Budec, President of BUCK.

CATIA also enables BUCK to virtually show its customers different variations of a lighting system, which helps in the decision-making process. "Showing our customers the different 3D mock-ups brings additional value to the service we strive to provide them with. Adjustments are quick and the resulting design respects the customer's wishes entirely," said Budec. And thanks to the integrity and

Telekom - Conference room

associativity of CATIA 3D models across products such as 3D Part Design, 2D Drafting and Generative Sheetmetal, changes made to the original design are quickly and accurately reflected downstream, which considerably reduces development time. Designers can automatically update 3D models and their associative 2D drawings and quickly transfer the data to their punch press machines using the DXF format.

A CATALOGUE OF OVER 500 ARTICLES

BUCK's Architectural Lighting catalogue for 2008/2009, intended mostly for interior designers, contains 30 groups of products and over 500 articles. This catalogue is the result of a three-year effort by engineers working in R&D at BUCK, a relatively short amount of time considering the volume and scope of this project. It was possible thanks to CATIA. The digital mock-ups of the light fittings designed with CATIA contain technical and technological information, which is BUCK's intellectual capital. And with recently acquired 3DVIA Composer, BUCK can use these 3D designs to create interactive installation procedures for its customers. For example, thanks to 3DVIA Composer's animation capabilities, a designer created animated installation instructions for BUCK clip-in ceiling lighting for one of its partners, a supplier of suspended ceilings in Russia. "With 3DVIA Composer we are able to create documentation that is clear and easy to understand for anyone wishing to install our lighting systems," said Budec.

PROTECTING INVESTMENT

By virtually simulating the construction of future products, BUCK can very early check the geometrical accuracy and discover potential downstream assembly problems. "Designs that present geometrical discrepancies in the assembly as well as potential technological problems jeopardize investments related to tool production, which nominal value exceeds 100,000 euros. Thanks to CATIA, we secure our investments and reduce errors," said Darko Budec.

BUCK received technical support from CAD-CAM DATA, a member of the CadCam Group, Dassault Systèmes' reseller in Serbia. After successfully completing implementation and training on CATIA V5R15 XM1 in 2005, BUCK was able to design parameterized lighting systems that can be adjusted to different spaces and ambiences.

BUCK will soon transition from CATIA XM1 to CATIA PLM Express to take advantage of its data management capabilities. The objective is to manage technical and technological documentation throughout the company and to link its BOM to the company's ERP system •)

Changes made to the original design are quickly and accurately reflected downstream.

For more information:
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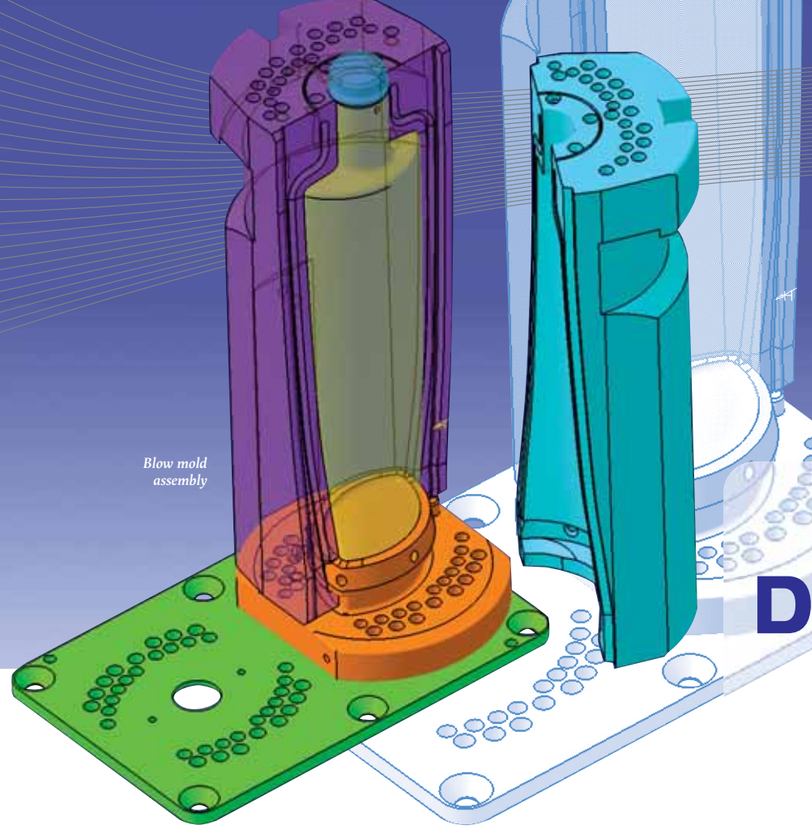
www.buck.rs

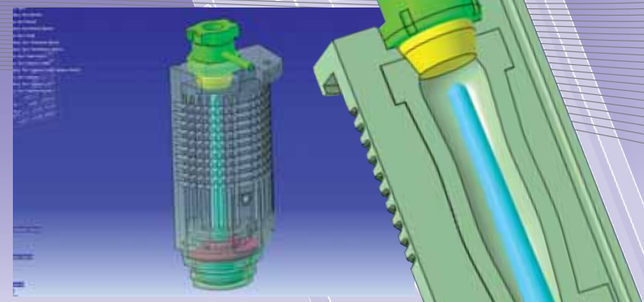
About BUCK

Founded in 1992, BUCK provides multi-purpose lighting solutions for spaces of all sizes. Its mission is to produce custom-made lighting of the highest quality and sophistication based on its client's needs. It also strives to provide customers with best in class engineering services in lighting solutions for shopping malls, office buildings, banks, insurance companies, universities, hospitals, factories, sports arenas, residential buildings and embassies. Its products are sold in Serbia as well as in Italy, France, Germany, Russia and Scandinavia. BUCK is ISO 9001-certified since 1997 and recently certified ISO 9001 by the Swiss certification company, SGS.



Blow mold assembly

Product rendering after modeling



Blank mold assembly

Anadolu Cam Reduces Design Time by 50% with CATIA

By **Dora Lainé**

Ozgun Hodul, Mold Design Engineer, Sisecam Anadolu Cam

Anadolu Cam uses CATIA to design all its glass packaging as well as perform stress analyses and clash simulations on its products. Anadolu Cam has recorded a 50% reduction in design time, which has enabled it to take on more projects and consequently increase its overall business.

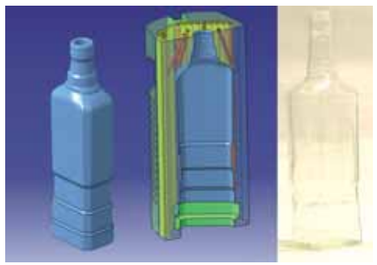
We have all used perfumes and cosmetics, had a soda or used pharmaceutical products that come in bottles of a variety of shapes, sizes and colors. In addition to their primary function as a container, these bottles must be robust enough to withstand being manipulated as well as support the weight of other bottles when stacked together. But bottles also vie for our attention on a store shelf through their stylishness and originality.

LEADERS IN GLASS PACKAGING

Anadolu Cam is the glass packaging division of Turkey's Sisecam Group. In addition to packaging, Sisecam Group also produces flat glass for building windows and cars and glass tableware such as plates and drinking glasses. The company is also present in the mining, chemical, paper packaging, mold and machinery manufacturing industries. One of Europe's leading glass packaging manufacturers, Anadolu Cam exports to the Balkans and the Middle East and has nine production facilities in countries such as Turkey, Georgia and Russia.

Anadolu Cam's glass packaging comes in various volumes and colors, depending on the contents. Pharmaceutical products, cosmetics, food, water, milk, beer, wine and high alcoholic-content beverages each require bottles of different thicknesses, shapes and colors. For example, amber colored bottles are best suited for pharmaceutical products, beer and wine because they provide the best protection from the sun. Glass durability is also important especially for high pressure liquids like sodas.

Blow mold bottle



PROVIDING QUALITY PRODUCTS IN A COMPETITIVE MARKET

The glass production sector is highly competitive and Anadolu Cam plans on maintaining its leading edge by delivering quality products to its customers before the competition. But high quality should not mean high costs. This is one of the reasons why Anadolu Cam opened a Design Center in 2006 and equipped its industrial design and advanced engineering departments with CATIA. Its objective: to introduce brand new packaging designs at an accelerated pace. "Our team consists of engineers, industrial designers and expert technical personnel who work together in each and every stage of packaging design," said Ozgun Hodul, Mold Design Engineer, Sisecam Anadolu Cam. "Expert designers in our design center produce creative and innovative designs with CATIA that take into consideration customer requirements for sturdiness, style and function."

A THREE-PHASE PROCESS

Anadolu Cam has a three-phase development process. The product design process begins with a customer design request. Designers create a conceptual design followed by a 3D model, which is presented to the customer for approval. After possible iterations with the customer, the design is approved, which leads to the second phase, the layout design process.

"3D makes it easy to demonstrate and visualize the product. Our design team works closely with the customer to design the desired bottle," said Ozgun Hodul. "Our 3D work sessions with our customers have been met with enthusiasm since we can implement their design requests in real-time and show them a virtual representation of the finished product before it's even manufactured," he said. In the layout design process all manufacturability concerns are taken into account to design the cavities of the container and the intermediate "parison" shape.

The final stage is the mold and accessories design process where Anadolu Cam designers model the mold of the glass package and various accessories. The resulting models are used by the mold manufacturer to manufacture the molds, which are then sent to the production plants to manufacture the bottles themselves. "Mold manufacturers can directly use the 3D data to process the mold," said Hodul. "This has not only shortened the overall manufacturing process, it has also prevented possible errors, since 2D drawings can sometimes be misinterpreted."

DESIGN CONSISTENCY AND STYLE

"CATIA enables us to prepare robust and reliable models and implement revisions in record time thanks to its unique data model and strong parametric capabilities. I love CATIA's parametrics!" said Ozgun Hodul. In the company's latest project CATIA enables engineers to automatically update the 3D model when changes are made to the mold design. "When our designers change a figure, dimension or parameter, CATIA automatically updates the entire design. This ensures consistency of our data from design to production." Anadolu Cam also takes advantage of CATIA's impressive surfacing capabilities. "We can design the most complex and difficult surfaces, which enables our designers to create outstanding, stylish and original glass packaging," said Ozgun Hodul. Anadolu Cam uses CATIA's knowledgeware capabilities to manage complex relationships between parameters as well as the compatibility of all the parts. It also uses CATIA's analysis functions to perform load analyses and clash simulation tests between the cavity of the bottle and the mold. "When the mold is pressed together and opened, we need to see if there is any interference between the glass and the mold and CATIA allows us to visualize this very clearly," said Hodul.

Bottle models

DESIGNING 50% FASTER

Anadolu Cam has halved its design process time since it began using CATIA. "Before we used to waste too much time when designing products that have complex surfaces or engravings but CATIA has reduced this time by 50%," said Hodul. "In the past, we couldn't manage complex surfacing features in our products but with CATIA no bottle is impossible."

Anadolu Cam has increased its business since it can take on more projects than before and complete them faster, thanks to CATIA. In the near future, the company wants to go even further by using templates and design methodologies, which it plans to develop with its solution provider, DS Business Partner ArGe Muhendislik Ltd, based in Turkey. The latter played an important role in getting Anadolu Cam designers up to speed with customized training, consulting and providing tips on how to best use CATIA in certain situations to increase productivity. And in line with Anadolu Cam's strategy for continuously improving the lifecycle management of its products, it is currently investigating the possibility of using 3DVIA Composer and ENOVIA SmarTeam to create it documentation and manage all product data.

So next time you drink a soda or splash on your perfume, take a closer look at the bottle. It is more than just a container •

For more information:
www.anadolucam.com.tr/en

By Shelli Zargary

Tips & Tricks – SmarTeam Design Express for Multi-CAD

In response to numerous reader requests, Contact Mag is pleased to introduce a new section featuring Tips & Tricks to help you better leverage Dassault Systèmes (DS) solutions. We asked DS experts to share their best practices, compiled through a combination of product knowledge and accumulated users' experience.

This first Tips & Tricks focuses on SmarTeam Design Express for Multi-CAD (SDE) solution. These Tips & Tricks offer best practices for designers seeking to optimize SolidWorks (or other CAD) data management with ENOVIA SmarTeam. To overcome the key challenge of reducing time-to-market when introducing new products, SolidWorks users can significantly shorten design cycle time by using SDE to efficiently and consistently reuse existing design data. SDE is an out-of-the-box PLM solution that meets the key requirements of the mid-market: a preconfigured package, low cost of ownership, rapid implementation, scalability, flexibility, quick ROI and ease of use.

TIP N° 1: DESIGN REUSE

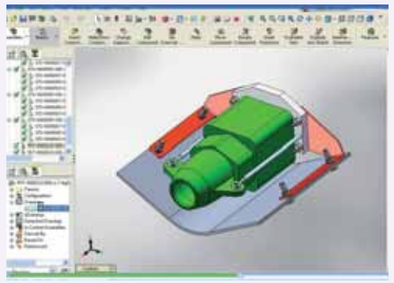
Did you know that you can find existing SolidWorks designs directly in ENOVIA SmarTeam without having to leave SolidWorks or whichever other CAD authoring tool you are using? SDE lets you jump-start new projects through optimal design reuse, ensuring product quality by leveraging validated existing parts while freeing valuable design resources to focus on the innovations that will make your new products profitable.

HERE'S WHAT YOU DO:

When requirements for a new product come in they are first documented in ENOVIA SmarTeam. All you need to do is search through your existing design data to find the validated parts that best meet the new requirements. You then use Design Copy to "drill down" inside an assembly and select which CAD parts – and more importantly which SolidWorks configurations – to use as-is, which to modify and which to replace, minimizing design from scratch and thus saving time and money. Updating newly created parts with item numbers lets you accurately connect design documents to their related items in the Engineering Bill of Materials (or E-BOM) for fast New Product Introduction.

TIP N° 2: IMPACT ANALYSIS

SDE is also used to manage design changes and to execute impact analyses to immediately detect which other documents and other products are affected by your changes. If, for example, you decide to change the size of an aperture of a Jet Ski pump for your new Jet Ski product, you can use SDE to identify the drawings of other existing Skis that are impacted by this change and update them as well. This helps avoid costly errors.



HERE'S WHAT YOU DO:

Use the "where used" functionality to automatically locate every instance of the parts you are modifying in every existing assembly and product. SDE leverages the embedded integration of SolidWorks in ENOVIA SmarTeam that manages all references and links in SolidWorks designs and in e-drawings to easily list all the products that will be affected by the new design change. Use SDE to save the modified part list embedded in the updated drawing, which is linked to the 3D design; this will prevent costly downstream errors such as using an earlier revision of the part during production.

Check out our next issue of Contact Mag for more Tips & Tricks for other DS solutions!