Contact mag
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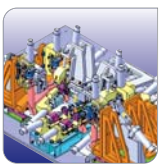
The DS PLM Magazine

Consumer Packaged Goods
PLM, the Path to Innovation

CATIA V6
Virtual Design for PLM 2.0

Arup Sport
Pushing the Limits
in Facility Design



DESign SA
Out of Africa

DASSAULT SYSTEMES

Editorial

There are times when we all get the feeling that time accelerates sharply. Since we've introduced the spiral of innovation with our V6 PLM 2.0 platform early this year we, at Dassault Systèmes, clearly have that strange feeling.

We have now moved to the official delivery phase of our V6 solutions and the number of pilot projects where we introduce V6 is on the upswing. And the first results are extremely encouraging: "ease of introduction, good performance, real openness, reliable, excellent V5/V6 compatibility, cool on-line collaboration tools" are just some of the comments we frequently hear during these pilot projects.

From every standpoint, we are now convinced that the evolution from V5 to V6 will be much, much faster than the one we observed from V4 to V5. So let us all accelerate time and innovation with PLM 2.0!

In this new Contact Mag issue, we hope you will enjoy discovering the value of PLM in the Consumer Packaged Goods industry. Yet another new industry segment where the deployment of our V5/V6 PLM solutions brings lots of business benefits and remarkable return on investment. Make it yours now!

Denis Senpéré
Senior Vice-President
Dassault Systèmes

International

UK, Ireland and SA

Contact mag
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By **Pascal Turcq**

CATIA V6: Virtual Design for PLM 2.0

To increase the odds of success, companies are harnessing the collective intelligence of customers, marketing experts, sales people, designers and engineers, before, during and after the product is defined. This provides them with an undeniable source of creativity, essential in today's competitive business environment. CATIA V6 on PLM 2.0 allows this participative process of product development to happen.

CATIA IS FUN TO USE

Today's young generation of video game aficionados naturally learn, play, and socialize in a virtual 3D world. Relying on the aggregating power of 3D, they easily and intuitively search for and access new information, manipulate game characters and environments, and connect with other players on the internet to share their live experiences. Today, product designers have similar expectations: they want access to all the relevant product data from a live 3D session. V6 fully embodies these principles and offers the same pleasure, simplicity of interaction and feeling of comfort to business applications. CATIA V6 truly engages in life like experience, bringing unmatched realism to product design. It provides everyone with the ability to see the product at any time during its development and to experiment with it in an intuitive way as if it were a real product. It promotes collaborative innovation between all the players in a company's ecosystem with a new set of tools that address creative product design by allowing access and manipulation of the 3D product throughout its entire lifecycle.

GLOBAL LIVE COLLABORATIVE DESIGN

3D is the ideal media for collaborative innovation. Dassault Systèmes has put it at the center of the enterprise by making it accessible to everyone thanks to 3D Live, the 3D portal for all product development participants. In CATIA V6, collaborative innovation is brought to the user in various ways:

- On-line global collaboration: people are connected to the same PLM Intellectual Property (IP) reference, react, and make their modifications all together on this single platform, at anytime from anywhere.
- On-line instant collaboration for 3D brainstorming: new tools enable everyone to identify other contributors, connect in a peer-to-peer manner, chat, exchange snapshots, perform co-review and, most importantly, co-design to exchange design intent in 3D.

SINGLE PLM PLATFORM FOR IP MANAGEMENT

Design data is accessible online from the single PLM platform and is managed as objects in a database and no longer as documents. This breakthrough in terms of data management allows users to manipulate the PLM objects at the right level of granularity. This guarantees a better life cycle management between those PLM objects and ensures true concurrent engineering and higher performance online creation. As an example, two users from two distant sites can work in parallel on the same product without locking each other out as they would in traditional CAD systems. The single PLM platform also enables multi-discipline collaboration faster and more easily than ever before. For example, people who do manufacturing will be able to work on the same product as those who design or do digital simulation. This means that all actors use the same information as the basis for their discussions.

TOWARDS A SYSTEM ENGINEERING APPROACH

3D is the design media of choice for product authoring and creation. However, at the modeling level most systems approach virtual product design by mainly focusing on designing the skin or shape of the product, its mechanical functions and the equipment that makes up the product. In reality, though, many technologically advanced products have "brains" or embedded systems that pilot the way they function. When you want to stop your car, you step on the brake. By stepping on the brake, you are actually sending a signal to the braking system that pilots and coordinates the different components of this system so that the car comes to a stop. CATIA V6 goes beyond the physical aspects of a product and promotes a Systems Engineering or multi-discipline, collective approach to product development based on a unique Requirements, Functional, Logical, and Physical approach. Designers can, therefore, go further than modeling the shape, mechanics and equipment of a product. With CATIA V6, they can model and simulate the behavior of the embedded software systems in a product.

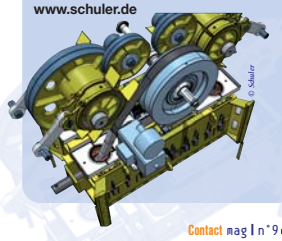
CATIA V6, A REVOLUTION AND AN EVOLUTION

From what we have seen so far, CATIA V6 is clearly a revolution. Yet, it is also a natural extension of V5: the ramp-up time will be short for V5 users and the transition in methodologies from V5 to V6 very smooth. This first release of CATIA V6 covers nearly 80% of the V5 portfolio making it ready for implementation in selected industries. In addition, with V6, customers have a portfolio that is mapped to their specific industrial processes •

For more information:
www.3ds.com
www.catia.com

Schuler is adopting V6

Schuler AG is a leading global manufacturer of mechanical and hydraulic metal forming products, systems and services. The company is enhancing its V5 PLM solution by adopting V6. Its different work sites throughout the world each handle different product parts and processes. The complexity of its products requires real-time data sharing and decision making among engineers, suppliers, and customers. They can benefit from V6's single PLM platform and connect on line from wherever they are via a simple Web connection to work in concurrent engineering. This on-line remote collaboration would remove the constraints of replication and users will be able to share their work-in-progress together in real time in 3D. "V6 reduces the problem of bandwidth and latency time. All our stakeholders could connect and work together simultaneously on the same product," said Walter Knoblauch - PLM Manager. And with 3D Live and the turntable and heads-up displays, Schuler employees, even non-technical staff, would be able to navigate, understand and participate in product definition in 3D.
www.schuler.de



Mark your calendar!

DELMIA European Customer Conference

- **Date: October 15-16, 2008**
- **Location: SI-Erlebnis-Centrum, Stuttgart, Germany**
- **Registration: www.delmia-cc.com/europe.htm**

European CATIA Forum

- **Date: November 26-27, 2008**
- **Location: Disneyland Paris, France**
- **Registration: www.3ds.com/news-events/ecforum**

partner

PROSTEP

CAA V5 BASED

Dr. Bernd Pätzold
President and CEO,
PROSTEP AG

Federated eBOM Makes Heterogeneous Environments Seamless

PROSTEP AG provides integration solutions between different PLM applications in a heterogeneous environment. Contact Mag spoke with Dr. Bernd Pätzold, President of PROSTEP AG, on recent developments in PLM integration and the company's partnership with Dassault Systèmes.

Contact Mag: How was PROSTEP created and what is its prime objective?

Bernd Pätzold: Founded in 1994, PROSTEP has developed from a R&D center for the automotive industry into the leading provider of solutions for PLM integration, product data exchange and product data migration, as well as a provider of integration solutions for a wide variety of development disciplines. In addition to the PROSTEP Group, there is also the ProSTEP iViP Association, a research organization that focuses on standards for the automotive and aerospace industries. Today, PROSTEP is a company with a headcount of over 250 PLM-Specialists in Germany, France and the USA. The company's customer base comprises leading enterprises in the aerospace and automotive industries, as well as shipbuilding and mechanical engineering.

C.M.: What is the nature of PROSTEP's partnership with Dassault Systèmes?

B.P.: Because PROSTEP provides integration solutions between different PLM applications in a heterogeneous environment, it is important for us to work with leading PLM system providers to learn about their products and their strategies and to have access to their technology. We therefore became a DS CAA Adopter partner over five years ago and as of last year enhanced our CAA partnership by jointly developing the Federated eBOM solution for ENOVIA with the ENOVIA organization. Federated eBOM provides access, via ENOVIA, to other PDM systems such as Agile (Oracle), Teamcenter (Siemens) and SAP. Available worldwide to all DS partners, it is now based on the V6 architecture and our OpenPDM technology, a PLM middleware infrastructure that integrates different PDM systems. It provides connectivity to external enterprise data and uses this data as if it were residing in ENOVIA.

C.M.: What customer scenarios does Federated eBOM apply to?

B.P.: One scenario is when customers need to migrate their data from their existing infrastructure to their new ENOVIA platform. With Federated eBOM, they can access, from the new ENOVIA system, their old data and work in the new system on this data. Federated eBOM is also the right solution for companies working in a heterogeneous distributed PLM environment comprised of different business units each managing their data with different PDM solutions. Here, users need to be able to access this data from their ENOVIA platform. Collaboration, in this heterogeneous environment, becomes seamless.

C.M.: What is in store for the future?

B.P.: Our perspectives for the near future are to provide integration to other systems, for example for requirements management and for electrical applications and to integrate CATIA V6 via the V6 architecture with non-Dassault Systèmes PDM systems. Our objective is to make integration for customers easier than it was in the past •

For more information:
www.prostep.com

Consumer Packaged Goods - PLM, the Path to Innovation

George Young

An expert in innovation, product development and PLM technology, Kalypso helps Consumer Packaged Goods (CPG) companies define their product strategy throughout the product's lifecycle. Contact Mag spoke with George Young, Managing Partner at Kalypso, on the challenges facing this industry and what CPG companies need to do to improve their growth and productivity.

Contact Mag: What particular challenges does the CPG industry face?

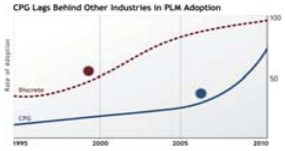
George Young: A CPG product is a formulated ingredient inside a package, which makes it inherently different from a discrete product. Since this industry is governed by a complex regulatory environment, CPG companies need to consider the formulation and the package at the same time and represent the information that's in the formulation on the package. Secondly, CPG companies often work with suppliers and subcontractors, and this poses the challenge of being able to trace, throughout their supply chain, the origin of all raw materials used. Finally, innovation is a very important competitive factor in this industry. Companies that have done well over the last five years have been the ones with the highest track record of innovation. An example is one of Procter & Gamble's toothbrush where the company used the design from an outside design firm, then incorporated consumer insights to perfect the design making it one of the most successful products of the last twenty years. The need for consumer insights is clear and is increasingly being built into the product development process.

Contact Mag: What role does a PLM system play in the development of a CPG product?

G.Y.: The first role is that it's the single version of truth for product data management where you can go to one place and find integrated product information that shows both the formula and the package. This enables companies to provide accurate labeling on their packaging using information that comes from suppliers, which also improves traceability. PLM's collaborative capabilities promote open innovation while reducing cycle time because you can look at formulas and package designs on line with your suppliers, you can make revisions in a virtual environment, and everyone can see what these revisions are. We can say that PLM's collaborative capabilities are helping CPG companies move away from the traditional way of doing things, which is a tendency to be insular and to derive all their ideas from within the four walls of the company.

Contact Mag: Why has the CPG industry been slow to adopt PLM?

G.Y.: This is a traditional industry in which trade secrets, protection of intellectual property and secret formulas were always the key to competitive success and when you talk about putting together a single version of truth people are afraid that the trade secrets and some of these key formulations can become too visible and maybe too portable and leave the organization. Even though these fears have not been entirely alleviated, companies are adopting appropriate IT security measures and moving forward because the advantages far outweigh the risks. We, at Kalypso, can confirm this trend since the rate of PLM adoption at CPG companies is increasing rapidly, as are the benefits •



Dedicated Solutions for the CPG industry

By Raymond Wodar and Gilles Mahe

Dassault Systèmes addresses the specific needs of the Consumer Packaged Goods (CPG) industry with new dedicated technologies. A key objective is to deliver innovative new products that comply with increasingly stringent federal regulations, and to ultimately provide an industry specific collaborative platform to accelerate product delivery to market.

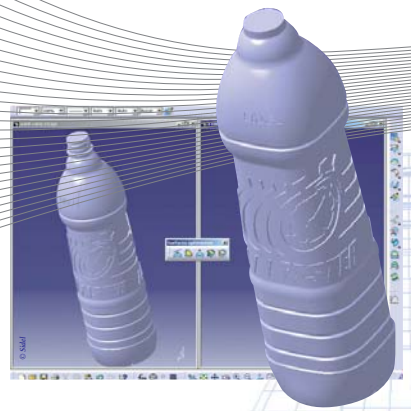
From a marketing or packaging aspect, these new tools allow CPG companies to create virtual product concepts that combine the 3D geometry of primary packaging components as well as the appropriate artwork and labeling information and to create those mock-ups in real time instead of relying on industrial artist 2D sketches. These virtual mock-ups become totally interactive 3D environments and the marketer can put those mock-up packages or concepts into context (a customer's home, a retail or merchandising context), then take the virtual product and put it in a virtual store for example, and virtually analyze a consumer's shopping behavior.

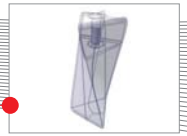
PRODUCT LIFECYCLE SINGLE VERSION OF TRUTH

The CPG solutions allow all actors to go to one place and find integrated product data that shows both the formula and the package; this is the single version of truth of the product record and consequently the virtualization of the product during its entire lifecycle. ENOVIA is the keystone of the CPG offering since it manages all product data and information and makes this information accessible at any time to all those involved in product design, marketing and manufacturing. The CPG offering is enhanced with CATIA 3D design tools for virtual product shaping and styling, SIMULIA products for design verification, simulation and analysis of product behavior in different situations (a package falling on the floor, for example), DELMIA tools to simulate complete production line efficiency and products from 3DVIA to simulate the consumer experience.

KEEPING TRACK OF ALL CPG PRODUCT COMPONENTS

Strict regulations force CPG companies to declare what is in their products down to the chemical constituent level. This means they need to rapidly be able to trace all raw materials throughout the supply chain. Specification management is the foundation for CPG companies to adhere to specific compliance rules, authorizations and approved product specifications for manufacturing. It can also impact bill-of-materials definition, downstream supply processes and raw material procurement processes. »





Consumers too can create in 3D

By Celine Peres

Rather than wait for a product to be designed before being tested by consumers, why not get consumer feedback while it is still in development?

The advertising group Publicis and Dassault Systèmes joined forces last year to provide a joint response to this question: the 3dswym platform. Based on Dassault Systèmes' 3DVIA technology, this platform offers internet users the possibility of participating in the design process of the product. Often their experience of using a product can be of more value than engineers' ideas, so it makes sense to give them decision-making power, particularly in the packaging design process and in the layout of sales outlets.
With 3dswym, consumers have a whole palette of tools (visuals, logos, colours, shapes, sizes, etc.) which enables them, for example, to devise and create, in real time and via a 3D interface, the packaging for their yoghurt and to picture it on a supermarket shelf or in their refrigerator.
With 3dswym, the advertiser can personalise product launches for more effective marketing that responds better to the needs and imagination of consumers in all their diversity. The 3dswym platform enables qualitative studies to be undertaken, volume mock-ups to be created, consumer tests to be performed, etc. A few clicks are all that is needed to enable consumers to vote over the internet for their preferred packaging type in order to save on mock-up costs and to minimise the risks inherent to every launch •

»

CPG ACCELERATOR FOR GLOBAL SPECIFICATION MANAGEMENT

Companies that also need to collaborate with trading partners and extended design chains will benefit from a new ENOVIA product called CPG Accelerator™ for Global Specification Management. With this new product, CPG companies can capture the complete product definition for a finished good and keep track of the interaction between the formula and the package as well as the process to make their product. CPG Accelerator™ for Global Specification Management is a collection of best practices of Dassault Systèmes CPG partners and customers that provide maximum value for the CPG industry. It allows companies to maintain specification control for manufacturing compliance and also configures their bill of materials.
CPG Accelerator helps CPG companies achieve their quality goals while benefiting from regulatory compliance. They can capture packaging components, the artwork and the formula as well. The formula is also decomposed into raw materials and the ingredients down to the chemical definition level. Companies can store and manage this information as well as the process of change control of the formula and the regulatory compliance of its constituents •

CPG Accelerator features

- Creates a single version of truth of CPG product data by replacing isolated documents/ data systems used for product development with a single, global, and validated process-driven system of record. Creators, collaborators and consumers will have access to a consistent, up-to-date, single source of information.
- Provides an easily accessible, global yet centralized database of product specifications, supplier list, raw materials specifications that can be reused instead of re-inventing the wheel every time a new product is launched. Companies drive their costs down and margins up because they benefit from economies of scale.
- Focus is shifted from linking product specifications to documents to attaching them to the product itself at the component level. By optimizing product specifications and providing global access to product related information, decisions can be made faster, and downstream errors dramatically reduced. Raw material usage, costs, and product quality are also improved.
- Provides pre-configured CPG approval processes, which ensure that all necessary approvals in a company's CPG organization are obtained throughout the release process. Approval process templates can be customized to define, for example, the type of approval required and from which person in the organization.
- Provides pre-configured CPG specification templates with typical CPG design and functional specifications to help create new specifications. They include characteristics such as packaging color and weight parameters, capsule specifications for bottles and appropriate tolerance information with units of measure.
- Provides the ability to manage data from the CPG supply chain such as trade name, distributors and manufacturing locations for raw material and packaging specifications. Search capabilities can locate specifications by supplier and/or trade name. In addition, CPG companies can collaborate with the responsible supplier while creating specifications as well as during the review process.
- Provides a database of norms and regulations such as the CTFA (Cosmetic, Toiletries, Fragrance Association), CAS (Chemical Abstracts Service) and EINECS (European Inventory of Existing Chemical Substances) that manage formula ingredients information and the possibility to search for specifications by type of ingredient.

Managing Ideas with **Integware**

Earlier this year, Dassault Systèmes and Integware signed a partnership agreement that set the foundation for the development of solutions for the Life Sciences and the Consumer Packaged Goods (CPG) industries that combine Dassault Systèmes' ENOVIA technology with Integware's expertise in PLM.

Integware has a strong track record in configuration management, product development, program management, quality systems and other PLM solutions, but innovation, early estimation and costing analysis is where it sets itself apart in the CPG industry. Integware's multi-discipline consulting staff has extensive experience in developing optimal solutions to business challenges. "To deploy our solutions, our consultants follow a rigorous software development process that can be scaled to any project size," comments Chris Kay, CEO.

Within the global product development process, the Ideation and Product Conceptualization phase is accomplished via stage gate processes and supported by dashboards and real-time reporting within the ENOVIA software.
As a CAA Gold Partner, Integware has developed software products for ENOVIA in the areas of, change management, stage gate processes, quality audits, and Corrective Action Preventive Action (CAPA). These solutions have been deployed at many large organizations to address their unique business needs thus reducing customer support and implementation costs.

One of Integware's most recent engagements of ENOVIA solutions includes deployment of Marketing-Ideation consulting services for a major industry leader in cosmetics and women's beauty products. These services extend the client's ability to evaluate, plan, forecast sales and integrate marketing data with other critical business systems such as reporting and work order management systems •

For more information:
www.integware.com

Patented packaging by L'Oréal.


Patented packaging by L'Oréal.

Patented packaging by L'Oréal.

Technology at the Service of L'Oréal

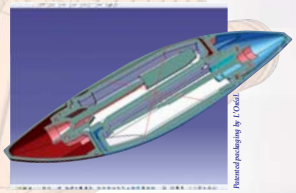
By **Dora Lainé**

"L'Oréal Produits Grand Public" in Paris uses CATIA to design all the packaging for its products in Europe. Bottles for shampoos and conditioners, mascaras and lipsticks are some of the packaging products they design for L'Oréal brands such as L'Oréal Paris, Maybelline, Garnier, and LaScad.

At the service of L'Oréal's creams, shampoos and cosmetics globally recognized for their high quality and efficiency, the package is an essential part of L'Oréal's products and the first contact the consumer has with the product even before using the formula inside. A successful package is one that consumers find nice to look at and touch, that enables the consumer to apply the formula with as little effort as possible, that is easily recognizable on the store shelf and that incites the consumer to buy the product. The package must also be functional because it has to deliver the product in the most optimum way, it sometimes has to be airtight to protect the formula, and it has to inform the consumer by way of its label. Respecting essential requirements and regulations are also of utmost importance. Packaging must be manufactured so that the packaging volume and weight is limited to the minimum amount needed to maintain the required level of safety, hygiene and acceptance for the packaged product and for the consumer.

A CREATIVE PROCESS BORN IN MARKETING

Launching a new product is a creative process that begins in marketing and enhanced with input from different teams. The result of extensive market research, an idea for a new product is submitted to the packaging department as a mock-up or sketch, with specifications on what the future product should do. "Our job is to design the most appropriate package for the product in the shortest amount of time to satisfy consumer buying preferences and technical accuracy," said Gilles Baudin, Packaging Director Europe, L'Oréal Produits Grand Public. "We also have to take into account the aesthetic, functional and regulatory constraints inherent to all mass market products."


Patented packaging by L'Oréal.

ANTICIPATING DOWNSTREAM NEEDS EARLY ON

The packaging department also has to satisfy constraints imposed by L'Oréal's production units. "Anticipation is key," said Dominique Noël, Design Manager, L'Oréal Produits Grand Public. "We have to incorporate, early in our designs, features that will counterbalance any adverse effects a package may be subjected to during production and that can slow down the production process." For example, by adding a rib on the neck of a bottle it will increase its structural integrity when the different parts of the bottle are assembled and prevent it from buckling when the cap is placed on the bottle. "This "trick of the trade" allows us to make a thinner bottle overall and reduce material usage and costs," said Gilles Baudin.

BETTER COLLABORATION THANKS TO CATIA

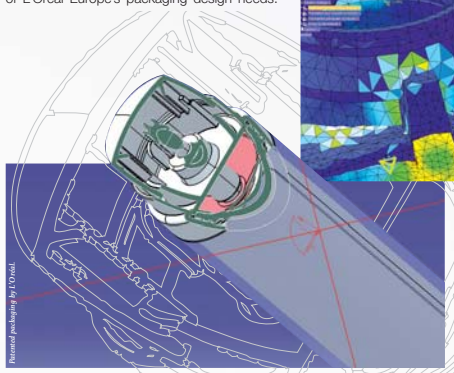
With 3D as its principle design vector, designers use CATIA to facilitate communication with marketing as well as with suppliers that produce the different packaging components. "Our job is to transform a dream into reality," said Gilles Baudin. "CATIA makes it easy to exchange ideas with our colleagues and partners thus increasing innovation," said Dominique Noël. "We can show marketing any suggestions we may have on their initial idea, directly in 3D, in a matter of minutes. In one afternoon of brainstorming our designers can show the impact each design decision has on the overall package and create a virtual mock-up that incorporates everyone's ideas," said Dominique Noël.

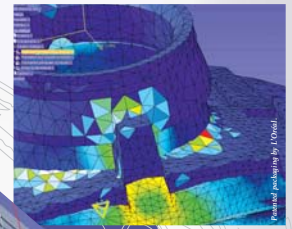
Since packaging components are produced by suppliers that use a wide variety of technologies, the packaging department has to ensure that each part fits seamlessly together as if the entire package were produced in one place. There must be continuity between the surfaces of the cap and the body of a bottle once it is assembled. Working in a virtual 3D environment makes it possible to perform simulations that ensure this before actually assembling the package together.

"Package strength and resistance to shock, compression, and other forces are virtually tested using CATIA Finite Element Analysis," said Dominique Noël. "We also simulate the position of the label on the bottle using the Develop function to create a flattened image on which we position the label. If there is any problem, we are better off finding it in CATIA than on the production line," he adds. With CATIA designers can rapidly create several versions of the same package (200ml, 300ml, etc) in anticipation of a possible future request to change its capacity.

INCREASED PRODUCTIVITY

Designing in 3D has dramatically improved productivity. Its four designers are able to handle all of L'Oréal Europe's packaging design needs. "L'Oreal launches many new innovative products each year, which requires us to design new packaging at a fast pace. Thanks to CATIA, with the same number of designers we have been able to multiply by 2 the number of 3D designs we can deliver," said Gilles Baudin. In effect, with CATIA, collaboration, exchanging of ideas and the speed at which these new ideas take shape have added a new dimension to the way the designers approach each new project - with passion •


Patented packaging by L'Oréal.


Patented packaging by L'Oréal.

More about L'Oréal

As the world leader of the cosmetics industry, L'Oreal is dedicated to serving all forms of beauty around the world. The Group owns an unrivalled portfolio of 25 international, diverse and complementary brands, and employs more than 60,000 people. With the biggest R&D budget in the beauty industry, L'Oreal places innovation at the heart of its strategy in order to constantly anticipate consumers' expectations and to offer them products of the highest quality and value.
www.loreal.com

Barilla: from a Functional to a Process Approach

Marco Rossi

The Barilla Group, world leader in various product lines, selected ENOVIA MatrixOne to change the way they operate within different functions. Contact Mag met Marco Rossi, IT Business Process Support Manager at Barilla, to understand how the group responds to the challenges with which they are faced.

Contact Mag: How did you tackle the introduction of the PLM project to the company?

Marco Rossi: Launching an increasing number of new products on the market and confirming and building the brand identity of the Barilla Group, has required redefinition of our company culture both in terms of organization and processes.

The PLM project is part of a larger initiative that is capable of supporting such a change, and it has been a response to the requirements of improving the efficiency and speed of the product development processes, moving from a functional to a more process-focused approach, making possible a synergy between the Group's diverse realities and guaranteeing qualitative and process-related standards for all the Group's entities. For Barilla, PLM represents a real "backbone" that combines organization, business processes and product information; more particularly it helps us to completely integrate engineering and manufacturing, as it introduces a new company culture of how to manage a product throughout its whole life cycle.

C.M.: What were the needs of Barilla?

M.R.: The fundamental elements for PLM within our organization were improving process efficiency, producing a model of product information that would work for all the Group's entities and creating a real "repository" of product knowledge. Faced with such objectives, the Group's expectations for this project were considerable, as they had to guarantee consistency in information and in processes for the whole organization on both a national and international level, redesign the crossover workflows of product development, make the information widely available, and last but not least, facilitate collaboration with our external partners.

C.M.: Why did you decide to adopt ENOVIA from Dassault Systèmes?

M.R.: We carried out a selection phase that involved the main players of the PLM market, at the end of which ENOVIA MatrixOne responded in a precise and convincing manner to our prerequisites. Particularly concerning functional aspects, ENOVIA MatrixOne demonstrated its ability to manage the specifications related to different shop floors from raw materials to handling units and from consumer units to trade units. Other important functionalities are those of workflow management with the respective authorisations and an integrated document management system. From a technological point of view, with ENOVIA MatrixOne we value the flexibility of the solution that allows us to respond to our users' needs, through action that focuses more on configuration than on solution customisation, from the data model to the user interface. This also allows us to avoid the burdensome rewriting of codes, thus improving implementation times and reducing maintenance costs. Finally, other important international businesses have contributed to creating the capacity for complete integration with our ERP reference system, SAP.

C.M.: What were the implementation phases for PLM within the Group?

M.R.: We started off with a detailed analysis in February 2005 and on 4th July of the same year we were already in production with the "Master Data" functionalities for products, then, in November with the specifications for both raw materials and packaging, and in February 2006 we went into production with the management of different shop floors and specifications for the finished product. This project respected deadlines, which I must say were ambitious, and costs, allowing us to be in sync with the implementation of our ERP SAP system and replace the various legacy systems developed in the previous years.

To date we have implemented further functionalities such as the part of project management that supports new product development and introduction processes with Stage-Gate methodologies. We have also insisted on the possibility of activating views of the various shop floors in relation to factory processes and functions with ENOVIA MatrixOne including the view of manufacturing in relation to the chosen production works. In the meantime, from September 2006, the PLM solution has already gone beyond Italy's borders and has been implemented by our organisations in northern and central Europe. Recently, we integrated the PLM solution with some virtual markets, allowing them to view our catalogue and it is currently being implemented for our organization in the US. For our Group, PLM is an element of success that supports our growth strategies.

All of the Group's top management is supporting the PLM initiative along with other strategic projects and "change management" for defining new business processes, without which no change could take place.

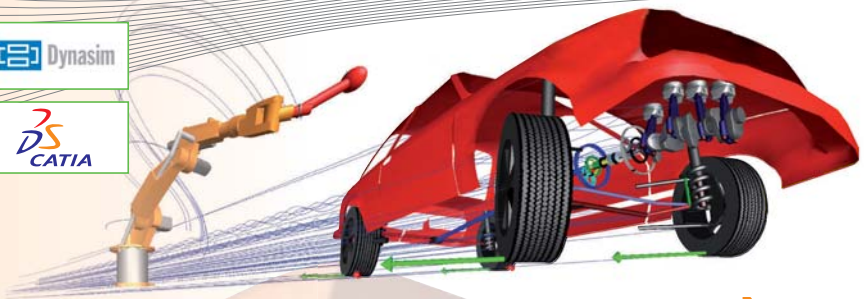
C.M.: What steps will be taken in the future?

M.R.: The development that we have planned for our PLM solution will concern (among some other functionalities that will be necessary to support the dynamism of the Barilla Group) the strengthening of the actual functionalities of document management involving clients and suppliers. Further developments will be determined by the ability of Dassault Systèmes to anticipate and interpret as well as possible the needs of businesses such as ours. Just recently, Barilla had the possibility of meeting with your president Bernard Charlès, who, in addition to confirming the fact that ENOVIA MatrixOne is the basis of the PLM solution at Dassault Systèmes, showed us some guidelines of how virtual reality could help us in defining packaging, an important element of success when it comes to the final consumer, and in the portability and navigability of product information for in-house users who are unfamiliar with a simple alphanumerical representation of the information •)

For more information:
www.barillagroup.com

Key benefits for Barilla

- Reduction of lead times by 66% for product data definition
- Redefinition and reduction of over 50% of product characteristics with significant savings in costs and time
- Simplification of product prototypes; today with fewer than 70 templates we manage over 5,000 types of packaging material and this means significant savings in management time and in harmonisation for all the Group's entities
- A single "master data" functionality but with different views for R&D, Marketing, Sales, Packaging, Engineering, Purchasing and Manufacturing
- One "language" that is unique and common to all.



Dynamic Simulation for Multi-Engineering Systems

By **Dora Lainé**

Dynasim, a Dassault Systemes company, provides modeling and simulation capabilities to manufacturers of complex products comprised of systems from different engineering disciplines. Its Dymola product suite enables companies to virtually see the entire product in operation and monitor the interrelationships between the different systems that make it up, and thereby reducing costs and time to market.

The complexity of today's products and the need to model complete systems that depict reality is a challenge most manufacturers face. For example, the operation of an internal combustion engine involves the complex and continuous interactions between multiple areas of physics, specifically, mechanical motion combined with thermal, fluid, chemical and electrical phenomena, all of which require integration with a control system.

MODELING INTEGRATED MULTI-ENGINEERING SYSTEMS

Dymola, Dynamic Modeling Laboratory, is a complete tool for modeling and simulation of integrated and complex or embedded systems for use in automotive, aerospace, robotics, process and other applications. Its unique multi-engineering capabilities provide new and revolutionary solutions for modeling and simulating the dynamic behavior and complex interactions between systems of different engineering fields, such as mechanical, electrical, thermodynamic, hydraulic, pneumatic, thermal and control systems.

With Dymola, users can build more integrated models and have simulation results that are closer to reality.

Libraries are available in Dymola that contain components for the different engineering fields and that correspond to physical devices which are simply dragged-and-dropped to build the model. Models can be intuitively organized the same way as the physical system is composed. Dymola use computer algebra to transform models into a more suitable form for numerical calculations. This makes it apt to handle large, multi-engineering systems more efficiently.

The Dymola environment uses the open Modelica® modeling language. It is the only object-oriented equation-based language today that facilitates the reuse of the dynamic behavior of model components. Its model library of components can be modified to better match a company's unique modeling and simulation needs. Of course, users can also create their own model libraries if they wish.

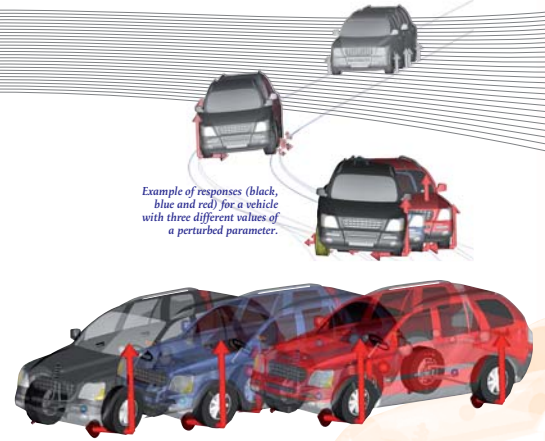
DYNASIM RELEASES DYMOLA 7.0

Dymola 7.0 includes support of Modelica language 3.0 and features key enhancements such as improved model lifecycle management capabilities as well as new and extended model libraries in addition to the new Modelica Standard Library 3.0. •

For more information:
www.dynasim.com
www.modelica.org
Sandrine.Loembe@3ds.com

At the core of CATIA Systems

The CATIA Systems V6 solutions will take advantage of Dymola's Modelica-based technology. New in V6, CATIA Systems puts Systems Engineering at the heart of product development and provides a single platform for hybrid, multi-disciplinary embedded systems modeling, behavior-driven simulation, and validation.



Example of responses (black, blue and red) for a vehicle with three different values of a perturbed parameter.

Volvo Cars: Active Safety

By **Mats Jonasson** (Volvo Cars) and **Johan Andreasson** (Modelon)

Safety continues to play a prominent role in the development of Volvo cars. Traditional development and testing of active safety technologies is important from a real-life perspective. On the other hand, computer testing is both time and cost efficient. As part of its continuous strive to improve the overall safety of its cars, Volvo Cars is adopting model-based approaches to active safety system development.

Preventive actions play an increasingly important role in vehicle safety. Real life testing in combination with computer testing, which is both time and cost efficient, enables Volvo Cars to enhance its safety knowledge. To what extent, then, can modelling and simulation replace testing in the active safety system development process? "If you can represent the vehicle behaviour with a mathematical model, you have a great platform for active safety system development", says Per Ola Fuxin, Manager, Active Safety Functions at Volvo Cars. "However, a model must not just be valid in the sense that it captures the results of already tested scenarios and parameterisations. It must also be able to predict the effects of new scenarios, parameters and configurations", he continues.

The test vehicle is equipped with car body levelling sensors, a steering robot, torque measuring wheels and a gyro platform.

VALID MODELLING APPROACH

To address this, an important part is to show that by having valid subsystem and component models, the resulting vehicle model shall also be valid. The work is conducted in Dymola with models built from Modelon's VehicleDynamics Library, implemented in Modelica. These models are hierarchically built-up where each subsystem is easily replaced by another. The subsystems are parameterised individually from construction data or isolated tests before they are assembled to form the complete vehicle model. The vehicle model is then simulated and the results are compared to the corresponding real-life tests for validation.

A further advantage with the modelling approach is that this hierarchy continues down to the component level where the Modelica code can be viewed and modified. "In this respect, the Modelica approach is appropriate. The openness of the code essentially gives us the advantages of an in-house tool without having to have a software development team in-house", says Mats Beckman, Tyre Specialist at Volvo Cars. A particular case where a model-based approach is valuable is when we want to learn the effects of parametric uncertainties; these can, for example, occur from different road conditions, load cases and tyre pressures. "Zooming in on the details to study how each component or subsystem influences the entire vehicle behaviour is the key to an efficient and systematic analysis", says Bengt Jacobson, Technical Specialist, Vehicle Control Architecture at Volvo Cars." Understanding how different parameter changes affect the vehicle allows us to adapt sensors, estimators, and controllers in an efficient way to continue to improve safety", he concludes •

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More about Modelon

Modelon is a Dynasim Partner that specializes in Model-Based Systems and Control Design, and is the premier provider of Modelica-related consulting and products. Modelon's portfolio includes model libraries for air conditioning, vehicle dynamics, hydraulics, and pneumatics among others.
www.modelon.se

By **Sébastien Cardet**,
BPA Business Development

BPA Business Development Increase the Odds for Project Success

Dassault Systèmes proposes Business Process Accelerators (BPA) to customers of all sizes to address and accelerate their industry specific processes. These flexible software assets are easy to implement and help customers achieve a faster return on investment, without the cost of maintaining a tailor-made software.

Drawing on many years of experience in creating preconfigured industry and cross-industry solutions, Dassault Systèmes has identified features of their solutions that have been tried, tested, and shown to have a wider use across varied industries. These flexible solution features or components have been packaged as BPA, allowing more users to benefit from the proven advantages of a certified component of an industry solution. "Everyone wins with proven specialized applications that reduce project risks and increase the odds for more success," says Bruno Latchague, Executive Vice President, PLM Business Transformation, Dassault Systèmes. More than 20 BPA are available on the latest V5 releases and cover different domains such as Systems engineering, specific industry processes, and complex collaboration. CAVA and CSE are two of these BPA.

CAVA, Vehicle Architecture

CATIA V5 Automotive extensions - Vehicle Architecture (CAVA) was developed in partnership with renowned German automotive OEMs and has been implemented at Audi, Bentley, BMW, Citroen, Mercedes-Benz, Peugeot, Porsche, Volkswagen and Skoda.

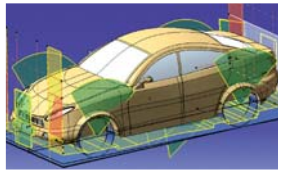
CAVA helps to ensure the compliance of a car's design, regarding vehicle architecture, vision, wipers, manikin, safety and other automotive design tasks, to national and international standards like: Economic Commission for Europe (ECE), Environmental Working Group (EWG), (Environmental Working Group), Society of Automotive Engineers (SAE), Federal Motor Vehicle Safety Standards (FMVSS).

Throughout the development stage, new car designs must comply with international regulations, norms and standards, which do not only affect OEMs. Approximately 70% of development activity rests increasingly with suppliers. CAVA features display the requisite international standards information geometrically within CATIA V5 and are saved on CATPart levels. The feature-based architecture also includes associative architecture, i.e. changes in data input prompt an update of the CAVA data. When non-compliance occurs, the user receives the relevant advice. Typical international standards are provided with CAVA, but company-specific standards can also be easily incorporated. CAVA products offer a complete set of easy to use features covering rear view mirror, viewing fields, security belts, underfloor clearances, lamp positions, pedestrian protection, and much more. Associated pre-configured standards are built into CAVA and can easily be administered and extended to company-specific settings. CAVA creates reference or help geometry representing design space, clearance areas, or fields of vision required to support draft and design. And, since this help geometry is generated from the established standards, any existing or new geometry can be verified against these standards during the entire development process of a car.

The CAVA architecture supports the entire process chain including the data created by the embedded supply chain. Through tight integration with CATIA V5, CAVA features can be automatically interchanged with the CATIA data so that suppliers and OEMs can use these features throughout the design process.

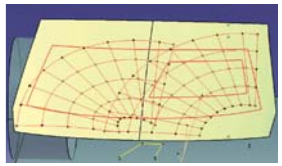
For more information about CAVA:
Jpotthoff@transcat-plm.com

CAVA OVA



CAVA Safety

CAVA Wiper



CSE, Collaborative Systems Engineering

CSE integrates multiple domains to provide a high-level, collective view of an entire product. To design a successful system, engineers must consider both technical and business aspects such as performance, cost, schedule, sourcing, manufacturing and disposal.

Leveraging ENOVIA SmarTeam's collaborative environment, CSE centralizes all development efforts on a unified product definition and supports the systems engineering process from needs identification to final product validation. It provides a complete environment to engineer and manage requirements, while ensuring traceability across disciplines and across domains. "With CSE, we have succeeded in giving all 150 actors a single structured view of both the product and the process", explains François Chivot, manager Systems Engineering Methodology and Tools at Dassault Aviation.

Requirements management is one of the strongest differentiators in determining marketplace success. To determine the correct set of requirements, engineers must consider them in the context of the whole integrated system. CSE enables the translation of customer terminology into engineering information throughout a product's lifecycle. With CSE, users can capture, obtain, and verify requirements as well as generate documents, all within a collaborative environment. CSE provides Microsoft Office integrations that support capturing/viewing/editing through Microsoft Word and Infopath. Other functionalities, like generation of Requirements Verification Matrices are also available in order to facilitate the requirements analysis activity, through Microsoft Excel.

With CSE users can allocate these requirements to the systems engineering data, such as functions, logical components, test plans or documents. This traceability is a key point in allowing system engineers to analyze change requirement as well as the resulting impact. Coupled with workflow and shared catalogs, changes specific to a configuration or across projects can be rapidly communicated to global stakeholders. The PLM platform facilitates trade-off studies and alternatives, to evaluate product costs, quality and time standpoints. Because system requirements become connected to the product definition, CSE ensures "right to market" delivery by matching the final product with initial customer expectations •)

For more information about CSE:
Nathalie.Bogatirsky@3ds.com

Viewpoint

Dear readers,

Earlier this year innovation at Dassault Systèmes stepped up a gear with the introduction of the V6 PLM 2.0 platform. Pilot V6 deployment projects in the UK, show that the technology delivers encouraging results and fundamental business and productivity benefits through collaboration, openness, ease of use, accelerated performance and positive user reaction. We will bring you case studies and user experience of V6 in forthcoming Contact Mags.

In this edition you will read about some very diverse applications of Dassault Systèmes technology in the automotive industry, at a supercar manufacturer, in sports facility creation, to accelerate industrial training, and to develop a UK entry to the Vendée Challenge, single handed round the world yacht race. We wish them the best of British!

I hope that you enjoy reading these articles and that they inspire you to contact us with your success stories which could appear in future editions of Contact Mag.

Mike Crow
Director, Channel Development
United Kingdom, Ireland and South Africa
Dassault Systèmes Ltd

UK, Ireland and SA

To be featured in, or to receive, future issues, please contact Lisa.Granton@3ds.com

Ascari KZ 1R Limited Edition developed using CATIA technology.

By **Nick Lerner**

CATIA Drives PLM at **Ascari Cars**

Like increasing numbers of smaller and specialist engineering companies, supercar manufacturer Ascari Cars turned to CATIA for high performance engineering and a scaleable PLM solution.

BRITISH ROAD POWER

Ascari Cars Ltd is one of the most exclusive car manufacturers in the world. Creator of the breathtaking KZ1 and A10 supercars, the company has captured the imagination of elite drivers everywhere with its emphasis on speed, performance and precision engineering. Ascari Cars is so dedicated to the driving experience that as well as its manufacturing facilities in the UK, it also has a purpose built race resort in Southern Spain, the first of its kind anywhere in the world and a luxury retreat for Ascari's exclusive guests.

Interior texture detail of Ascari road car modelled and rendered in 3D.

Ascari Cars is not a high-volume car manufacturer. There will only ever be 50 KZ1s and 10 A10s, built by a small, highly skilled team of designers and engineers in Banbury. But what the team lacks in scale, it more than makes up for in skill, precision, attention to detail and expertise. Within this environment, capturing and storing engineering data and knowledge is just as important as for high-volume manufacturers, and a vital part of creating and establishing an ongoing legacy for the company and future engineering teams.

HIGH PERFORMANCE ENGINEERING

Ascari's design engineers had worked with several different CAD systems and owned various software technologies including CATIA. It was tedious and time consuming to control and manipulate the data between the various systems so the company consolidated to a single CATIA system to pave the way for future generations of Ascari Cars.

Design and engineering knowledge now resides within the computer network rather than with the engineers. The 3D digital representation is the single reference point that is updated with every design or engineering change and iteration. Dassault Systèmes technology automatically updates the central model, ensuring that engineers are always working with accurate and correct information while creating a traceable evolutionary path for every component and part.

FASTER FASTER FASTER

Like many smaller companies, or those still in the early stages of design evolution, Ascari Cars wanted to find a scaleable design engineering solution that offers the high performance capability to cope with the complexities of automotive development, as well as the ability to grow into a fully formed PLM solution as the company develops, and its product portfolio increases.

System installation, integration and at elbow support has been provided by Dassault Systèmes Value Added Reseller, INCAT which was chosen for the task of applying its expertise to this business, design, and product development project because of its enormous experience and expertise providing solutions to other automotive OEMs at the highest levels.

A scaleable design engineering solution offering world class high performance.

Following consultation with Ascari's design and production team, INCAT proposed a flexible solution of CATIA licenses including floating modules of Generative Shape Design, one license of STEP and one Sheet Metal Design module. Smaller companies like Ascari don't necessarily have in-house specialists on hand to guide them through the implementation process. So support from INCAT, in the role of trusted technology partner delivered a flexible but straightforward solution with the right level of training and facilitation.
The software maintains control of Ascari's engineering data through a rigid set of processes and procedures, which the company manages so that when future vehicles are developed, a system is in place to ensure that data is intact and readily available for deployment.

Since CATIA has been in place at Ascari Cars, the company has experienced benefits including time saving, seamless data migration, design development and ease of use. CATIA also enables Ascari Cars to communicate effectively with its partners and suppliers across supply chain systems.

Full assembly models can be produced quickly allowing changes to be made in minutes. Since the cars are customised for each individual, this speed of flexibility is an invaluable feature.

SUSTAINABLE LEGACY

CATIA enables Ascari to work more efficiently today and to more simply develop future generations of Ascari Cars. This advanced functionality has been achieved through using a single data source and a clear product development path, so that all the company's design-to-manufacturing information can be easily accessed for any future design project, whether that is for road or race.

The CATIA V5 solution at Ascari Cars offers the company, a consolidated approach to engineering data and a common intercommunications platform. The next generation Ascari cars will trigger a step change in the company's product development processes, creating the need for a more fully fledged data system to cope with ever increasing amount of engineering information.

DRIVING DEVELOPMENT

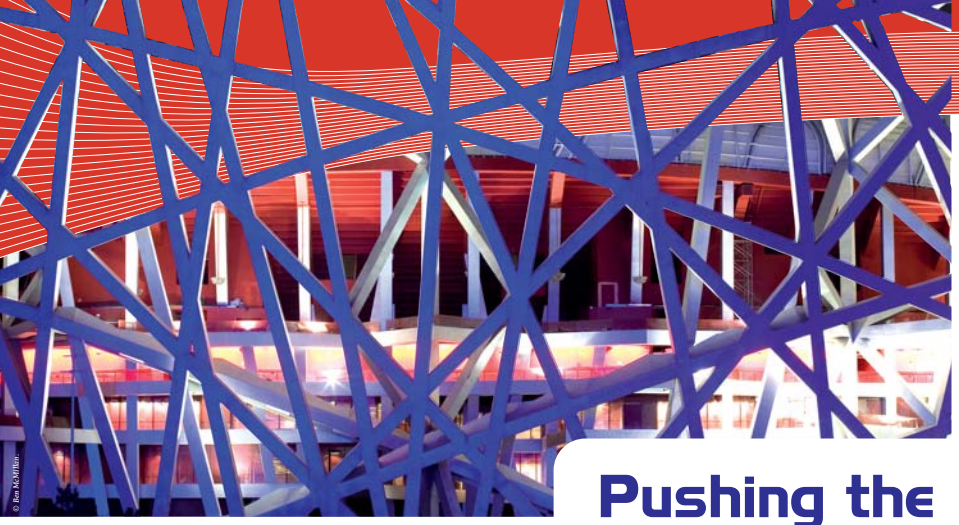
The Dassault Systèmes solution provided to Ascari by INCAT is an example of how businesses of any size are able to derive the same, and often higher, percentage returns as large-scale enterprises.

By committing design and production information to a 3D model based methodology, design intent is maintained as an asset within the company along with production methodology and associated data. Since each vehicle is unique, the availability of data related to every design iteration facilitates instant information access. Retrieval of this data, for product development or improvements to exiting models, is a quick procedure that also allows the company to retain a complete history of its work and output.

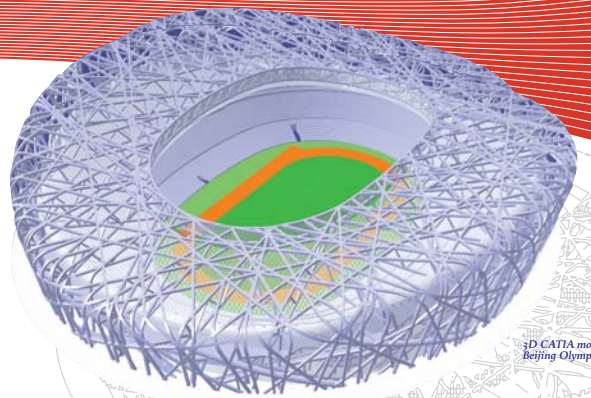
In Dassault Systèmes technology, Ascari has found a flexible solution, which just like the cars it produces, has been tailor-made to deliver the best possible performance, no matter what lies ahead. For small engineering companies data management is always an issue, and as operations expand PLM systems must grow too. The 3D model based technology used at Ascari Cars has enabled it to create a sustainable legacy for its data as it moves into the next phase of company and vehicle development •

For more information:
www.ascari.co.uk
www.incat.com

3D Ascari car data is retained using Dassault Systèmes software.



Detail view of steel fabrications at Beijing Olympic Stadium.



3D CATIA model of the Beijing Olympic Stadium.

Pushing the Limits in Sports Facility Design

By Nick Lerner

Sports facilities and stadia are seen by the world both live and at home as ever-greater sporting events fill our leisure time. Now considered an urban essential, these increasingly sophisticated arenas benefit from Dassault Systèmes' CATIA design-to-build technology that generates 3D models for a better outcome.

There are hundreds of new sports facilities being built across the world to host a range of events from The Olympics Games and Premier Division Football to horse and motor racing, tennis, gymnastics and swimming, as well as multi-purpose venues that enhance national, local and community sports activities.

Some of the best of these facilities, including the 2008 Beijing Olympics Stadium, are developed using CATIA advanced 3D model-based design-to-manufacture solutions from the 3D world leader, Dassault Systèmes and with the Gehry Technologies' Digital Project™ software platform. In preparation for both Beijing 2008 and the London's 2012 Olympics, CATIA is used to ensure that complex structures for the Games and their many associated activities are delivered on time, on budget and to the right specifications.

OLYMPIC GLORY

The foremost company working in this sector is Arup Sport whose work includes the 2008 Beijing Olympics Stadium, The London Olympics Aquatic Complex, the stunning Valencia Stadium, and new world-class stadia for Ukraine and the Middle East. Arup Sport Senior Structural Engineer, Kate McDougall, spoke of her work and the use of CATIA 3D-based model technology. "The stadia and sports facilities that Arup Sport is working on benefit from Dassault Systèmes' 3D modeling because of the functionality and flexibility that this methodology provides. Our work covers architectural design services, structural, mechanical and fire engineering as well as many other specialist technical services. Using 3D CATIA models, the information that we need is easy to access, update and integrate across the internal and external supply chains that we operate within."

Stadium design is a series of repeated patterns developed with CATIA technology.

Kate added, "Stadia are all unique and they always incorporate complex geometry. Coordinating their design, planning and construction involves making many changes and updates throughout the projects lifecycle. This process is enhanced and facilitated through the use of 3D digital models. The software allows us to save costs by developing a route to manufacture early in the project and also by allowing us to make use of standard components to improve quality and make financial savings. The CATIA 3D-based model methodology also makes checking efficient, easy and quick since complex geometry is modelled in three dimensions."

RULES OF THE GAME

CATIA has been used to design many roof systems for sports stadia. These are becoming important showpieces in themselves with their dramatic operation and engineering ingenuity. The complexity of these structures which often include intricate but large scale moving parts is ideal for development using CATIA which, with its kinematic and rules based capability is able to show a simulation of the moving roof and indicate potential clashes or other problems. Deploying CATIA in this situation it is possible to solve all potential problems through analysis and to refine the design digitally before any physical manufacturing commences.

> Productivity, creativity and elegance are available from CATIA.

Kate McDougall, of Arup Sport added, "Roofs have to clear certain envelopes and must also operate with maximum efficiency. Developing optimum geometry and sections is made easier with CATIA because it enables the input of parameters that have an affect on the design, and allows automation of certain aspects in the design process."

TASTE OF VICTORY

Zaha Hadid Architects, the award-winning firm, has been commissioned with delivering the spectacular swimming complex for the London Olympics. Partner, Patrik Schumacher, a champion and user of 3D modeling software recently said, "Productivity, creativity and elegance… are available from Digital Project and the Dassault Systèmes software."

Geoff Haines, Managing Director of Desktop Engineering, the company that supplied and supports Digital Project and Dassault Systèmes' 3D modeling software at many architecture instaed of architects and engineering companies including Zaha Hadid, Arup, SOM and Allies and Morrison said, "Dassault Systemes' CATIA brings architects, sports facility developers and the AEC industry the proven benefits of large-scale design and manufacture software. The CATIA-based Building Information Model, BIM, is a complete set of data that includes 3D design and manufacturing information, as well as associated rules, methods and knowledge that govern all aspects of a building or development."

MIND GAMES

Lord Sebastian Coe, winner of the Olympic 1500m gold medal in 1980 and Chairman of the London Organising Committee for the Olympic Games (the organisation in charge of overseeing the development of the Olympic Games), is someone who certainly understands the significance of well-executed design in sports facilities. He recently spoke at the opening of a new training facility, "I know just how important that extra hundredth of a second can be and these facilities will enable athletes to develop and hone their technique allowing them to be at the top of their game."

It is well known that great facilities enhance sports to produce better outcomes. Across the world CATIA users are developing and building ever-more advanced venues that help human beings excel at what they do best •

For more information:
www.arup.com
www.zaha-hadid.com
www.dte.co.uk

More about Gehry Technologies

Gehry Technologies is a consulting and development firm providing solutions tailored to the architecture, engineering and construction industry. Gehry Technologies is also a Dassault Systèmes CAA Gold Partner and embeds CATIA technology into its software platform. Digital Project™ is a revolutionary new software platform for building teams to realize ambitious building projects working through digital technologies. Gehry Technologies created Digital Project™, a CATIA-based Building Information Modeling (BIM) system that combines 3D design and data management capabilities with project experience gained while using Dassault Systèmes' 3D solutions over the years, and dedicated software developed by Gehry Technologies.
www.gehrytechnologies.com

Skipper Jonny Malbon aboard Artemis 60.

A new round the world race yacht has been developed in the UK using Dassault Systèmes technology to achieve design excellence, unmatched performance and high levels of handling and safety.

By Nick Lerner

Non-Stop Around the World

Artemis 60 sea trials.

Around the world sailing race require a new 60 foot yacht and a tight, efficient team to support the captain who will circumnavigate our planet non-stop and single-handed for the race's 3 months duration.

The boats used for this high order technical and human challenge are specially designed and constructed for the race and represent the ultimate in technology, performance, and safety. Among the innovations is the use of Dassault Systèmes CATIA by Simon Rogers Technical Team Leader and yacht designer.

KIDS STUFF

Simon has known yachts all his life having worked with his 'Yachtsman of The Year' and winner of the Admirals Cup father, since before he could walk, graduating from University in Yacht Design and living in Lymington, Hants, where sailing is all and the Solent beckons from the end of the High Street.

Simon, and his company Rogers Yacht Design Limited decided to invest in Dassault Systèmes CATIA based technology to develop the new Artemis Ocean Racing 2 IMOCA Open 60 Vendée Challenge vessel. He explained the choice. "The technical needs of producing a boat for the Vendée Globe Challenge require a design-to-manufacture system that is capable of many things. For the same reasons that most F1 teams use this software we use it too. We develop robust innovative designs that are performance proven through examination of an accurate 3D digital model of the boat."

MIRROR CALM

Dassault Systèmes UK Value Added Resellers, Intrinsys, said of the software, "CATIA, which is already the standard design-to-manufacture PLM system in the automotive and aerospace industries, is also the standard with many yacht designers including Beneteau, Oyster Marine and the Areva Challenge Americas Cup team who deploy it and reap the productivity benefits enjoyed by all users of this advanced technology. The ability to build and test a 3D digital model allows Rogers Yacht Design to know that the designs it develops are a true reflection of their intentions and that the resulting boat will be equally so. Whether you have a small number of seats (currently 3 at Rogers) or thousands, as at a multinational user, the same advanced working methodologies and consequent benefits apply."

WORKS TO RULE

"Designing a yacht using CATIA methodology allows us to view details as well the whole picture. This suits us perfectly allowing ideas to become possible. Another great advantage is that we can, for example, change the centre of buoyancy or the hull line and by defining other features of the boat's parameters as rules, those features adjust themselves parametrically. This is of enormous benefit when designing a boat since it can accelerate in any direction and even small design changes can have dramatic effects on performance and handling.

"Among the means that we have developed to control and maximise the yacht's performance is a new wing rig (mast) which we sought the help of Boeing to optimise. As fellow CATIA users data transfer was a simple matter.

> CATIA has allowed Artemis 60 to sail securely at an extreme level.

Another innovation on Artemis 60 is the stepped hull - a design concept originated by the speed-boat industry and adapted by us for sailing.

"CATIA was used to design, produce and locate equipment in optimum positions. This includes the radical interceptor on the transom that conforms to the organisers rules and allows fore and aft trim variation to optimise performance and stability".

SAFETY FAST

Simon commented, "This boat has been designed with powerful aggressive British good looks and handling to match. She has been built to be sailed at extremes. In the Southern Ocean Jonny will take her into our most dangerous sea environment with slim chances of survival or rescue if the worst occurs. A place where the wild seas test the strength and will of sailors and boats that dare to venture there. In these waters, waves that tower above the boat with its 100-foot carbon mast will toss the Artemis 60' relentlessly for days.

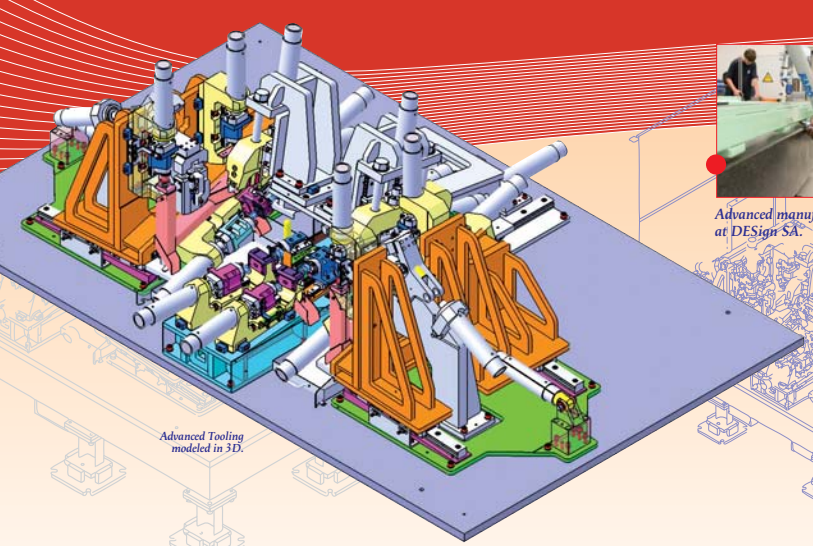
To compete better in this heroic human endeavour where Jonny and the other team's skippers carry aboard hopes and dreams, Simon Rogers has used the 3D digital boat model in a sophisticated programme that simulated its voyage 10,000 times through 12 years of historical weather data in a bid to optimise the rig and equipment as well as the hull shape.

Simon added, "Boat design is a very mathematical process where load cases, engineering units and forces govern our work. Powerful tools are needed to calculate and control them. Boat design is also an art which requires tools of equal utility. CATIA meets both of these needs and also offers a chance to try 'what if scenarios' using variants on the 3d model to explore the effects of design or specification changes. This facility provides great design freedom because the effects on the boat of trial designs can be seen quickly and in context of both the craft itself and the environment that surrounds it.

Simon concluded, "I am the designer of this boat as well as the leader of the technical team, and this carries the responsibility of a man's life. CATIA has allowed me to make Artemis 60 sail so that Jonny Malbon will feel relaxed and secure throughout the race even though he will be sailing at an extreme level. This will enable him to use the boat's performance to maximum effect thereby giving the Artemis Ocean Racing 2 team the best chances of success •

For more information:
www.rogersyachtdesign.com
www.intinsys.co.uk

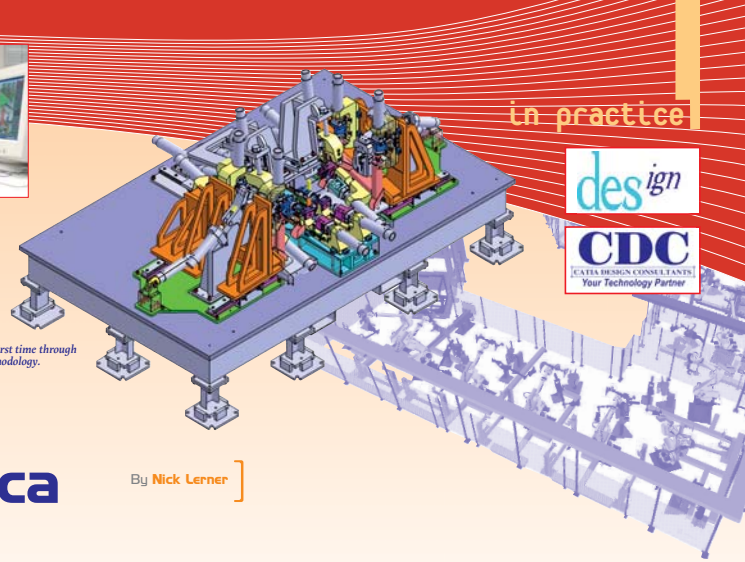
CATIA model of Artemis 60.



Advanced Tooling modeled in 3D.

Advanced manufacturing at DESign SA.

Engineers at DESign SA.



Right first time through 3D methodology.

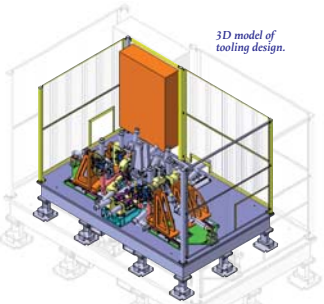
Out of Africa

By Nick Lerner

Building a company from zero to an industry leader and a world-beater in just 10 years takes courage, skill, determination and the right technology. DESign SA has done all this and is set for further success.

South Africa's leading automotive and aerospace tooling supplier is part of the DESign SA group which provides engineering services, based on the most advanced technology available today, to customers around the world.

Starting from scratch 10 years ago and now comprising of 200 qualified engineering staff, the company brings Dassault Systèmes CATIA and DELMIA based methodologies and programming to automotive and aerospace OEMs and their supply chains. DESign SA exports around half its services and has expert staff located in customers' production plants across 4 continents. Managing Director John Mulgrew explained the company's success, "We recognised that there is significant global demand for the services that we offer. From our own experience of manufacturing and installing precision tooling for body in white production, we are able to recognise the specific engineering services that are needed to maximise accuracy in manufacture. These are related to the processes that surround the tooling including man, machine and robot interaction.



3D model of tooling design.

"Since DESign SA is South Africa's foremost tier one aerospace and automotive supplier we have naturally adopted for ourselves the same technology that is used by the OEM's that we work with and we operate to the same exacting standards. By using CATIA and DELMIA we manufacture and set up tooling systems that have been proven digitally, using 3D models, so that less time needs to be spent on site."

ROBOT CONTROL

Dave Kupferman, Director of Robotics and Automation takes up the story, "Our Offline Programming (OLP) includes positional data and instructions to factory floor PLCs to control lines and third party devices including robots, conveyors and carriage systems." He cites an example of the benefits of programming in advance of installation, "In one case the delivery of line-side robots was delayed by six weeks, which would normally result in delays in programming and optimising the equipment on site. However, by using CATIA and DELMIA to simulated the production equipment at its location we were able to programme it in advance of arrival, and then quickly make simple adjustments to compensate for physical conditions at the site, once it was installed."

An additional advantage of using Dassault Systèmes 3D model based technology in this way is that more time is made available to sign off programmes; time that can which can be used develop further cost saving programmes. Tolerance conditions within the production environment, components and tooling mean that adjustments always have to be made on site but the time saved by OLP adequately provides for these eventualities and brings other benefits to the process. One of these is, that welding guns can be selected to be right first time and not changed once it is realised that the wrong heads have been specified. Further, tool movements can be optimised to achieve the greatest efficiency and reduce 'air time', i.e. the time that tools are between functions and therefore unproductive.

SAFE POSITION

Dave added, "The methodology that we develop through using CATIA and DELMIA is transferred to users providing, not only the optimum production environment, but also higher safety levels for workers. This is done by simulating actual human working conditions to ensure that light curtains and other safety equipment is correctly positioned.

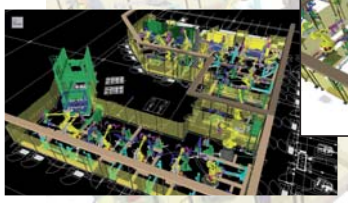
"One of the great advantages of using CATIA and DELMIA in this way is that the standards issued by our automotive and aerospace OEM customers can be adhered to with absolute veracity throughout the processes of design manufacture and commissioning. For example, tooling components such as cylinders, risers, L-blocks and shims can be called up to customers' specifications saving time while ensuring that standards are met."

John Mulgrew spoke about the business advantages of that DESign SA has experienced, "We started this company by bringing a great deal of experience gained at Toyota, VW and BMW and have initiated our internal training programmes based on Kaisen. This has led to the company's engineering practices, which aim - for perfection. By gathering the experience gained from working with the world's foremost manufacturers and employing those practices at DESign SA, we have achieved a very high level of internal productivity and accuracy. Our Offline Programming and software skills are utilised to their best advantage because we are able to understand the means of production in the context of software programming requirements. This positions us ideally to provide OLP services to industry in the knowledge that their cycle-times and productivity will be improved.

> CATIA and DELMIA free up time that can be spent developing more cost efficient programmes.

AWAY TEAM

"For this reason we have staff all over the world and have become a great South African success story. For example, we have team of programmers in Germany, Canada, the UK, Australia, and at factories in South Africa.



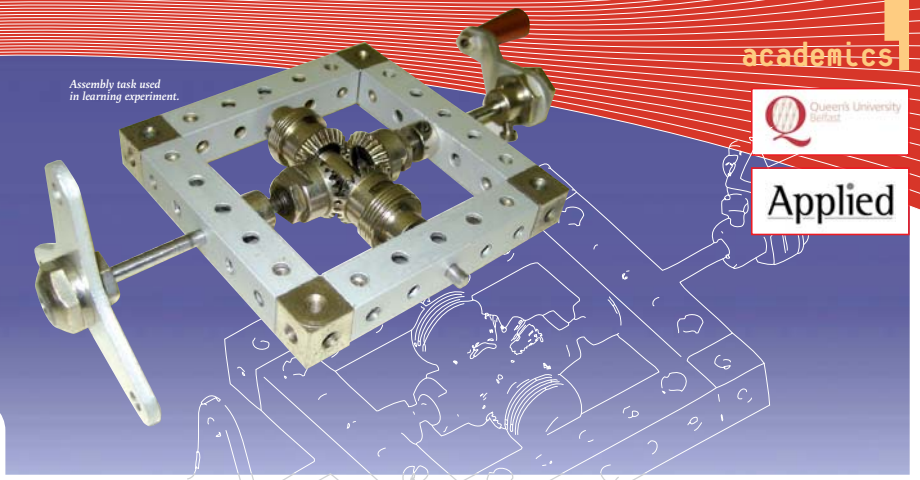
Production environment optimised using DELMIA.

"By making the choice to use Dassault Systèmes we have not only benefited from the power and rules based methodology that the software offers, but have also been able to partner with a local Dassault Systèmes Value Added Reseller, CDC, which has helped us to maintain our systems to maximum advantage.

John Mulgrew concluded, "We have built a strong engineering and technology company from the ground up and proven that with the right mix of skills and procedures, along with the right technology and partners it is possible to take on the world - and succeed" •)

For more information:
www.des-ign.co.za
www.cdcza.co.za

Animation development.



Assembly task used in learning experiment.

By Nick Lerner

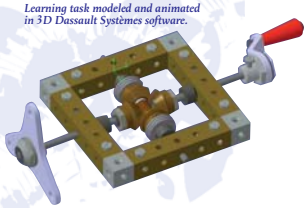
The Nuts and Bolts of Cognition

Improving industrial learning and the processes that govern it is being undertaken by a team of engineering and psychology academics together with software industry application specialists using Dassault Systèmes technology.

IN A FIX

Queens University in Belfast, Northern Ireland, has been conducing research into cognition using animated instructions based on Dassault Systèmes CATIA and DELMIA DPM softwares and it plans to use 3DVIA to extend its work in this area.

Cognition is defined as the mental faculty or process of acquiring knowledge by the use of reasoning, intuition or perception, and at Queens University the schools of Engineering and Psychology have been collaborating to understand more about learning in a bid to improve industrial productivity.



Learning task modeled and animated in 3D Dassault Systèmes software.

Gareth Watson, a PhD student at the University explained the work that he has been conducting. "We have been looking at the psychology behind learning and discerning the human factors that influence the use of work instructions. We ran a series of experiments where groups of people had to perform complex engineering assembly tasks using different kinds of instructions; written, static diagrams and animated 3D models."

Gareth continued, "As expected animation teaches people fastest static images second and written instructions third. Animation is 37% quicker to learn by than written instruction and 16% quicker than static images. Quality is also improved."

LESSONS LEARNED

The ease with which the 3D models were built and animated made experiments quick to set up using industry standard Dassault Systèmes V5 PLM software. Since the University has strong contacts with UK industry, genuine aerospace and automotive assemblies were used so that the study's CATIA based methodology can be brought to these industries as well as others that the department of Mechanics and Aerospace works with. Joe Butterfield, a Research Fellow at that Department said, "We have proved the case for this value added extension in the utilisation of CATIA 3D digital models, used in conjunction with DELMIA, as tools for training industrial assembly and its management. Further, since an assembly task is also governed by how well it has been optimised planners can use this methodology to design better and more efficient assembly strategies."

LEARNING MENTOR

The Dassault Systèmes Value Added Reseller that supports Queen's University with CATIA, DELMIA and 3DVIA, is Applied PLM Solutions. Applied's Director of Operations, Sue Clark detailed her company's work, "We provide the university with software training and because we have close connections with the automotive and aerospace industries we are able to ensure that the university maintains its systems and practices to current industry standards."

Sue continued, "It is important for the university to demonstrate potential return on investment when its work is transferred to a commercial environment and Applied is instrumental in this using its broad based industry knowledge. Our most recent work with the university has been in cognition and learning where we have helped them to apply Dassault Systèmes software to training systems and documentation. This software produces better work instructions and adds real value to the academic work of the university."

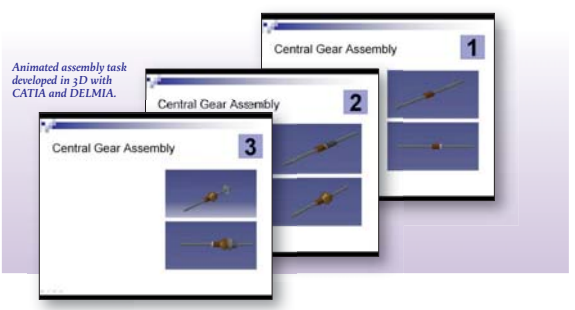
GOOD DEGREE OF IMPROVEMENT

"The need for language independent instructions for technical publications and methods is growing, particularly in aerospace where industry globalisation and the portable nature of aeroplanes means that engineers of various nationalities need to access complete and up to date work instructions." Said Sue, "Dassault Systèmes software offers engineers of any level, and non engineering staff alike, the ability to interact with complex instructions and perform high level work with increased productivity benefits. Further, by allowing access to CATIA models using this methodology, the intelligence that has been built into the model can be passed to others in the productivity chain. This also adds considerable value to a firms intellectual property by passing knowledge through the business in ways that immediately benefit productivity."

MINDFUL OF CLARITY

Cathy Craig Senior Lecturer in Perception at Queen's University's School of Psychology has been involved with several industrial cognition projects and commented, "Dassault Systèmes software allows the benefits that have been developed by very skilled people to be understood by others and used to improve production and maintenance output.

"This work has implications not only in industry but in activities such as sport where trainers can observe situations from another person's perspective using avatars. This work feeds back into industry and helps us to understand through visual feedback and mental models how production processes and their organisation can be improved."



Animated assembly task developed in 3D with CATIA and DELMIA.

GRADUATION DAY

Cathy concluded, "Applied has helped us to develop highly beneficial methodologies using Dassault Systèmes industry standard software. This crosses language barriers by avoiding linguistic misunderstandings and delivers faster learning using better processes and ultimately a more controlled and productive industrial environment" •

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