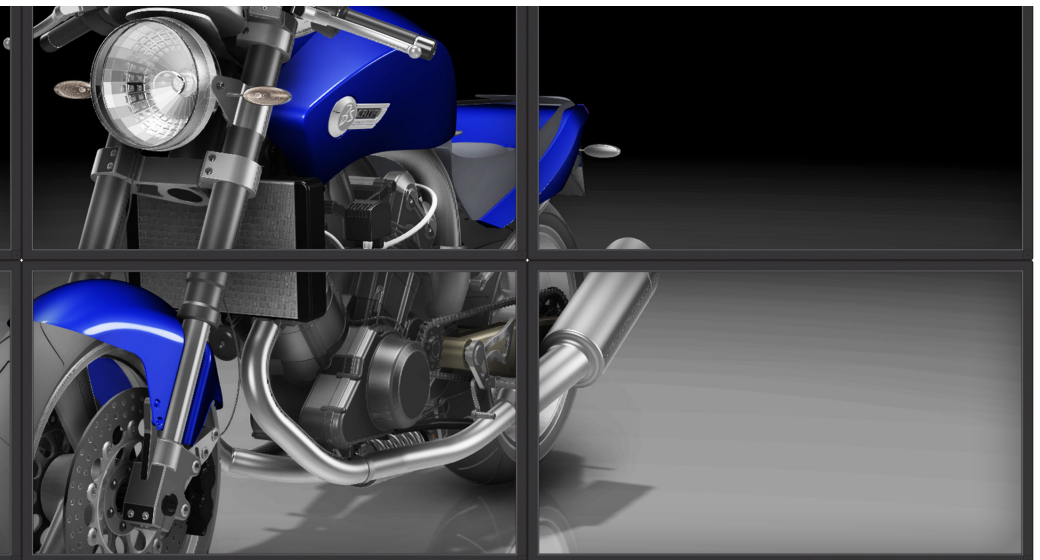# 3D opens the door to the world we imagine

The AMD FirePro™ W9000 professional graphics card and AMD Eyefinity technology enable a spectacular six screen experience[1].

Customer:
Dassault Systèmes

Application:
- CATIA V5 and V6

Challenges:
- Competitive Pressure
- Faster time-to-market
- More demanding designs

Solution:
- AMD FirePro professional graphics is fully certified for CATIA V5 and V6 enabling advanced workflows for a unique PLM digital product experience at an incredible value

Value Proposition
- Optimized and certified for CATIA V5 and V6
- Provides tools and supporting technology to create the ideal CATIA® workstation environment
- Optimized 3D graphics performance with support for immersive 3D Stereoscopic rendering
- Powerful workflow performance gains: Engineering teams can navigate in massive airplane or automotive assemblies to make correct decisions faster
- Greater productivity and collaboration gains with AMD Eyefinity technology making multidisciplinary engineering fast and efficient

For three decades Dassault Systèmes (DS) has been a world leader in 3D and Product Lifecycle Management solutions. SolidWorks, CATIA, SIMULIA, DELMIA and ENOVIA products enable engineers and industrial designers to digitally define and simulate products, processes and resources. These Dassault Systèmes applications help customers to quickly bring more innovative products to market. With 3DVIA, Dassault Systèmes invites ordinary individuals to unleash their imagination and express themselves and their vision in 3D. Through a 3D platform of community, 3D content, and complimentary 3D software, consumers can create and share lifelike 3D experiences online.

As it establishes 3D as the universal language for both businesses and consumers, Dassault Systèmes exploits the latest developments in computer hardware in order to deliver a high performance and high productivity experience for its customers. Such hardware developments include the AMD FirePro™ family of professional graphics products and, in particular, the new AMD FirePro W9000 professional graphics card.

Christophe Delattre of DS Research and Development (R&D) team in Paris said. "A powerful graphics card is mandatory when handling large data sets in an application like CATIA. It is key to getting the best out of the software and providing a real-time 3D experience. In R&D we regularly conduct compatibility testing of our software on various hardware configurations.

On one hand we are looking to verify that the hardware can support our software; on the other we also want to know if our software is designed to make full use of what the hardware delivers and so we take a particular interest in the development of graphics cards."

For compatibility testing the Dassault Systèmes R&D team has some favorite models - typical customer assemblies that contain several hundred parts. These are very large datasets with between one and five million polygons. The R&D team loaded these in both CATIA V5 and CATIA V6 and manipulated them using the AMD FirePro W9000 professional graphics card, taking a particular interest in shading and rendering performances.

The verdict? "Fantastic. For a single card, it has a crazy number of stream processors - 2,048! It must be one the most powerful graphics processing units ever made," exclaimed Delattre.

According to Delattre, who leads the Dassault Systèmes R&D visualization team, setting up a six-screen display was quite straightforward. "We put the graphics card into a Windows® 7 OS-based workstation. We plugged in six HD (1920x1200 resolution) LCD screens and we set up the screen configuration using the AMD Catalyst™ Control Center software. We started CATIA, and it worked just fine." The team went on to explore AMD Eyefinity technology and checked out OpenGL support, dynamic manipulation of shaded models and assemblies, video memory for both large data sets and textures and real-time photorealistic rendering.

AMD FirePro™ Fast Facts:

- DisplayPort 1.2 support enables 4096x2160 max resolution

- Decodes two HD video streams simultaneously

- AMD HD3D Pro support via stereoscopic 3-pin mini DIN

- Multi-stream hardware H.264 HD encoder for power efficient and quick video encoding

- Overlap support across up to six projectors for seamless projections[1]

- 6GB GDDR5 memory and 264 GB/s memory bandwidth

"With AMD Eyefinity technology, the feeling of complete immersion is really impressive. At Dassault Systēmes we aim to push the limit of high quality images on screen in order to bring users as close to reality as possible."

Jerome Maillot, Technology Director, Dassault Systēmes

"Rendering performance was still very good after switching from one screen to six screens," reported Delattre. "Moving from one screen to six was very easy and we achieved very good performance and speed without the need to modify our application. This is clearly going to have a beneficial impact on our customers and their ability to conduct collaborative design reviews on power walls and within virtual reality rooms."
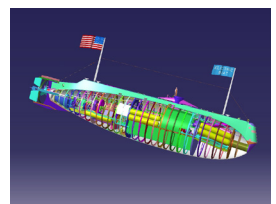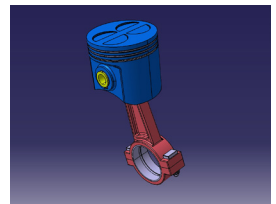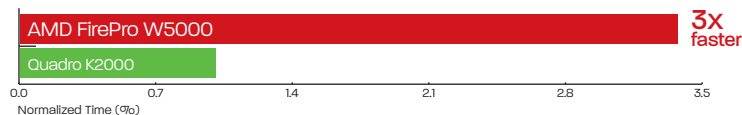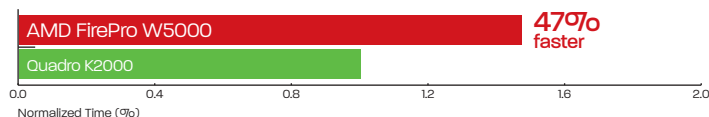
Delattre also tested the bezel function in the AMD Catalyst software – this enables engineers to make an allowance for the edge of each display unit. "We did not have to remove any pixels and did not lose any part of the image. In CAD, having a seamless image really matters. Actually the AMD FirePro W9000 professional graphics card is ahead of its time and we are looking forward to an 'edge-blending' capability in an upcoming version of the AMD FirePro graphics driver so we can drive several HD projectors for a large display wall. We are also waiting for LCD manufacturers to provide edgeless screens."

With 6GB of on board memory the AMD FirePro W9000 professional graphics card enables plug and play simplicity. This

contrasts with the cost of a PC cluster, which would be the normal requirement for supporting several screens, a solution that may also require additional IT skills. "The ability to drive a six-display system with just one box is definitely the right path. It is amazing that one card can drive a high-resolution projector and a big wall or room with stereo as well. It is definitively a one step forward in terms of providing a life-like experience to DS customers," noted Delattre.

"With AMD Eyefinity technology, the feeling of complete immersion is really impressive," said Jerome Maillot, Technology Director "At Dassault Systèmes we aim to push the limit of high quality images on screen in order to bring users as close to reality as possible. The ability to drive six display outputs simultaneously and achieve such a large image on a very high resolution display is a great step forward for engineering collaboration. Sharing a 3D model at full scale and achieving a significant cost reduction at the same time sounds like a dream, yet it is a reality. It is clear that the AMD FirePro W9000 professional graphics card has delivered the high level of technology that Dassault Systèmes has come to expect."

Catia benchmarks

AMD FirePro W7000 — 72% faster
Quadro K4000
Normalized Time (%) — 0.0, 0.4, 0.8, 1.2, 1.6, 2.0

AMD FirePro W5000 — 47% faster
Quadro K2000
Normalized Time (%) — 0.0, 0.4, 0.8, 1.2, 1.6, 2.0

AMD FirePro W7000 — 2x faster
Quadro K4000
Normalized Time (%) — 0.0, 0.7, 1.4, 2.1, 2.8, 3.5

AMD FirePro W5000 — 3x faster
Quadro K2000
Normalized Time (%) — 0.0, 0.7, 1.4, 2.1, 2.8, 3.5

For more information, visit www.fireprographics.com

1 AMD Eyefinity technology supports up to six DisplayPort™ monitors on an enabled graphics card. Supported display quantity, type and resolution vary by model and board design; confirm specifications with manufacturer before purchase. To enable more than two displays, or multiple displays from a single output, additional hardware such as DisplayPort-ready monitors or DisplayPort 1.2 MST-enabled hubs may be required. Maximum two active adapters supported. See www.amd.com/eyefinityfaq for full details.