

# Computers in engineering

## Collaboration takes strides via 3D Live

In May, **Dassault Systèmes** used the occasion of its annual CATIA Operators Exchange (COE) PLM conference in Las Vegas to introduce 3D Live, a solution that provides instant 3-D collaboration to users of all skill levels. According to the company, it is the first full-PLM application available online.

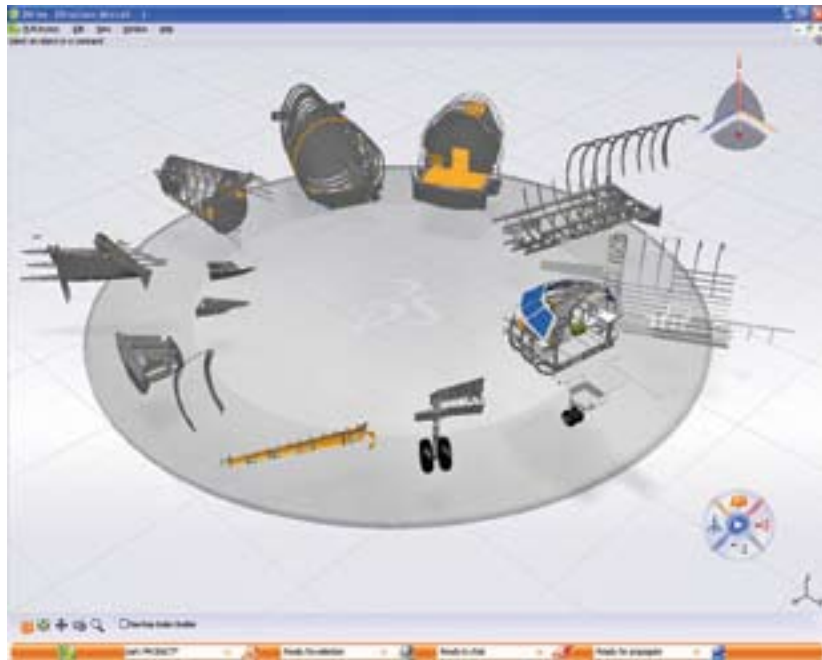
With an intuitive, turntable-style interface, 3D Live is intended to make the benefits of 3-D available to everyone in the product life cycle. The interface allows nontechnical users to rotate a desired assembly and zero in on specific components through use of an exploded view. This enables users across the enterprise to search, navigate, and collaborate without having to be well versed in CAD or PLM technology via the Web.

"With 3D Live, we want to provide a paradigm to the way people plan, imagine, chat, decide, and construct," said Bernard Charlès, Dassault Systèmes President and CEO.

3D Live presents information in a real-time format, displaying up-to-date metadata such as part numbers, supplier information, and product stakeholders. The program's contextual 3-D search capabilities allow users to look up product information, check for dependencies, and view status quickly and efficiently. A buddy list and integrated chat window enable the proper stakeholders to be involved in the review process or to collaborate on design challenges throughout the process.

"3D Live offers benefits never before envisioned in product development and team collaboration," said Al Bunshaft, Vice President of IBM PLM Solutions, a Dassault Systèmes partner. "The power to conceptualize, develop, and deliver products in a shared environment over the Web presents enormous possibilities for customers seeking an advantage in the fast-paced and ultra-competitive markets where they do business."

One of the early adopters of 3D Live is the Space Engines Division of **Snecma**. The company is currently in



3D Live's intuitive turntable-style user interface allows users throughout the product life cycle to benefit from 3-D. Users can rotate to a desired assembly and zero in on specific components through an exploded view.

the process of making 3-D data more accessible to its various departments, from designers who will design in 3-D to analysts who will verify directly on the 3-D model. Other Snecma employees such as program managers, technical project managers, product quality managers, and procurement staff also possess a need to access and visualize 3-D product information.

"Users don't need a lot of experience or technical knowledge to manipulate a complex 3-D engine since the user interface is relatively simple and easy to learn," said Thierry Delaporte, Vice President Deputy Operation Office, Space Engines Division, Snecma. "This is a breakthrough for those who need to access and visualize a part since they can now exchange with their colleagues in a more productive manner without having to learn all the mechanics of the more complex DMU tools already used by our engineers."

The collaboration opportunities afforded by 3D Live are expected to accelerate defect management, as Snecma

test teams in Germany can more efficiently exchange with development colleagues in France. Information exchange with partners and suppliers is also expected to improve.

"Beyond the ability to visualize a product, we want to use the application's most advanced tools to make real-time collaboration at a distance possible based on the same product information and where all parties can contribute and exchange ideas," Delaporte said.

According to Charlès, 3D Live signals a shift in Dassault's strategy, considering it a first step toward providing software as a service, allowing users to go to a destination site and subscribe for certain services. Charlès said this shift is not far off and predicts it to happen within the next two years.

"You will see a revolution of all our portfolios' user experience in a big way," he said. "3D Live should give you an idea of where this is going."

Matt Monaghan

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### Swales bypasses physical testing with MSC Software solutions

Swales Aerospace, which has since been acquired by ATK, used FEA solution MSC Nastran and motion simulation program MSC Adams from MSC Software to eliminate the need for physical testing of the NASA satellite constellation THEMIS (Time History of Events and Macroscale Interactions during Substorms) probe bus and probe carrier.

THEMIS, launched February 17, 2007, is NASA's first five-satellite mission launched aboard a single rocket. Swales served as prime contractor for the probe bus and probe carrier, and the University of California Berkeley was the mission integrator and instrument provider.

The MSC Software solutions played a role in many aspects of the development and validation of THEMIS, most notably in the validation of the probe bus deployment clearance analysis.

"These tools served as the only means of validating that the design met all critical clearance requirements, as a system deployment test of all the probes on the probe carrier was not possible," said Michael Cully, THEMIS Program Manager for Swales Aerospace.

The five probes carry identical suites of electric field, magnetic field, and particle instruments, providing robustness to the constellation design and allowing for any one of the probes to be placed in any orbit.

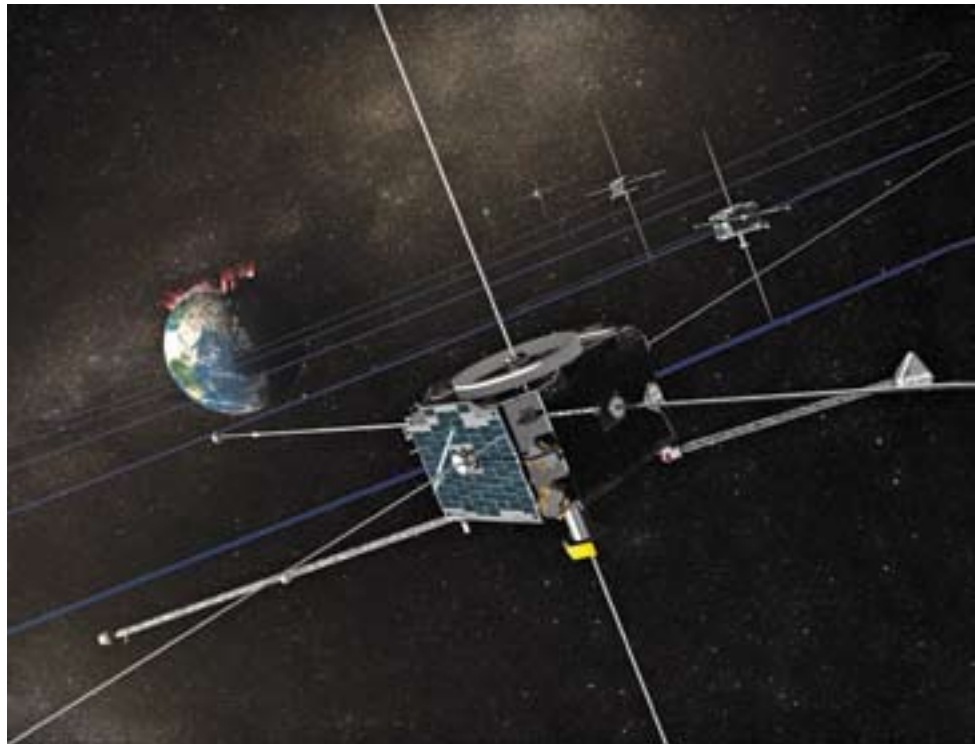
The probe bus structure, consisting of ultra-lightweight panels of graphite epoxy facesheets and an aluminum honeycomb core, provides mechanical support for all other subsystems.

The probe carrier, mounted to the third stage of a Delta II rocket, is predominantly aluminum alloy, is weight-optimized, and includes a patch panel that manifolds all of the umbilical electrical and control circuit cabling from the probes to the launch vehicle.

During its two-year mission, THEMIS will attempt to answer questions about the origin and phenomenology of solar



The probe bus, shown undergoing avionics unit installation and checkout in the Swales Aerospace clean room, was developed using MSC's Nastran and Adams software programs.



The THEMIS satellite constellation, shown in an artist's conception as it might appear in orbit, will line up along the sun-Earth line, collect coordinated measurements, and observe substorms during its two-year mission.

and Earth magnetospheric interaction, the resultant electrical substorms, effects on space and weather, disruptions in ground power grids, and communications. These affect the operation of other space satellites and the lives of humans in the sub-auroral regions of Earth.

THEMIS' satellite constellation will

line up along the sun-Earth line, collect coordinated measurements, and observe an estimated 30 substorms in process. The resultant data will help pinpoint where the storms begin, a feat previously impossible with single-satellite missions.

Matt Monaghan