

# INTEC and Centric Software Deliver Next-Generation Collaborative Functional Prototyping Solution

Centric Software Inc, the leading provider of Collaborative Product Innovation (CPI) solutions, and INTEC have recently partnered to deliver a complimentary solution in the field of Virtual Product Development (VPD) by interfacing Centric's product Centric Innovation and SIMPACK. The interface enables users to apply SIMPACK motion results on Centric Innovation digital mockup models. Typical applications include collision detection and Collaborative Functional Prototyping (CFP). The solution has been successfully deployed at SIEMENS Transportation Systems.

Sharing SIMPACK simulation results across the company and beyond

In an effort triggered and driven by Siemens Transportation Systems (TS), Centric Software and INTEC have created an interface between SIMPACK and Centric Innovation.

One of the key requirements for the solution was to be able to share results of SIMPACK simulations across different departments and sites of the company as well as with suppliers and customers outside of the SIMPACK environment.

Another important aspect was the desired ability to apply the results to the existing CAD geometry of the virtual product defined in Centric Innovation, a classic digital mockup task, in order to be able to exploit such features as collision detection, investigation of the dynamical vehicle envelope and generation of high fidelity customer presentations of the virtual product.

Virtual product development beyond the classic digital mockup with Centric Innovation

The first phase of the development of the interface between SIMPACK and Centric Innovation covered the classic aspects of

traditional digital mockup tools, such as visualising CAD geometry, collision detection and generation of high fidelity 3D visualisation models.

Centric Innovation's Collaborative Functional Prototyping provides total product definition and boundary conditions by bringing together different CAD systems, defining the complete product structure and adding behaviour. Team members can define virtual models, simulate its full functionality in real-world scenarios and assess the results in the Centric Innovation environment.

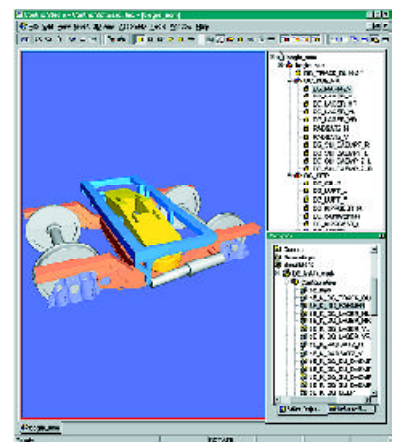
However, not only does Centric Innovation cover the field of virtual prototyping with geometrical and functional integration, but it is also designed to support companies in the fields of Innovation Management and Design-to-Target. This is done by providing a software solution that enables users to share, communicate and annotate their virtual products.

Using synchronous and asynchronous collaboration technology Centric Innovation supports these inter- and intra-team communications.

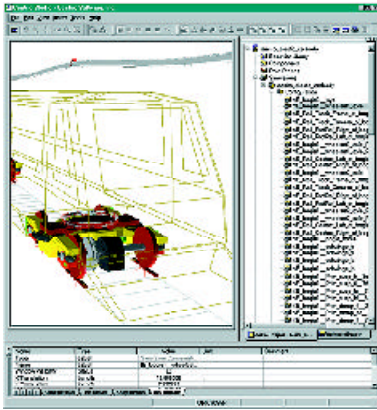
Once the core virtual product is defined in Centric Innovation, it can be enriched with attributes such as cost structure, development progress and simulation



Exporting SIMPACK Results to Centric Innovation



Mapping of SIMPACK Results to CAD Geometry



Train Model for Gauging Analysis  
(Dynamic Collision Detection)

results. These attributes can also reference external information and files like Excel spreadsheets, CAD models and engineering results. Once an attribute has been defined, users can publish/subscribe to these attributes, so that they will be automatically alerted via email if an attribute changes. This is especially useful for keeping track of changes in complex products across multiple development teams and sites. Due to its capability to interface with all major product data management systems (PDM), Centric Innovation can easily and quickly be integrated into a company's existing data management solution.

#### Interfacing between SIMPACK and Centric Innovation

The interface between SIMPACK and Centric Innovation enables SIMPACK users to export and share the animation results of their SIMPACK simulations in a format easily readable by Centric Innovation. The SIMPACK results supported can either be transient or modal results with rigid as well as flexible bodies. Not only are the simulation results exported to Centric Innovation, but also the basic structure of the SIMPACK model is exported along with the results in the so called MBS file format. The MBS file format can store an arbitrary number of results of different simulation runs and types. In conjunction with the capabilities of Centric Innovation this provides the means for introducing versioning, i.e. managing of the different version, of the SIMPACK results.

By importing the MBS file into Centric Innovation through Centric Software's MBS connector, a new simulation folder is created along with scenarios representing the set of results from SIMPACK. CAD geometry is mapped to the bodies used

in the simulation by a simple drag and drop action.

This easy to use and powerful combination of SIMPACK and Centric Innovation creates a dynamic digital mockup model, which enables users to preemptively detect issues with the virtual prototype and to present, discuss and resolve them with all team members.

#### Successful deployment of the solution at SIEMENS Transportation Systems

The first beneficiary of the combination of SIMPACK and Centric Innovation is SIEMENS Transportation Systems (TS). SIEMENS TS already successfully uses the interface to keep track of the train development which is shared by different SIEMENS locations like Vienna, Uerdingen and Graz. Applications that require information about the complex geometry of the trains as well as their dynamic movements can be covered. For instance for gauging simulations (avoiding collisions of trains with space reserved for track infrastructure or platforms taking into consideration the dynamic movements of the vehicles) both tools have successfully been interfaced. Dr. Anton Stribersky, head of Group Technology of Mechanical Systems for Rolling Stock at SIEMENS TS, says that "working with the VPD system has reduced time and cost and complex structural dynamics calculations have been automated".

#### Availability

The new interface will be generally available as a new SIMPACK module with SIMPACK Release 8.6 due in April 2003. Centric Software's MBS connector will be available with Centric Innovation Release 4.6 due in January 2003.