SIMULIA 2016
Multibody Simulation
User Group Meeting
PROGRAM

3DEXPERIENCE®
On behalf of Dassault Systèmes SIMULIA, I would like to welcome you to our first Simpack Multibody Simulation User Group Meeting.

It has been an exciting time for us, especially since we acquired the SIMPACK Group in July 2014, giving the growth and development of Simpack an all-new perspective and dimension. Simpack, the world leading Multibody Simulation (MBS) software, is used primarily in industrial sectors such as automotive, engine, railway and wind energy. Simpack is particularly well suited for high-frequency transient analyses, even into the acoustic range, complex nonlinear systems with flexible bodies, and harsh shock contact. Simpack enables engineers to generate and solve virtual 3D models to predict and visualize motion, coupling forces and stresses.

With Simpack, now part of Dassault Systèmes, the SIMULIA realistic multiphysics simulation technology portfolio expands to include multibody mechatronic systems, from virtual concept validation to the real-time experience.

As part of the SIMULIA Brand, Simpack is now the strategic MBS component of the Dassault Systèmes 3DEXPERIENCE® portfolio.

With Simpack technologies enhancing the 3DEXPERIENCE platform, Dassault Systèmes provides the leading integrated solution for end-to-end development of advanced systems, combining realistic multiphysics simulation, accurate real-time simulation of mechatronic assemblies, and control of smart systems.

Counting the previous Simpack User Meetings, this is actually Simpack’s 11th User Group Meeting, and the first European one since the integration of Simpack into Dassault Systèmes in April 2016.

The primary goal of this event is the same as always: to give users an opportunity to share their Simpack experiences and learn about new modeling and analysis strategies.

We are delighted that there are a variety of presentations from both our customers and from our SIMULIA Simpack engineers.

Users such as BMW, Jaguar Land Rover, Siemens, Voith Turbo and more will show you how they are utilizing Simpack.

You will also hear about the latest Simpack features and technology updates and find out how they can be applied to further enhance productivity with Simpack. Further, I will present you with an insight of Simpack’s role as part of Dassault Systèmes SIMULIA.

Finally, I would like to thank each one of you, our customers, for making this MBS User Group Meeting a successful event. You are our most important asset, and we would not be where we are today without your continuous support and knowledge.

Let’s move forward together with the common goal, of using simulation to power innovation!

Roger Keene, VP Sales SIMULIA Worldwide Operations of Dassault Systèmes
Dassault Systèmes is, at its heart, a technology company. SIMULIA aims to provide state-of-the-art simulation technology that our customers can confidently use in a production environment. We advance that technology in three ways:

First, we continually develop our existing products, adding new features, improving performance and making them easier to use. Second, we broaden our offerings by acquiring companies that take us into new areas of simulation. Finally, we partner with companies that have products and technology that complement what we provide.

In each case, we are always looking to provide our users with the best and latest technology. A case in point is Simpack, which was acquired by Dassault Systèmes in July 2014. Simpack provides the best, most robust, multibody simulation (MBS) technology available. It can routinely solve problems that other MBS products struggle with. It offers the capability to solve Simpack models in real-time, allowing, for example, an automotive engineer to adjust suspension parameters in the model and get immediate feedback on the change in ride and handling using a driving simulator.

Simpack models are typically much smaller than FEA models, between 50 and 2000 degrees of freedom with a frequency range of 0 to 10 kHz. Simpack uses relative coordinates to assemble the system of equations, whereas most other MBS products (and Abaqus models using connectors) use absolute coordinates. While this makes it more complex to develop the equations, it results in far fewer equations overall and hence significantly reduced run times and greater robustness and accuracy. The matrices that Simpack solves are dense, unlike the sparse matrices that Abaqus generates. This means that the solvers in Abaqus and Simpack are very different, each highly tuned to the types of equations being solved.

Simpack complements the rest of the SIMULIA portfolio. Any part in a system model can be made flexible using an Abaqus superelement so the fidelity of the model can easily be increased as the design matures. Loads determined using Simpack can drive an Abaqus simulation, and fe-safe can calculate the durability of the components. Isight can automate and optimize Simpack workflows, CATIA Systems/Dymola can be used for controls, hydraulics and non-mechanical aspects of the system model, and they can be used to manage all the Simpack data. Future releases of our products will significantly increase this interoperability. However, Simpack will continue to be open using flexible bodies from other FEA tools, controls from MATLAB® and Simulink®, and tire models like CDTire and FTire, for example.

Find out more about SIMULIA and Simpack at 3DS.com/SIMULIA and Simpack.com
# AGENDA: Wednesday, November 09 — Morning Sessions

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<th>Time</th>
<th>Session</th>
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<tr>
<td>8:00</td>
<td><strong>REGISTRATION &amp; PARTNER EXHIBITION</strong></td>
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<td><strong>CHAIRMAN:</strong> Steve Mulski, Technical Sales Director SIMULIA Multibody Simulation, Dassault Systèmes</td>
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<tr>
<td>9:00</td>
<td>Welcome</td>
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<td><em>Andres Barth, EUROCENTRAL Managing Director, Dassault Systèmes</em></td>
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<td>9:05</td>
<td>Welcome and Introduction to SIMULIA Simpack</td>
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<td><em>Roger Keene, VP Sales SIMULIA Worldwide Operations, Dassault Systèmes</em></td>
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<td>9:15</td>
<td>Simpack – Technology Updates</td>
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<td><em>Wolfgang Trautenberg, SIMULIA R&amp;D Technology Director Multibody Simulation, Dassault Systèmes</em></td>
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<td>9:45</td>
<td>Simpack Flex Bodies</td>
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<td><em>Stefan Dietz, SIMULIA R&amp;D Technology Director Multibody Simulation, Dassault Systèmes</em></td>
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<td>10:05</td>
<td>Simpack Automotive</td>
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<td><em>Marcus Schittenhelm, SIMULIA R&amp;D Multibody Portfolio Director, Dassault Systèmes</em></td>
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<td>10:25</td>
<td><strong>COFFEE/TEA BREAK &amp; PARTNER EXHIBITION</strong></td>
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<td><strong>CHAIRMAN:</strong> Wolfgang Trautenberg, SIMULIA R&amp;D Technology Director Multibody Simulation, Dassault Systèmes</td>
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<td>10:50</td>
<td>Simpack Engine</td>
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<td><em>Axel Dewes, SIMULIA R&amp;D Multibody Portfolio Senior Manager, Dassault Systèmes</em></td>
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<td>11:10</td>
<td>Simpack Rail</td>
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<td><em>Mark Michael, SIMULIA R&amp;D Portfolio Management Specialist, Dassault Systèmes</em></td>
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<td>11:30</td>
<td>Simpack Wind &amp; Drivetrain</td>
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<td><em>Steve Mulski, Technical Sales Director SIMULIA Multibody Simulation, Dassault Systèmes</em></td>
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<td>11:50</td>
<td>Simpack Q&amp;A</td>
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<td><em>Axel Dewes, Stefan Dietz, Mark Michael, Steve Mulski, Marcus Schittenhelm, Wolfgang Trautenberg, Dassault Systèmes</em></td>
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AGENDA: Wednesday, November 09 — Afternoon Sessions

12:00 | LUNCH & PARTNER EXHIBITION

CHAIRMAN: Jan Zeman, Senior Technical Sales Manager SIMULIA Multibody Simulation, Dassault Systèmes

13:00  Deployment of WIZARD at JLR  
Bjorn van Uem, VPG Group Leader Virtual Hub, Jaguar Land Rover

13:30  Advanced Cranktrain Simulation at BMW  
Florian Kuscha, Simulation Structural Dynamics Powertrain, BMW AG  
Norbert Schröder, Simulation Structural Dynamics Powertrain, BMW AG

14:00  Simulation and Validation of Derailment Experiments with Simpack  
Bernhard Girstmair, Vehicle Dynamics and Analytics, Siemens AG

14:30  Using Flexible Gears in Order to Detect the Root Cause of Gear Damage  
Heidi Götz, Calculation and Simulation, Voith Turbo GmbH & Co. KG

15:00 | COFFEE/TEA BREAK & PARTNER EXHIBITION

CHAIRMAN: Axel Dewes, SIMULIA R&D Multibody Portfolio Senior Manager, Dassault Systèmes

15:30  Using SIMAT Co-Simulation to Integrate ABS Technology into Simpack Virtual Vehicle Models  
Gregory McCann, Durability and Robustness CAE, Jaguar Land Rover

16:00  Developing an Aeroelastic Stability Analysis Process for Large Wind Turbines using Multibody Simulation  
Alireza Rezaeian, Development and Project Engineer, MesH Engineering GmbH

16:30  Numerical Study of the Structure-Borne Sound Transmission of a Bogie using Multibody Simulation  
Johannes Woller, Scientific Associate at the Chair Dynamics and Mechanism Design, Technical University of Dresden, Faculty of Mechanical Science and Engineering, Institute for Solid Mechanics

17:00  SIMULIA MBS Solution  
Roger Keene, VP Sales SIMULIA Worldwide Operations, Dassault Systèmes
Exhibitors:

**CENIT** offers comprehensive PLM consulting, service and software solutions based on Dassault Systèmes, SAP and our own software developments. Understanding the challenges of digital transformation, we offer holistic solutions for the entire value chain. With long-term industry and process expertise, CENIT supports manufacturing enterprises in optimizing their digital product development.

For more information visit: www.cenit.com

**cosin scientific software** was founded in 2009 to advance the development and application of FTire, the leading high-frequency tire model on the market.

cosin provides high-end simulation software for tire and vehicle dynamics and road modeling. The key product FTire has established its position as the leading tire model for vehicle comfort and NVH analysis over the last years.

Together with development partners, cosin offers full range support for tire data measurement, parameter identification and road surface measurement. cosin has its main office in Munich, Germany.

For more information visit: www.cosin.com

The department »Mathematical Methods in Dynamics and Durability« of the **Fraunhofer ITWM** is concerned with modeling and simulation of usage variability, dynamic loading and energy efficiency of vehicles and machines.

**Focus of work:**

- Efficient statistical methods for durability, reliability and energy efficiency
- System simulation: models and software for real-time capable tire simulation, ground interaction and Human-in-the-Loop driving simulator
- Non-linear structural mechanics: tires, rubber- and hydro mounts, ables and hoses

For more information visit: www.itwm.fraunhofer.de
KEONYS has been a leading European partner in PLM (Product Lifecycle Management) and 3D solutions for over twenty years. At the heart of the digital company, KEONYS enables organizations of all sizes and in all industries to create and market better products and innovative services more rapidly.

As a key player in innovation and productivity, one key topic for future growth is Simulation. Therefore KEONYS has built up a competence center of 8 experts to support the SIMULIA brand portfolio of Dassault Systèmes working on various application domains where simulation is required, like Biomedical engineering, Aerospace and Defence, Consumer Goods, High Tech and Electronics, Energy and Transport & Mobility. Beside the historical products (Abaqus, Tosca, fesafe, Isight, CATIA ANALYSIS, 3D EXPERIENCE), KEONYS has developed high technical skill on the new acquired tool Simpack as well as provides complementary solutions like MultiMechanics and Trueload.

Get in touch with us: marketing.deutschland@keonys.com
www.keonys.com | @KeonysPLM

The company MesH Engineering GmbH is a leading global provider of engineering consultancy services and advice related to Computer Aided Engineering (CAE). The company is divided into the departments MesH Automotive, MesH Wind, MesH Rail and MesH Aerospace. Our core competences are multi-body simulation, structural analyses and real-time applications.

For more information visit: www.mesh-engineering.de

SynOpt was founded in 2012. We are experts in virtual product development. We strongly believe that realistic simulation as an integral part of the product development process stands for much more than only structural analysis of components by means of mathematical models. SynOpt is the specialised partner for SIMULIA products in D,A,CH. You can count on our support, our competency and our network.

Get in contact with us: Dr. Martin Herrmann, Ralf Passmann, email: info@synopt.de, web: www.synopt.de
Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.