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Welcome to 'Advanced CAE solutions for next-generation propulsion system design'

Provisional programme

Friday 19 September 2025

12:00 (JST)	Arrival for buffet lunch Reception area

	Presentations
12:30 (JST)	**Keynote address** Chris Hopper, Managing Director, Realis Simulation Inc. Nick Tiney, Product Management Director, Realis Simulation Inc.
13:00	**Pressure relief valve simulation of a Battery Electric Vehicle (BEV) battery pack** Taketo Yamada, Honda Motor Co. Ltd.
13:30	**Accelerated accurate detailed kinetics in 3D CFD VECTIS simulations** Detailed chemistry is crucial in internal combustion engine (ICE) simulations to capture fuel composition effects and pollutant formation. However, high computational costs limit its use. A new feature in VECTIS introduces a chemical clustering method that groups cells with similar thermo-chemical states, dramatically accelerating source term computation by up to 10 times and cutting overall simulation time by up to 2.5 times. This breakthrough enables practical, high-fidelity fuel and emissions modelling across a broader range of powertrain development workflows. Evgeniy Shapiro, Senior Product Manager Fluid Dynamics, Realis Simulation Ltd. Charles Turquand D'Auzay, Ignacio Hernandez, Realis Simulation Fabian Mauss, Lars Seidel, Anders Borg, LOGEsoft Kerstin Brandes-Grote, Volkswagen AG
14:00	**TBC** TBC

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14:30	**Driving efficiency through ring pack optimisation with RINGPAK and mode FRONTIER** Automation offers a great potential for improving efficiency in CAE workflows. Utilising the power of advanced optimisation algorithms to determine geometric parameters that deliver the best possible performance for piston assembly components can significantly save engineering teams' time. These algorithms also potentially deliver designs that are more optimised than what would be possible with manual or Design of Experiment (DoE) type studies. With it's proven 3-piece Oil Control Ring (OCR) model, RINGPAK can predict Lubricant Oil Consumption (LOC) accurately making it the ideal tool for parametric studies of the piston ring pack. In this study, we shown how RINGPAK coupled with modeFRONTIER is used to optimise the ring pack of a 3-cylinder GTI engine to find the optimal trade-off between oil consumption, blow-by and friction. Lubor Buřič, Development Manager, Structural Mechanics, Realis Simulation s.r.o.
15:00	**Tea break**
15:15	**From feedback to functionality: Delivering Hino Motors requested enhancements in FEARCE-Vulcan** At the Realis 2024 Japan User Conference, Hino Motors presented a case study using FEARCE-Vulcan for thermal analysis on their engines. While the results were strong and the simulation run times orders of magnitude faster than traditional approaches, their conclusion identified several areas where usability could be improved, particularly around setup complexity and integration of CFD coolant analyses. This presentation highlights the improvements delivered in the 2025.1 release of FEARCE-Vulcan, driven by Hino's feedback. Key updates include a streamlined workflow, improved default settings, clearer results visualisation, and a significantly simplified user interface. Most notably, FEARCE-Vulcan now provides a method that automatically links VECTIS 3D CFD, to predict the coolant jacket thermal load, and includes that as part of the iterative FEARCE-Vulcan FE thermal solution. This new method delivers significant efficiency and accuracy improvements as it removes manual data exchange between CFD and FE models whilst guaranteeing the correct heat transfer between the two domains. Jan Hynouš, FEARCE Product Manager, Realis Simulation s.r.o.

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15:45	**Using SABR to concept an EV transmission with minimal gear whine** This study works through a concept phase electric vehicle transmission design using SABR. The concept is a parallel axis single speed transmission, and the variables which are covered are centre distance tuning, bearing selection, ratio selection and gear macro geometry design. Multiple differing concepts are chosen to be compared for metrics such as weight, deflection, gear misalignment and ultimately gear NVH performance. SABR has many tools to allow rapid evaluation of different concepts, for durability, stiffness, and NVH excitation. The software also guides the user with these tools to make quick directional decisions during concept design and helps avoid introducing problems which are harder to rectify at the detailed design stage. Lubor Buřič, Development Manager, Structural Mechanics, Realis Simulation s.r.o.
16:15	**A Model Based Development approach to motorcycle hybrid powertrains using IGNITE** This presentation introduces a model-based approach to developing and calibrating control strategies for hybrid motorcycle powertrains. Using a CAE toolchain combining IGNITE and Simulink, the methodology enables early-stage evaluation of vehicle longitudinal behaviour and powertrain architecture selection. Once the architecture is established a focus is placed on control calibration tasks such as throttle-to-torque mapping and ICE/EM torque blending, which significantly affect drivability under low-speed and transient conditions. Using Model-in-the-Loop (MiL) simulation, the control logic can be iteratively tuned in realistic driving scenarios, allowing engineers to evaluate calibration trade-offs prior to physical testing. Vratislav Ondrak, IGNITE Product Manager, Realis Simulation s.r.o.
16:45	**Cloud HPC and data-driven engineering pave the way for next-generation research and development** Rescale has evolved from traditional cloud HPC resource provisioning to launch a new solution that supports the management and utilization of simulation data. This accelerates the entire process of creating value from data and powerfully promotes data-driven research and development.

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	By automatically organizing vast amounts of simulation data and managing it with appropriate metadata, searchability and reusability of data are improved. This powerfully supports the work efficiency of designers and researchers. Hiroki Shimizu, Rescale Japan K.K.
17:15	**What's New in 2025** Nick Tiney, Product Management Director, Realis Simulation Inc.

18:00 (JST)	Evening buffet, networking and drinks reception Reception area Meet our team of experts, an opportunity to network and ask questions.
20:00	Close