

Computational Simulation Lab

Initiation Workshop – Munich, Oct. 2026



IAS
TUM Institute for Advanced Study
Technische Universität München

Computational Simulation Lab Workshop, Munich 2026

== Sustainable Innovation by Collaboration ==

Agenda

Munich, 2026

Date: October 5-7, 2026

Location: [TUM Institute for Advanced Study, Lichtenbergstraße 2 a, 85748 Garching bei München, Germany](#)

The following agenda is potentially adapted according to the feedback to the questionnaire, and availability of the participants. Please check the recent updates at <https://www.cee.ed.tum.de/en/st/cs-lab/events/csl-workshop-2026/>

Day 1 - Community day (05.10.2026)

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|----------------------|--|
| 09:00 - 09:30 | Welcome and Introduction by Prof. Dr.-Ing. habil. Roland Wüchner and Dr.-Ing. Suneth Warnakulasuriya |
| 09:30 - 10:00 | Keynote speech (" <i>Old challenges and new opportunities - change the (research) operating system</i> " by Mr. Nils Boeffel) |
| 10:00 - 10:30 | " <i>Computational Mechanics Meets AI</i> " by Prof. Riccardo Rossi, CIMNE, Spain |
| 10:30 - 11:00 | Coffee break with a group picture (Be sure to be there!) |
| 11:00 - 12:30 | Lightning pitches from diverse stakeholders <ul style="list-style-type: none">• "<i>Developing Research Software for Computational Mechanics – a user's perspective</i>" by Prof. Dr.-Ing. habil. Manfred Bischoff, University of Stuttgart, Germany.• "<i>Reliable computational modelling – challenges and perspectives as methods and tools evolve</i>" by Mrs. Maria Pantusheva, GATE Institute, Bulgaria.• "<i>From Algorithms to Products: Delivering Industrial Impact</i>" by Dr.-Ing. Thilo Franke, Volkswagen AG, Germany.• "<i>Digital Twins: Control, Risk, and Model Correction</i>" by Prof. Harbir Antil, George Mason University, USA.• "<i>The Process Is the Experiment: Software Development in a Heterogeneous Team</i>" by Mr. Matthias Dörfler, Fraunhofer Ernst-Mach Institute, EMI, Germany.• "<i>Scalability, Trust and Collaboration: Key Requirements for Industrial Simulation</i>" by Dr. Christoph Heinrich, Siemens AG, Germany.• "<i>Three facets of Computational</i>" by Prof. Dr. Hans-Joachim Bungartz, Technical University of Munich, Germany.• "<i>Diverse Interests in Computational Engineering and Sciences: Multiscale, Multiphysics, and Multidisciplinary Perspectives</i>" by Prof. Kenjiro Terada, Tohoku University, Japan. |
| 12:30 - 13:30 | Networking lunch (provided in the same building, encouraging team spirit, encounters and new connections) |

- 13:30 - 15:00 Panel discussions
- “Navigating the Tech Overhead: Innovation-open, sustainable software infrastructure for complex simulations” moderated by Prof. Dr. Fernaß Daoud.
Panelists: Prof. Pooyan Dadvand, Prof. Dr.-Ing. habil. Stefan Kollmansberger, Prof. Joris Degroote, Dr.-Ing. Ute Israel
 - “People, Knowledge, and Continuity: Beyond the code - Cultivating sustainable innovation in Computational methods in engineering” moderated by Prof. Antonia Larese.
Panelists: Prof. Chul-Woo Kim, Prof. Dr. Harbir Antil, Dr.-Ing. Malte von Scheven, Prof. Maria Pina Limongelli
- 15:00 - 15:30 Coffee break with networking.**
- 15:30 - 17:00 Working groups (agnostic to specific applications)
- From fundamental methods to industrial impact (**Group A, Auditorium**)
Moderated by Pooyan Dadvand*, Philipp Bucher, Ricky Aristio, Talhah Ansari
 - Sustainable scientific software & infrastructure (**Group B, CSL Room 1 and 2**)
Moderated by Malte von Scheven*, Stefan Kollmannsberger, Qining Tang, Máté Kelemen
 - Data, documentation, and knowledge Continuity (**Group C, CSL Room 3**)
Moderated by David Koch*, Anoop Kodakkal
 - AI as a new collaborator in computational engineering (**Group D, CSL Room 4**)
Moderated by Harbir Antil*, Jithender Timothy, Ihar Antonau, Thies Mattes Buschke
- 17:00 - 18:00 Reporting the findings of working groups
- 18:00 - 18:30 Closing summary with day 2 outlook by Dr.-Ing. Ann-Kathrin Goldbach
- 19:00 - ... Networking dinner** (provided in the same building, encouraging team spirit, encounters, and new connections)

Day 2 - Topical day (06.10.2026)

- 08:45 - 09:00 Welcome by Prof. Dr.-Ing. habil. Roland Wüchner
- 09:00 - 09:30 Keynote speech (*“Research Data Management and current challenges and opportunities in Research Software Development”* by Mr. David Koch, Technical University of Munich, Germany)
- 09.30 - 10.30 Short topical presentations with Q&A
- *“Past – Present – Future”* by Prof. Pooyan Dadvand, Siemens AG, Spain.
 - *“HPC for Structures and Fluids”* by Prof. Riccardo Rossi, CIMNE, Spain.
 - *“Material modeling in R&D for anchorage systems”* by Prof. Dipl.-Ing.Dr.techn. Matthias Neuner, Boku University, Austria.
- 10:30 - 11:00 Coffee break**

- 11:00 - 12:30 Short topical presentations with Q&A (contd.)
- “*Bridging experimental and computational research through digital twins*” by Prof. Girma Bitsuamlak, Western University, Canada
 - “*New Particle Methods: Discretization Enabling Adaptive Fluid Simulation and Large-Deformation Solid Analysis with Deformable Kernels*” by Prof. Mitsuteru Asai, Kyushu University, Japan.
 - “*AI-strategic of the Nemetschek Engineering-Brands*” by Mr. Stefan Kaufmann, AllPlan, Germany.
 - “*Kratos in the Industrial Workflow and Research Software for Everyday FEA*” by Mr. Jesse Friedrich, Volkswagen AG, Germany.
- 12:30 - 14:00 **Networking lunch** (provided in the same building, encouraging team spirit, encounters, and new connections)
- 14:00 - 15:30 Topical group session (based on the topical presentations, moderated discussions with specific questions to be addressed from day 1)
- Computational structural mechanics and optimization (**Group E, Auditorium**)
Moderated by Cristian G. Gebhardt*, Talhah Ansari
 - Fluid dynamics, Multi-physics and coupled problems (**Group F, CSL Room 3**)
Moderated by Joris Degroote*, Anoop Kodakkal
 - HPC, Reduced-order models and AI-Augmented simulation (**Group G, CSL Room 4**)
Moderated by Felix Dietrich*, Annalisa Quaini, Ihar Antonau, Thies Mattes Buschke
 - Emerging methods and future research directions (**Group H, CSL Room 1 and 2**)
Moderated by Pierluigi D'Acunto*, Laura Moreno Martínez, Qining Tang, Ricky Aristio
- 15:30 - 16:00 **Coffee break with networking**
- 16:00 - 17:00 Reporting the findings of the working groups
- 17:00 - 17:30 Closing summary with day 3 outlook by Dr.-Ing. Ann-Kathrin Goldbach

Day 3 - Technical day (07.10.2026)

- 08:45 - 09:00 Welcome Prof. Dr.-Ing. habil. Roland Wüchner
- 09:00 - 11:00 Technical hands-on session
- Kratos Multiphysics - Machine learning / AI for users by Prof. Riccardo Rossi.
 - Kratos Multiphysics – Machine learning / AI for developers by Carlos Alejandro Roig Pina.
- 11:00 - 11:30 **Coffee break**
- 11:30 - 12:30 Technical hands-on session contd.
- Kratos Multiphysics – Geomechanics by Deltares, Netherlands

- 12:30 - 14:30** **Networking lunch** (provided in the same building, encouraging team spirit, encounters, and new connections)
- 14:30 - 16:00** Excursion: Lab tour in Siemens AG (Please respond to suneth.warnakulasuriya@tum.de to register for this event, as this event can only accommodate a maximum of 45 participants)
- 16:00 - 16:30** **Coffee break with networking**
- 16:30 - 17:30** Open session for discussions
- 17:30 - 18:00** Closing summary and feedback by Dr.-Ing. Suneth Warnakulasuriya

Room Information:

Room identifier	Room number	Floor
Auditorium	Auditorium	Ground floor
CSL Room 1	Conference Room 03	Ground floor
CSL Room 2	Conference Room 04	Ground floor
CSL Room 3	Conference Room 1.021	1 st floor
CSL Room 4	Conference Room 3.021	3 rd floor

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Group H: Emerging Methods & Future Research Directions

On 06.10.2026 from 14:00 – 15:30

Moderators: Pierluigi D'Acunto (Reporter) Laura Moreno Martínez
Assistants: Qining Tang Ricky Aristio

Tasks:

1. Map the landscape of emerging computational engineering methods
 - Identify and categorize the most promising emerging methods and technologies. Discuss where they are expected to have the greatest impact and what capabilities they require in terms of software, hardware, data, and expertise.
2. Assess gaps, limitations, and challenges
 - Discuss the limitations of current simulation approaches and identify the key scientific, technical, and organizational challenges that must be overcome for emerging methods to achieve widespread adoption and impact.
3. Develop a vision for the future computational engineering ecosystem
 - Define the elements of a future ecosystem that can support next-generation computational engineering, including education, workforce development, knowledge sharing, software sustainability, AI integration, computing infrastructure, and academia-industry collaboration.

Outputs / Key takeaways:

- Structure the emerging computational engineering methods according to application fields, software requirements, hardware requirements, etc.
- What are the limitations of recent simulation methods requiring new approaches?
- What novel opportunities support emerging computational engineering methods?
- What are the challenges in the emerging methods?
- How does an innovative future eco-system look like w.r.t. education, knowledge, software, hardware?

Instructions for moderators / assistant moderators:

- Moderators should first stimulate the discussion using the task points. Thereafter, collect, structure, and summarize participants' input. Afterward, develop key takeaways with the participants based on the hints in the section “Outputs / Key takeaways”.
- Assistant moderators will be assisting in taking notes and assisting with operating projectors, TVs, etc. throughout the group discussions.
- We would highly encourage moderators and assistant moderators to also participate in the group discussions.
- Finally, if **two moderators** are present, having **two groups** for the topic, then they should get together at the end (the last 10 minutes) to consolidate the output from the two groups.
- The reporter should present a consolidated output to the audience in the auditorium (**max 15 minutes for the presentation at the auditorium**).

Remark: The tasks and hints given are intended to be helpful, and meaningful deviations are certainly welcome.