

Webinar series: Simulation, AI, and HPC

A true dream team and game changer

From chemistry for chemistry!

The ASCS association and the Game Changer Simulation initiative are collaborating with the VCI association to plan a high-profile webinar series that will highlight the potential of simulation, artificial intelligence (AI), and high-performance computing (HPC) for business, science, and society. Each webinar will address the common ground between these technologies and also focus on a specific topic.

Objectives of the webinar series

- Increase visibility and understanding of simulation, AI, and HPC as key technologies
- Provide practical insights into different areas and applications in the chemical and pharmaceutical industry
- Promote exchange between industry, research, and politics
- Initiate new collaborations and projects (research and funding projects, use cases, etc.)

Structure of the webinar series

Each webinar will last around 60 minutes and may consist of the following elements:

1. Welcome & introduction to the topic (5 minutes)
2. Keynote or keynote speech (15 minutes)
3. Technical presentations/best practices from industry and research (10 minutes each)
4. Panel discussion with Q&A (15 minutes)
5. Summary and outlook (5 minutes)

Elements 2, 3, and 4 can be used individually with customized time slots. The total time should be based on a maximum of 60 minutes.

Overview of topics covered in the 6 webinars plus Webinar 0

Webinar 0 Title: Ready for the future: Focus on simulation, AI, and HPC – from vision to application – opportunities for the chemical and pharmaceutical industries

This webinar serves as an introduction to the entire series and clearly illustrates why simulation, AI, and HPC are not just buzzwords, but are already real game changers today. It shows the overarching benefits of these technologies for the economy and society – and translates this directly into their relevance for the chemical and pharmaceutical industry. This makes Webinar 0 an **orientation compass** that sets the stage for the six thematic in-depth sessions.

1. Energy & sustainability

Simulation and AI for optimizing energy consumption, CO₂ reduction, and sustainable processes. HPC as an enabler for complex sustainability scenarios that reveal new ways to decarbonize and increase efficiency.

2. Product Development & Virtual Prototyping

From idea to virtual product: How simulation drastically shortens development times. The combination of AI-supported design optimization and HPC computing power enables realistic testing and accelerated innovation cycles.

3. Research & Innovation in Chemistry and Materials Science

Digital twins and AI-supported material simulation are revolutionizing the development of new materials and processes. Simulation opens up completely new possibilities for efficiency and sustainability in this area.

4. HPC, Cloud, IT Structure, Energy

Whether for complex molecular dynamics, large-scale process simulations, or AI-supported models: without a stable and scalable IT infrastructure, potential remains untapped. High-performance computing provides the necessary computing power, while cloud solutions enable flexibility and scalability. Together, they create the basis for real-time, energy-efficient, and cost-effective use of simulation and AI. This also addresses issues of energy supply, sustainability, and IT security.

5. Risk management & resilience

Simulation and AI as early warning systems: from scenario calculations for crisis prevention to the stabilization of global supply chains. HPC provides the computing power for complex predictions.

6. Smart manufacturing & smart factory

The digital twin as the heart of networked production. Simulation and AI enable efficient, flexible, and sustainable manufacturing processes, while HPC provides real-time data for adaptive production control.

7. Mobility and logistics are interesting

Target groups

- Decision-makers from industry, politics, and science
- Specialists and managers from research and development
- Corporate strategists and innovation managers
- Technology and IT experts

Benefits for participants

- First-hand information on current trends and best practices
- Direct exchange with experts and decision-makers
- Concrete approaches for implementation in your own projects
- Networking and initiation of collaborations

With this webinar series, we not only want to inform, but also provide inspiration and connect players across industries. Simulation, AI, and HPC are the dream team for today's challenges – and tomorrow's solutions.