

NAFEMS Technical Working Group Overview

Multiphysics (MPWG)
2022



Multiphysics

- The NAFEMS Multiphysics Working Group (MPWG) has been set up to promote and support the use of Multiphysics simulation in industry.
- Industrial use of Multiphysics simulation is a diverse and challenging topic. The main driving force is the need for more realistic numerical simulations which leads to solving coupled problems, supported by continuing improvements in hardware and software. Some problems can only be solved by means of Multiphysics simulations. One of the most important aspects is the coupling of physics. In this context smart reductions, like e.g., coupling of 1D submodels with 3D submodels, are of vital importance.
- The MPWG holds monthly online meetings and yearly physical meetings during the NAFEMS World Congress and Multiphysics Conference.
- **Chair** - Alfred J. Svobodnik, Mvoid Group, Vienna, Austria
Vice Chair - Henrik Nordborg, OST - Eastern Switzerland University of Applied Sciences, Rapperswil-Jona, Switzerland
- The MPWG includes representatives of AdCo Engineering^{GW}, Airbus, Altair, ANSYS, ATOA Scientific Technologies, Dassault Systèmes, DYNAmore, ESI, Fontys University of Applied Sciences, Fraunhofer SCAI, Free Field Technologies, Fujifilm, IMAMOTER-CNR, John Deere, Mvoid Group, OST - Eastern Switzerland University of Applied Sciences, Siemens Digital Industries Software, TETRA PAK, TimeTooth Technologies, UiT - The Arctic University of Norway, University of Luxembourg, University of Manchester, University of Warwick, Veryst Engineering, Zurich University of Applied Sciences.
- Information about the MPWG can be found at www.nafems.org/community/working-groups/Multiphysics. To enquire about joining the MPWG complete the online form at www.nafems.org/community/working-groups/multiphysics/get_involved.

Multiphysics

- The Multiphysics Working Group has formed an online community (NAFEMS Multiphysics Community) which allows the NAFEMS membership to engage with technical experts of the NAFEMS MPWG.
- The Multiphysics Community is only accessible to NAFEMS members, and no significant knowledge or expertise is required to participate. The only requirement is a desire to learn more and interact with other engineers and scientists who have an interest in Multiphysics analysis.
- The MPWG hosts online community events featuring practical aspects of Multiphysics simulations for industrial applications.
- For more information about the Multiphysics community visit:
www.nafems.org/community/working-groups/multiphysics/mpwg-community/.
- If you would like to join this community, go to www.nafems.org/mynafems/communities/.

Multiphysics

- **Areas of Current Interest**

- Multiphysics Community online events
- The NAFEMS International Journal of Multiphysics Case Studies - Volume 2
- Publication: Multiphysics Simulations for the Impatient
- An online repository for Multiphysics case studies

- **Recent Outputs**

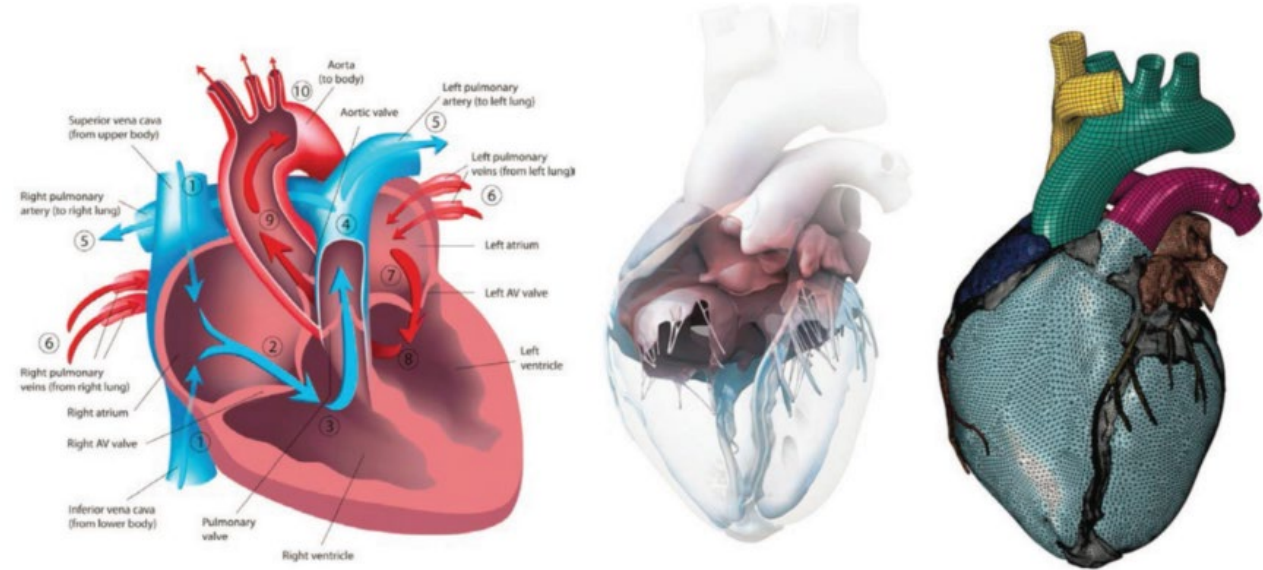
- Multiphysics Community event: Multiphysics E-Motor Design Process Through Optimisation
- Multiphysics Community event: General Guidelines for Multiphysics Simulations
- The proceedings from the NAFEMS Multiphysics Conferences

- **Past Events**

- International Multiphysics Simulation Conference, online, October 2021 (virtual conference as part of the NAFEMS World Congress 2021)
- European Multiphysics Conference, Budapest, October 2018
- European Multiphysics Conference, Copenhagen, November 2016
- European Multiphysics Conference, Manchester, October 2014
- European Multiphysics Conference, Frankfurt, October 2012

- **Future Plans**

- International Multiphysics Simulation Conference, tbd, October/November 2024



Chair Bio

Dr. Alfred J. Svobodnik, President & CEO of the Mvoid Group, is an entrepreneur, thought leader, engineer and scientist. He has been researching for more than 25 years in the areas of Multiphysics and virtual as well as computational acoustics. His passion is Jazz music.

Previously, Alfred spent five years with Harman International Inc. where he held several senior managerial and executive advisor positions in the areas of simulation and virtual acoustics for audio systems. Alfred started his career as founding member, Executive Partner and CTO in 1990 with Numerical Analysis and Design, a company specialized in engineering analysis with finite and boundary elements for stress analysis, structural dynamics and computational acoustics.

He is honorary member of NAFEMS, member of the NAFEMS German Steering Committee and Chair of the NAFEMS Multiphysics Working Group as well as founding member of the NAFEMS Professional Simulation Engineering Scheme. Furthermore, he is a full member of the Audio Engineering Society (AES) and a member of the ALTI Executive Advisory Board.

Alfred: 'One of my favorite quotes is: "Nothing is more powerful than an idea whose time has come" (Victor Hugo). For me, this guiding principle includes: always act with foresight, look at new, undiscovered ideas, sometimes move away from conventional ways, think outside the box in order to give ideas room to evolve. Ideas, whose time have come.

