



## Main Focus

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- Green by IT
- Parallel File System (BeeGFS)
- Visualization
- Seismic Data Processing
- Data Analysis and Machine Learning
- Scalable Parallel Programming
- Quantum Computing

# High Performance Computing

The High Performance Computing leadership team consists of Dr. Valeria Bartsch, Dr. Norman Ettrich, Dr. Daniel Grünewald, Dr. Janis Keuper, Matthias Klein-Schlöbl, Dr. Jens Krüger, Dr. Mirko Rahn and Dr. Rui Mário da Silva Machado. In the following Dr. Valeria Bartsch and Dr. Jens Krüger, as spokesperson, will answer the questions:

## What does your department deal with and what constitutes its research work?

We are a globally recognized partner when it comes to the development of new technologies especially for distributed and high-performance computing. We are committed to holistic and future-oriented development, optimization and research. Our topics include efficient and scalable hardware and software solutions, as well as methods for addressing industrial and societal challenges.

## What potential does your department’s research have for a better future?

We drive the current state of the art in high performance computing. We are courageous and break new ground when it comes to novel solution. We are not afraid to think outside the box and we are making a decisive contribution to the transformation to a sustainable society.

## Where do you see your department in five years?

We will have developed a complete supercomputing hardware and software stack. We integrate quantum computing into HPC systems successfully. We are open to the unexpected and will develop new ideas over the next five years.

## Which three keywords best describe your department?

- Holistic – sustainable – courageous

**Department topics in this report:**

- New Work – How We Work at Fraunhofer ITWM. . . . . S. 16
- European Data Cloud for Mobility of the Future . . . . . S. 28
- Rhineland-Palatinate Promotes Competence Center for Quantum Computing . . . . . S. 31
- QCStack: Between Classical Clusters and Quantum Computing . . . . . S. 32
- Changing the World With Research Results . . . . . S. 36
- Test Phase Launched: Comparison of Charging Structures. . . . . S. 53
- Digitization and Artificial Intelligence for Energy Management 2.0 . . . . . S. 56
- Microparticles With a Big Impact: Aerosols in Climate Models. . . . . S. 58

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