German Priority Programme 1648
Software for Exascale Computing

About SPPEXA
The Priority Programme Software for Exascale Computing (SPPEXA) of the German Research Foundation (DFG) addresses fundamental research on the various aspects of HPC software.

SPPEXA runs 2013-2019, and it is implemented in two-three year phases, consisting of 13 (phase 1) and 16 (phase 2) project consortia and more than 50 institutions involved. With SPPEXA’s second-phase projects funded by DFG as well as the French National Research Agency (ANR) and the Japan Science and Technology Agency (JST), SPPEXA strives for bilateral and trinational research to pave the road towards exascale computing.

EXAMAG - Exascale Simulations of the Magnetic Universe
U Heidelberg +++ U Würzburg +++ U Tokyo +++
U Strasbourg

Smart-DASH - Smart Data Structures and Algorithms with Support for Hierarchical Locality
LMU München +++ U Stuttgart +++ HLRS Stuttgart +++
TU Dresden +++ KIT Karlsruhe

EXASTEEL - From Micro to Macro Properties
U Köln +++ TU Bergakademie Freiberg +++ U Essen +++
TU Dresden +++ LU Magdeburg +++ FAU Erlangen-Nürnberg

Terra-Neo - Integrated Co-Design of an Exascale Earth Mantle Modeling Framework
LMU München +++ FAU Erlangen-Nürnberg +++
TU München

AIMES - Advanced Computation and I/O Methods for Earth-System Simulations new!
U Hamburg +++ U Versailles +++ RIKEN +++ Tokyo Tech

ExaStencils - Advanced Stencil-Code Engineering
U Passau +++ FAU Erlangen-Nürnberg +++ U Kassel +++
U Tokyo

EXAH1D - An Exa-Scalable Two-Level Sparse Grid Approach for Higher-Dimensional Problems in Plasma Physics
U Stuttgart +++ U München +++ U Bonn +++
ANU Canberra +++ MPG Garching +++ UC Los Angeles

GROMEX - Unified Long-Range Electrostatics and Dynamic Protonation for Realistic Biomolecular Simulations on the Exascale
MPI BPC Göttingen +++ JSC Jülich +++ Stockholm U

EXA-DUNE - Flexible PDE Solvers, Numerical Methods, and Applications
U Heidelberg +++ U Münster +++ U Stuttgart +++
TU Kaiserslautern +++ TU Clausthal +++ TU Dortmund

CATWALK - A Quick Development Path for Performance Models
ETH Zürich +++ RWTH Aachen +++ JSC Jülich +++
TU Darmstadt +++ GU Frankfurt

ESSEX - Equipping Sparse Solvers for Exascale
FAU Erlangen-Nürnberg +++ DLR Köln +++ U Greifswald +++
U Wuppertal +++ U Tsukuba +++ U Tokyo

ExaSolvers - Extreme Scale Solvers for Coupled Problems
RWTH Aachen +++ Tokyo U of Science +++ U Lugano +++
HLRS Stuttgart +++ U Trier +++ GU Frankfurt +++ Toyo U

ADA-FS - Advanced Data Placement via Ad-hoc File Systems at Extreme Scales new!
TU Dresden +++ JGU Mainz +++ KIT

ExaFSA - Exascale Simulation of Fluid-Structure-Acoustics Interactions
U Stuttgart +++ TU Delft +++ U Siegen +++
TU Darmstadt +++ Tohoku U

ExaDG - High-Order Discontinuous Galerkin for the Exa-Scale new!
U Heidelberg +++ TU München

FFMK - A Fast and Fault Tolerant Microkernel-Based System for Exascale Computing
TU Dresden +++ ZIB Berlin +++ Hebrew U Jerusalem

MYX - MUST Correctness Checking for YML and XMP Programs new!
RWTH Aachen +++ MDLS Saclay +++ U Tsukuba +++ RIKEN