German Priority Programme 1648
Software for Exascale Computing
SPPEXA – Software for Exascale

- **Strategic initiative of DFG to fund HPC software in Germany**
  - Establish collaborative, interdisciplinary co-design of HPC applications and HPC methods
  - Consists of research consortia with central, network-wide coordination

- **Aims of SPPEXA’s central coordination**
  - Central SPPEXA events, establish and foster international collaboration, doctoral retreats & coding weeks
  - Support project-specific activities, dynamically distribute network funds, education, gender incentives

- **SPPEXA research is ...**
  - ... driven by domain science / CSE application
  - ... powered by scientific computing / CSE methodology
SPPEXA’s Six Topics

• **Computational algorithms**
  - Large-scale machines
  - Efficient w.r.t. “modern” complexity measures

• **System software**
  - Process scheduling
  - System health monitoring
  - Resilience handling

• **Software tools**
  - Compiling, running, verifying, testing, optimizing

• **Application software**
  - Key driver for exascale
  - Hardware-software co-design necessary

• **Programming**
  - Make traditional approaches exascale ready
  - New programming models

• **Data Management**
  - Process large data sets
  - Archive, make data available
SPPEXA Facts

• **Consists of 13 research consortia**
  – Interdisciplinary research consortia
  – Involving 2-5 groups each
  – Addressing at least 2 out of the 6 SPPEXA topics

• **About 60 PIs and 60 PhD students**

• **Overall budget of 3.7m € per year**

• **Two three-year funding phases**

• **Launch of programme and projects was in January 2013**
Research Consortia

- Consortia cover > 15 disciplines
- Requires close collaboration within and among SPPEXA consortia
- The central coordination fosters synergistic effects within SPPEXA
- Detailed description of projects is available at

http://www.sppexa.de