EU and international future calls

EC, **G8, DFG**

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G8 and DFG activities concerning BDEC

- G8
  - The G8 initiative / active projects of the first call
  - Planned follow-up call
    - Why, how, and when?

- DFG
  - Priority program targeting the Exascale
  - Multilateralization

G8 Initiative
Active projects of the first call

- G8 *Heads of Research Councils* meeting in Kyoto/Japan in May 2008: Initiative for multilateral research funding
- Call in 2010: *Interdisciplinary Program on Application Software towards Exascale Computing for Global Scale Issues*
- Six projects on climate, earth system, seismic wave simulations, nuclear fusion simulations, dynamics of large biomolecular systems
- Final projects review, June 12-13, 2014 at Princeton University, Princeton, NJ, USA

G8 Initiative
Multilateral funding schemes are painful - is it worth the effort?

- A unique opportunity to enable collaborations between ≥ 3 different countries (4 projects with 5 or 6 countries)
- Beyond bilateral or regional international collaborations
- Potential to speed-up research by enabling top experts to collaborate
- Unique opportunity for interdisciplinary and -national student training
- Access to top HPC infrastructure

G8 Initiative
Multilateral funding schemes are painful - is it worth the effort?

- Research needs to be continued beyond the initial 3 years in order to impact on the path to Exascale
- Obvious need to continue joint efforts to meet HPC challenges at Exascale
- More funding needed (surprise!)
- Heavy administrative challenge for the national funding agencies (test-bed)
- Need to find a way to foster sustainable, long-term multi-lateral collaborations

Planned G8 Follow-Up Call
Why, how, and when?

- *Interdisciplinary Program on Application Software towards **Big Data and Extreme Computing** for Global Scale Issues*
- It is expected that 4-8 consortia may be funded
- Approximate budget is 10m € over 3 years
- Each consortium must consist of at least one academic participant from a minimum of 3 different countries represented by the participating funding agencies
- Consortia should aim for a balanced geographical contribution to the research project
- Call secretariat at ANR
- Call planned for April 2014

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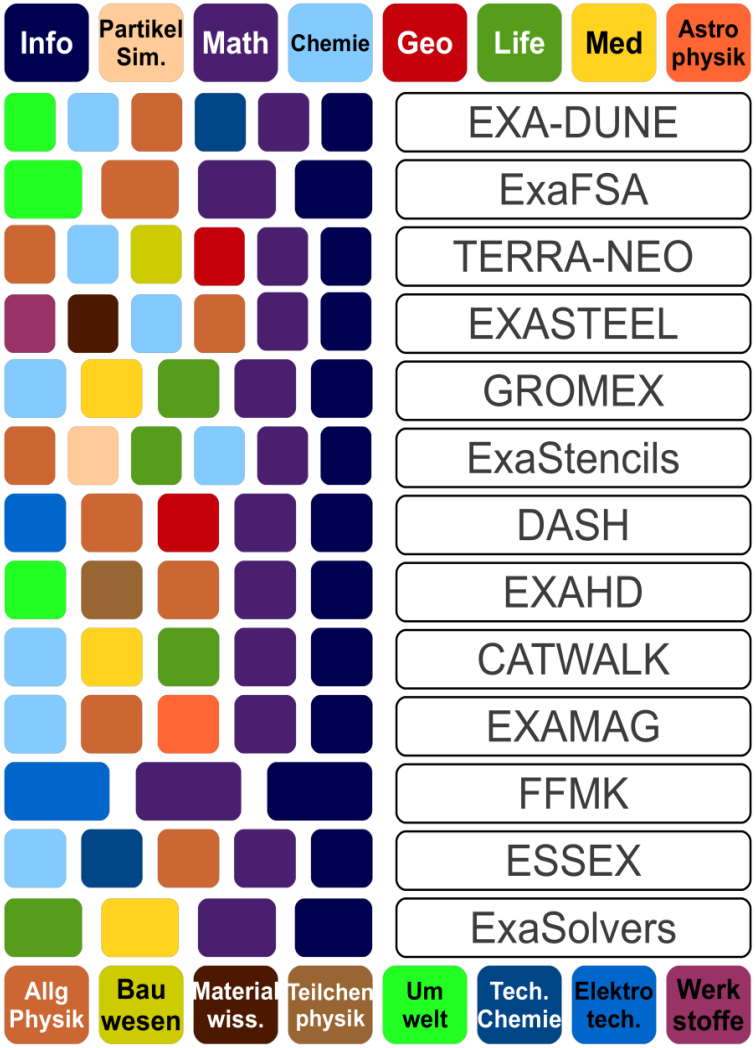
DFG Priority Program
Software for Exascale Computing

- Strategic initiative 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
- SPPEXA research is …
  - … driven by domain science / CSE application
  - … powered by scientific computing / CSE methodology
- 6 topics: Computational algorithms, System software, Software tools, Application software, Programming, Data management

DFG Priority Program
Interdisciplinary Research Consortia

- Cover > 15 disciplines
- Involve 2-5 groups each
- Address ≥ 2 out of 6 SPPEXA topics
- Close collaboration within and among SPPEXA consortia
- Overall budget of 3.7m € per year
- Two three-year funding phases
- Phase 1 launched in January 2013



DFG Priority Program
Multilateralization

- Phase 2
  - Call for projects in November 2014
  - Three-year projects to be launched in January 2016
- Welcoming scientists from other countries to join SPPEXA
- Practicing (G8) multilateral funding schemes
- Some agencies consider to co-fund “their“ scientists

Thank you

More information

- DFG: **http://www.dfg.de**
- funded research projects: http://www.dfg.de/**gepris**
- search for more than 17,000 German research institutions: http://www.dfg.de/**rex**

Six G8 projects

- ECS: Enabling Climate Simulation at Extreme Scale
- ExArch: Climate analytics on distributed Exascale data archives
- ICOMEX: Icosahedral-grid Models for Exascale Earth System Simulations
- Nu-Fuse: Nuclear Fusion Simulations at Exascale
- SEISMIC IMAGING: Modeling earthquakes and earth's interior based upon Exascale simulations of seismic wave propagation
- INGENIOUS: Using next generation computers and algorithms for modeling the dynamics of large biomolecular system

Backup-Slide

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