Exascale seen from a DFG perspective

DFG – The German Research Foundation

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The DFG

► research universities, non-university research institutions, scientific associations and academies

► funding from German federal government and the German states (€ 2.7 billion granted in 2011)

► funding for knowledge-oriented research

The DFG funding principles

▶ „owned by scientists – run by scientists"

▶ external peer reviews

▶ scientific quality sole criterion for funding decisions

▶ *bottom-up* principle

  ▶ permits rapid and flexible funding opportunities

  ▶ scientific community triggers coordinated funding

  ▶ few *top-down* initiatives ($\rightarrow$ Federal Ministry of Education and Research)
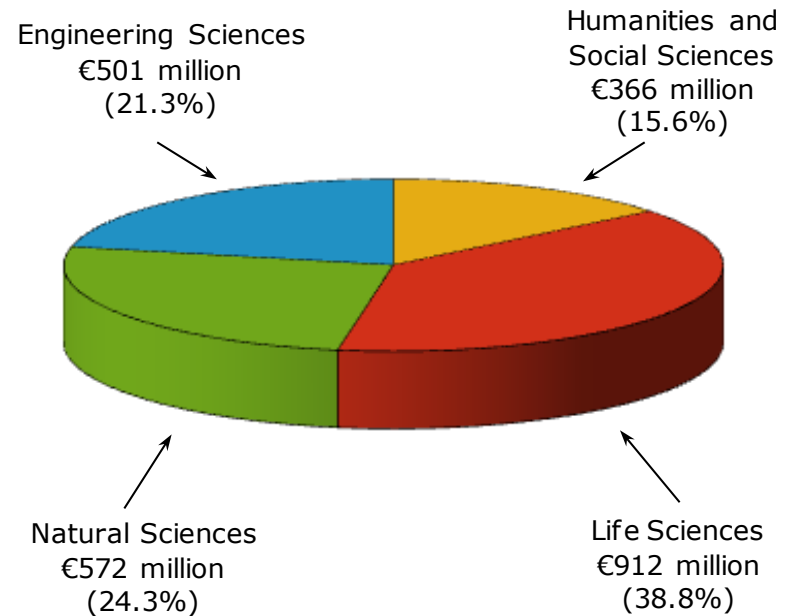
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What is the DFG's mission?
Germany's largest research funding organisation

The DFG

▶ serves **all branches of science and the humanities**

▶ fosters **scientific excellence** through competition

▶ supports **international cooperation in research** (e.g. bi-/multilateral agreements, international offices, G8)

▶ **advises** political and social decision-makers beyond funding of basic research

Funding in 2009, by scientific discipline

Engineering Sciences
€501 million
(21.3%)

Humanities and
Social Sciences
€366 million
(15.6%)

Natural Sciences
€572 million
(24.3%)

Life Sciences
€912 million
(38.8%)

total expenditure € 2.2 billion
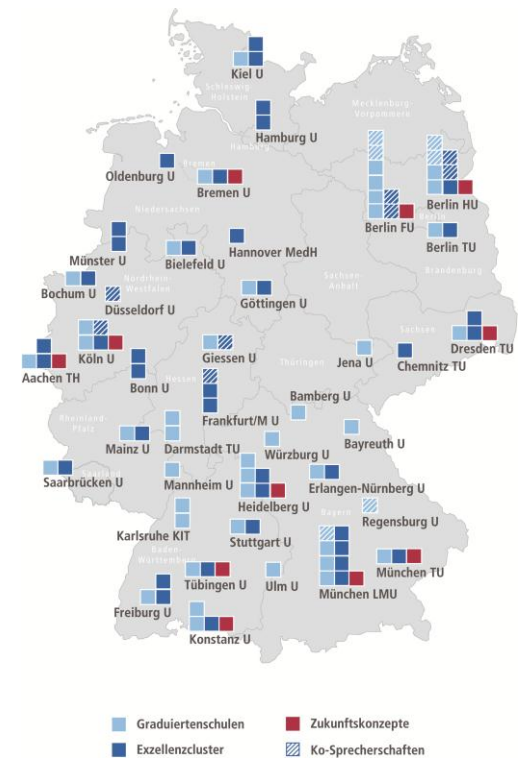
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Exascale@DFG

1. **Relevance of Exascale research**

2. **Existing DFG funding mechanisms to support *Path to Exascale***

3. **Opportunities for joint funding**

4. **DFG's perspective on the G8 Process – what next?**

Exascale@DFG

1. Relevance of Exascale research

► breathtakingly **increasing rate** of scientific data production

► data becoming an issue in **increasing numbers** of disciplines

► today's extreme scale computing challenges need to be tackled to serve tomorrow's more general computing needs

► can be of **strategic importance for an increasing number of research areas**

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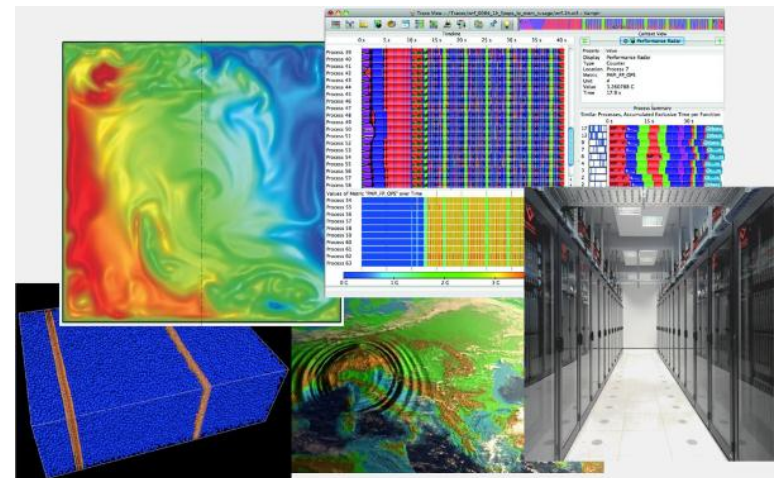## 2. Existing DFG funding mechanisms to support *Path to Exascale*

▶ CSE successful in the German Excellence initiative

▶ Priority Program on *Software for Exascale Computing*

- **Strategic element** of DFG's funding portfolio

- 2 x 3 years, first 3-year funding period just started (11 M€ plus 20% overhead costs)

- 13/68 cooperation projects funded

- typically 3-5 PIs/project covering different perspectives of the exascale software challenge: algorithms, applications, programming, system-software, data management, SW tools

2. Existing DFG funding mechanisms to support *Path to Exascale* (*2*)

► Priority Program on *Software for Exascale Computing*

- responds to IESP / EESI recommendations

- blend of evolutionary as well as revolutionary concepts to meet HPC challenges@exascale

- focus also on **educational aspects** (joint seminars, exchange between projects)

- 2nd call in mid 2014

3. Opportunities for joint funding

► synchronize existing funding initiatives (e.g. with the 2nd call of DFG's *Software for Exascale Computing* priority program)

► mutually associate projects across borders

► further develop the G8 process

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4. DFG's perspective on the G8 Process – what next?

► ... no *sustained* funding by DFG → project-based, only

► predefined call topics okay for a G8 test-bed

► DFG strives for a more **bottom-up approach**

► **scientific community legitimation of the topic choice**
favored over funding agency inspired strategic definitions

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4. DFG's perspective on the G8 Process – what next? (2)

► **topically open, multilateral calls seem still challenging** in a setting of sovereign national funding agencies which are bound to adhere to their individual funding principles and rules

► to convene international review boards for individual proposals seems not a viable nor affordable route

► some bilateral agreements between national agencies exist that allow for smaller-scale multilateral funding even on a single project basis

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4. DFG's perspective on the G8 Process – what next? (3)

► **Dilemma**: bringing together a bottom-up approach and the necessity to synchronize calls

► scientific community proposes for competing call topic ideas

► international review on an annual basis

► successful ideas then promote into joint calls for proposals

► **bottom-up input from the scientific community is thus amplified rather than preset by funding agencies**

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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**

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