JÜLICH
FORSCHUNGSZENTRUM

1st Daresbury-Jülich Workshop

Welcome and Introduction

Norbert Attig
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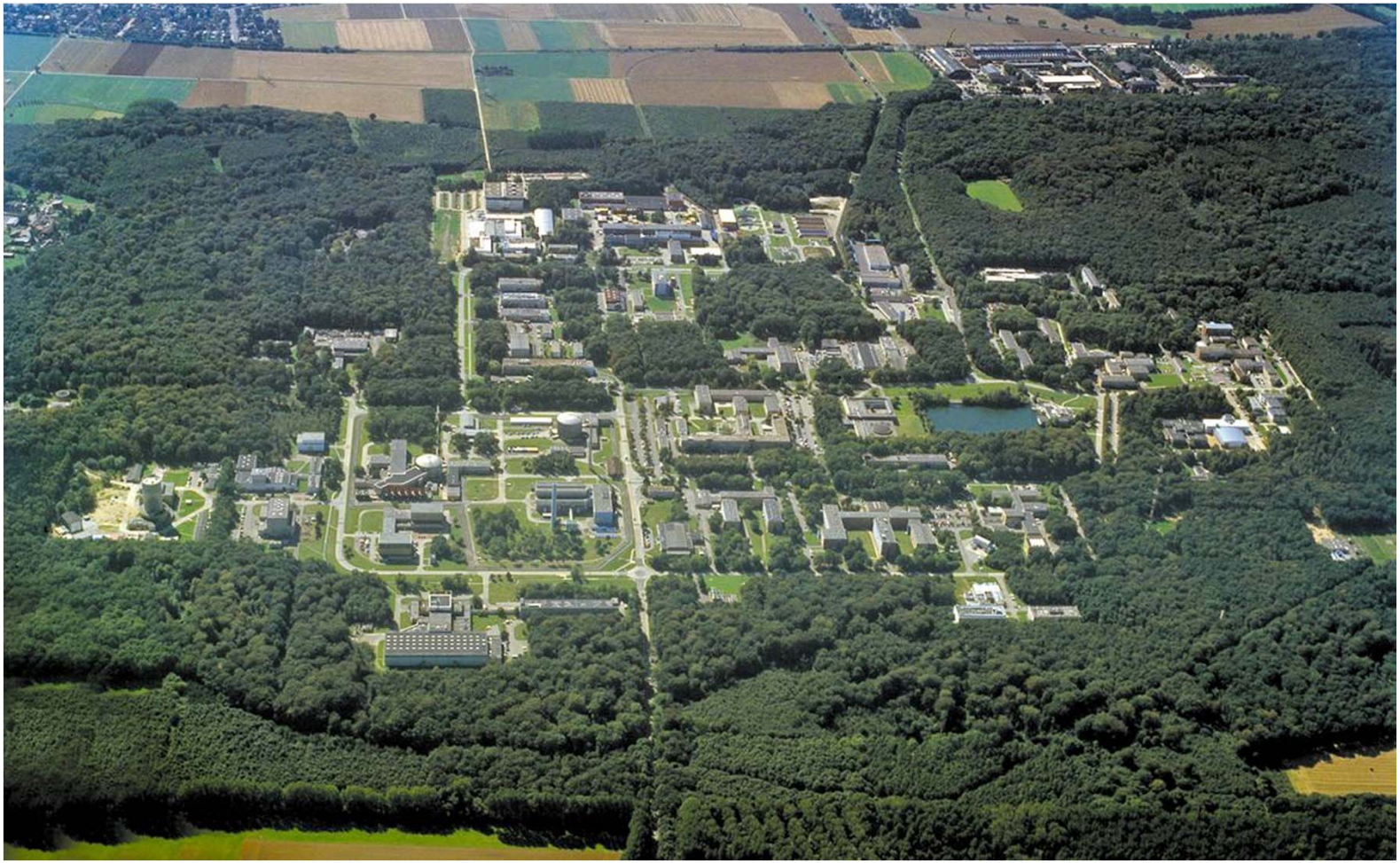
Jülich Supercomputing Centre (JSC)

Forschungszentrum Jülich (FZJ)



FZJ at a Glance (2011)

- **Budget:** 480 mio Euro,
  thereof 160 mio Euro third-party funding
- **Staff:** 5,000
  thereof 1,750 scientists
- **Visiting scientists:** 900 per year
- **Trainees:** 90 per year
- **Publications:** 2,100 per year
- **Protective rights and licences:** 16,100
- **Research fields:** health, energy and environment, and information technology; key technologies for tomorrow

Jülich Supercomputing Centre (JSC)

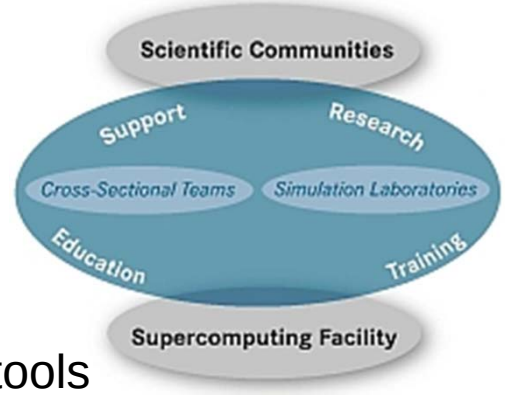
Jülich Supercomputing Centre

Supercomputer operation for:

- Centre – FZJ,
- Regional – JARA
- Helmholtz & National – NIC, GCS
- Europe – PRACE, EU projects

Application support

- Traditional and SimLab support model
- Scientific visualization
- Peer review support and coordination

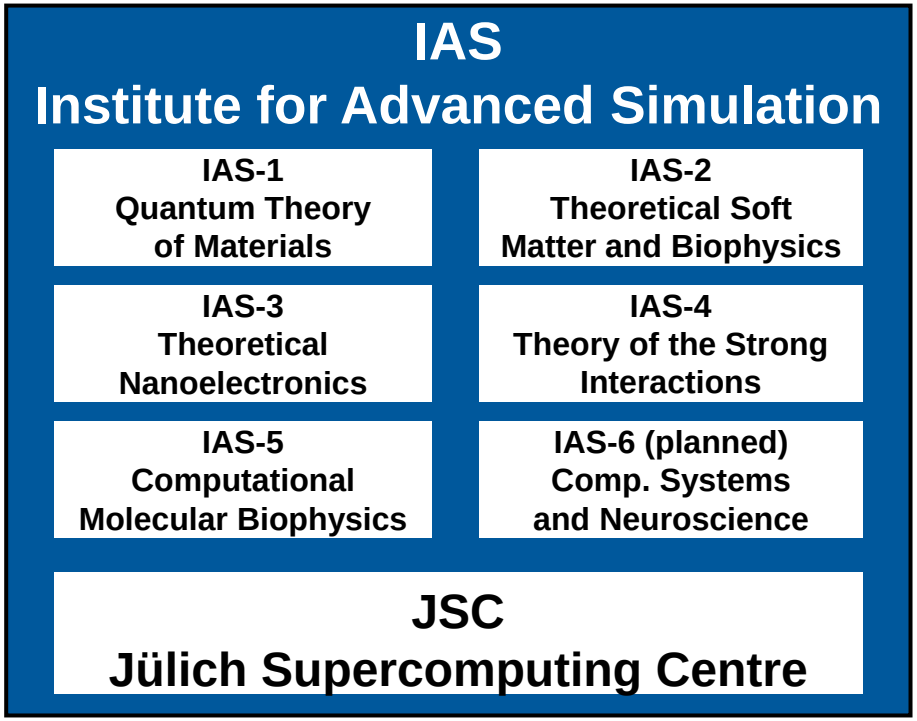


R&D work

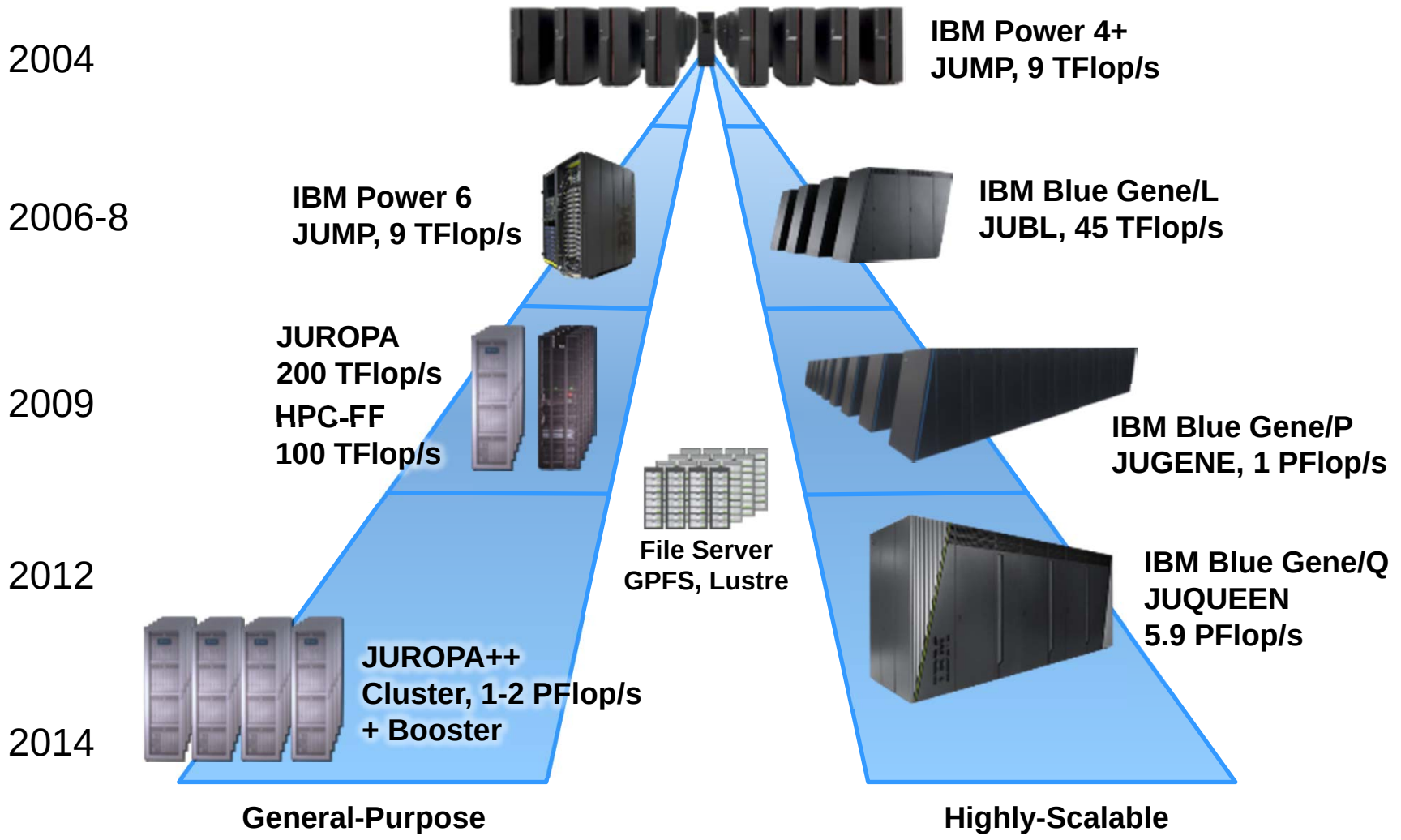
- Methods and algorithms, performance analysis and tools
- Computational Sciences
- Computer architectures,
  Exascale Laboratories with IBM, Intel and NVIDIA

Education and Training

JSC and Computational Sciences at FZJ



Supercomputer Systems: Dual Track Approach



IBM Blue Gene/Q JUQUEEN

JUQUEEN: Jülich's Scalable Petaflop System

IBM Blue Gene/Q JUQUEEN

- IBM PowerPC® A2 1.6 GHz,
  16 cores per node
- 28 racks, 458,752 cores
- 5,9 Petaflop/s peak
  5,0 Petaflop/s Linpack
- 448 TByte main memory
- connected to a Global Parallel File System (GPFS) with
  6 PByte online disk and up to 25 PByte offline tape capacity
- 5D network
- Production start: Nov 5, 2012

Nov 2012:
#1 in Europe
#5 worldwide
#5 in Green500

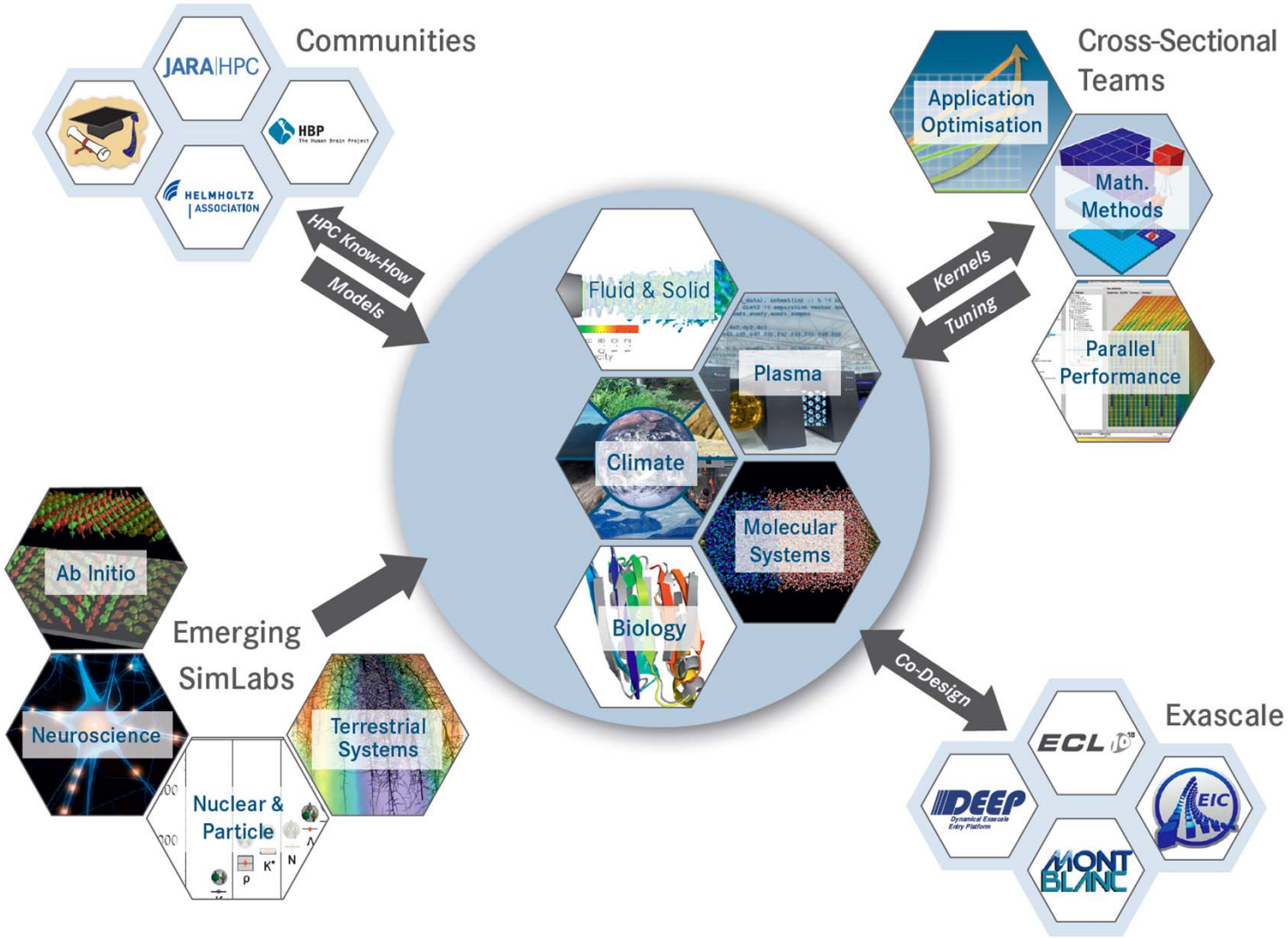
Supercomputer Installation

Major Challenges in Supercomputing

- Future supercomputer architectures will be dominated by massive parallelism → software has to be made highly scalable to take advantage of these architectures
- Power consumption becomes a more and more severe issue

- Community-oriented support
  → Simulation Labs
- Close collaboration and co-design with leading HPC vendors
  → Exascale Labs
- Improved collaboration with other centres, international HPC initiatives (e.g. IESP, EESI), science organisations and industry (e.g. “European Technology Platform for HPC”)

Domain-specific Research and Support



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Thank you for your attention!