Motivation - Current situation of HPC

- High Performance Computing (HPC) systems are crucial resources for research and development.
- Users want to focus on their science rather than becoming HPC specialists.
- Operation of HPC systems requires specialised centres.
- European HPC centres offer a variety of HPC architectures from different vendors with frequent innovation.
- European HPC centres and users are connected by high-bandwidth networks.
EUROGRID Vision

Build a European Grid infrastructure
that gives users
a seamless, secure access to
High Performance Computing resources
and that advances computational science
in Europe
EUROGRID Goals

- Support the e-Science concept
- Integrate resources of leading European HPC centres into a European HPC GRID
- Develop new software components for GRID computing
- Demonstrate the ASP model for HPC access (‘HPC portal‘)
EUROGRID Partners

HPC Centres
- SCSC Manno (CH)
- FZ Jülich (D)
- ICM Warsaw (PL)
- IDRIS Paris (F)
- Univ Bergen (N)
- Univ Manchester (UK)

Users
- Deutscher Wetterdienst
- EADS
- debis Systemhaus (Assistant Partner)

Integration
- Pallas (Project Coordinator)
- Fecit (Assistant Partner)

Volume: 33 person years, 2 MEuro funding
by European Commission Grant No. IST-1999-20247
EUROGRID Geography
Structure of the Work

- Application GRIDS:
  - application-specific interfaces, evaluation of GRID solutions
    - Bio-GRID
    - Meteo-GRID
    - CAE-GRID

- HPC GRID Infrastructure:
  - connect HPC centres using UNICORE technology

- Development and integration of new components

- Dissemination and exploitation
Bio-GRID

- Operate a GRID for biomolecular simulations
- Develop interfaces to existing biological and chemical codes
Develop a relocatable version of DWD‘s weather prediction model

Goal: weather prediction on-demand as an ASP solution
CAE-GRID

- Coupled simulation of aircrafts (e.g. structural mechanics and electromagnetic compatibility)

- Goal: internal HPC portal for EADS engineers
CAE-GRID

- Provide HPC portal to engineers at Daimler-Chrysler and partners
- Develop GRID technology for computing cost estimates and billing
HPC-GRID

- Demonstrate a European HPC GRID testbed
- Develop new GRID applications
- Enable sharing of competence and know-how
- Agree on security standards, certification, access policies, ...

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**IBM**
- CRAY T3E 900 (32 PE)
- NEC SX4B/2A
- Linux Cluster (4 PE)

**Parallab**
- SGI Onyx2 (4 PE)
- SGI O2000 (128 PE)

**FZJ**
- Linux Intel Cluster (36 PE)
- CRAY T3E - 600 (512 PE)
- CRAY T3E - 1200 (512 PE)

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**Manchester Computing**
- CRAY T3E - 1200 (816 PE)
- FUJITSU VPP300 (8 PE)
- SGI O2000 (128 PE)
- SGI O3000 (256 PE)

**DRIS**
- IBM SP3 (8 PE)
- NEC SX5 cluster (40 PE)
- IBM Power4 (256 PE, 1.3 TFLOPS)
- COMPAQ Linux Cluster (24 PE)

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**EUROGRID**
EUROGRID Infrastructure and Components

- Based on UNICORE system
- Develop additional GRID components
  - efficient data transfer
  - ASP infrastructure
  - resource broker
  - application coupling
  - interactive access
- Integration of new components by Pallas and Fecit
Schedule and Milestones

Start 11/2000
EUROGRID-0 Q1/2001
EUROGRID-0.5 Q4/2001
EUROGRID-1 Q3/2002
EUROGRID-2 Q3/2003
Current Status and Events

- EUROGRID-0 has been installed by partners
- HPC-Grid is running
- Development of application specific user interfaces begun
- UNICORE test system is available (www.fz-juelich.de/unicore-test)
- Joint workshop with DataGrid planned for GGF3
- EUROGRID booth at SC2001 in Denver
- GRIP project about UNICORE – Globus interoperability proposed and positively evaluated
Questions?

European Testbed for Grid Applications
www.eurogrid.org

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