



European Testbed for Grid Applications

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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



**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')

HPC Centres

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

Users

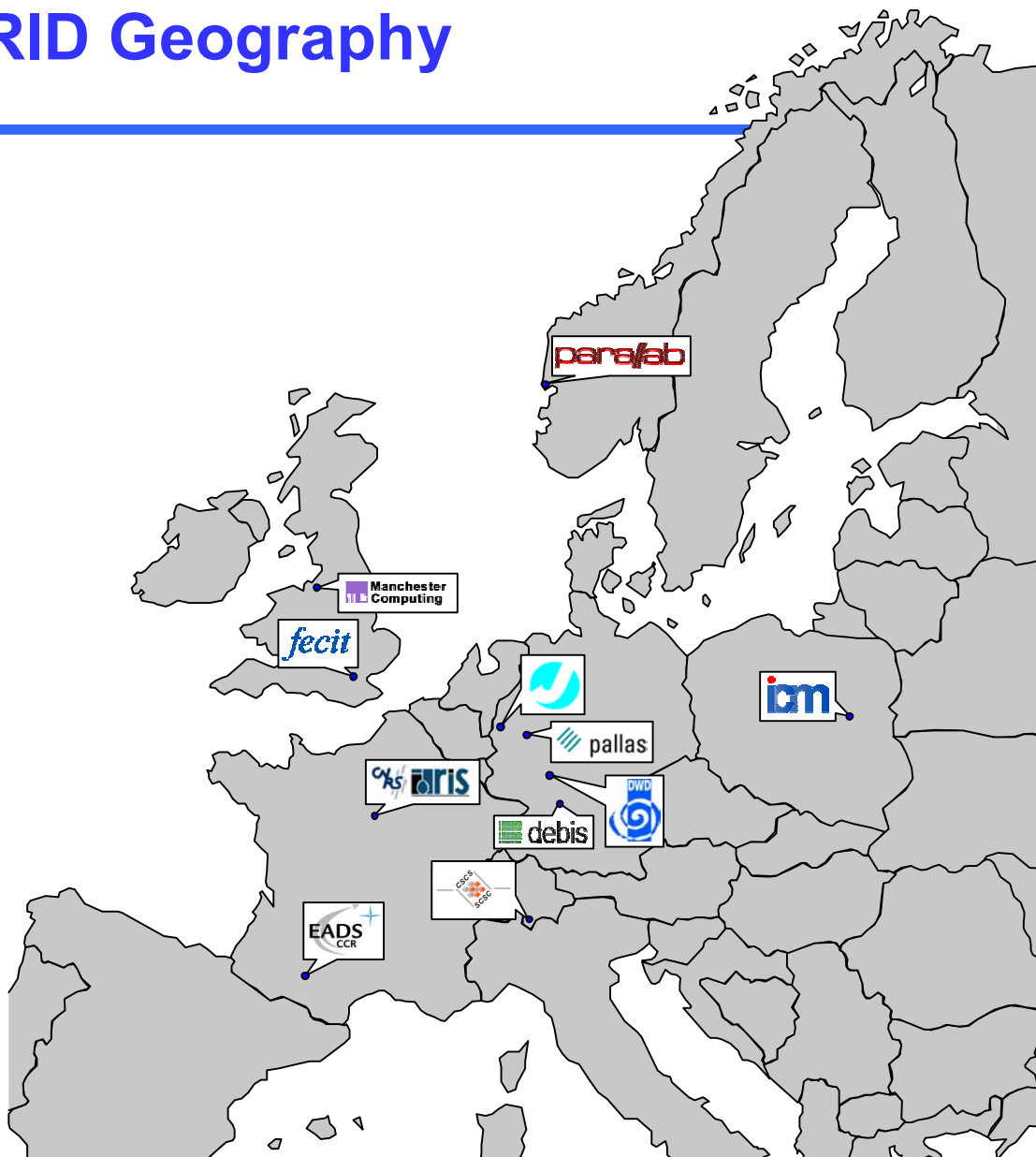
- Deutscher Wetterdienst
- EADS
- debis Systemhaus (Assistant Partner)

Integration

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

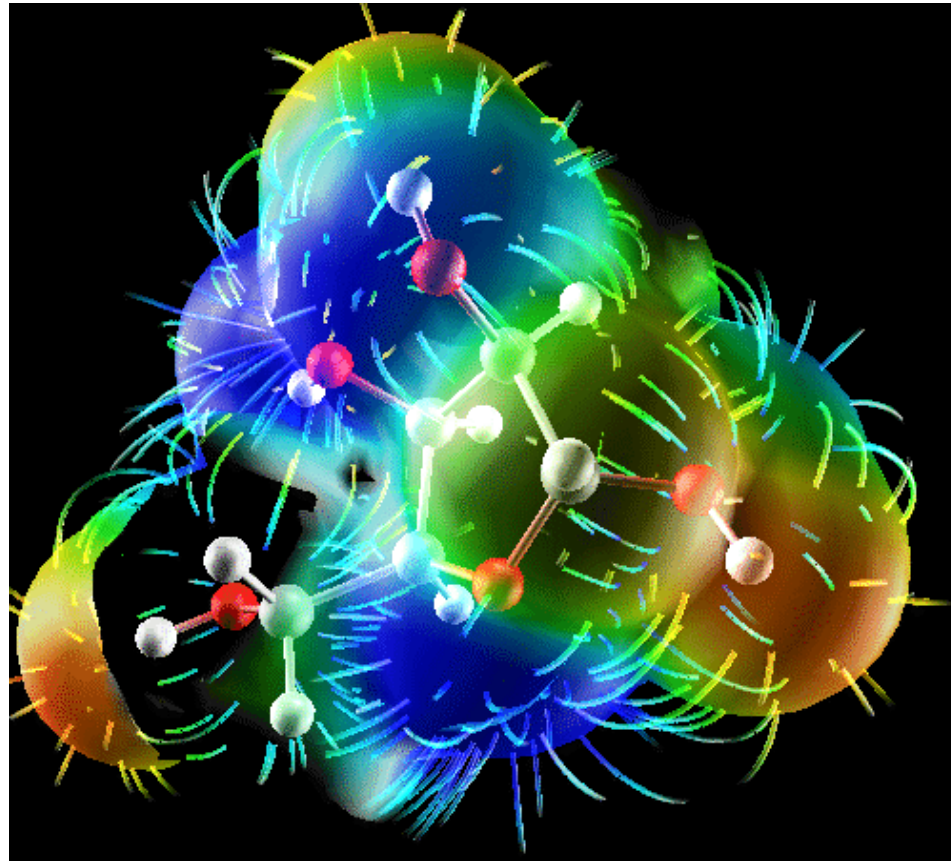
Volume: 33 person years, 2 MEuro funding
by European Commission Grant No. IST-1999-20247

EUROGRID Geography

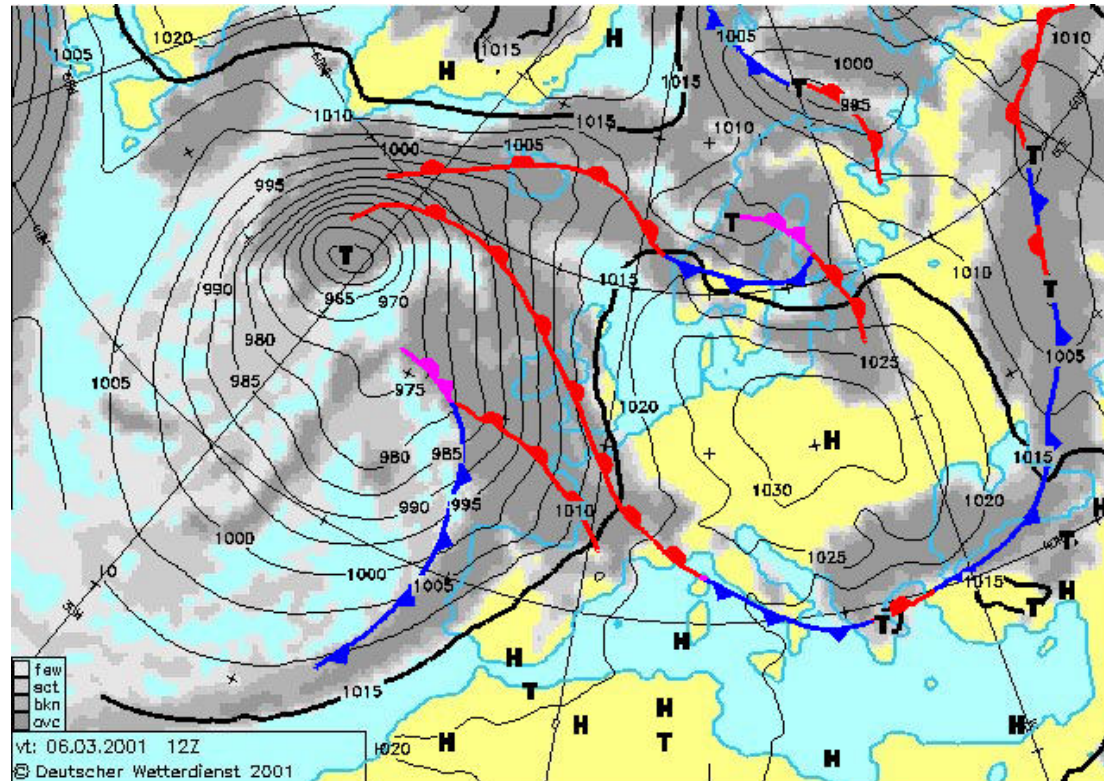


- Application GRIDS:
application-specific interfaces, evaluation of GRID solutions
 - Bio-GRID
 - Meteo-GRID
 - CAE-GRID
- HPC GRID Infrastructure:
connect HPC centres using UNICORE technology
- Development and integration of new components
- Dissemination and exploitation

- Operate a GRID for biomolecular simulations
- Develop interfaces to existing biological and chemical codes



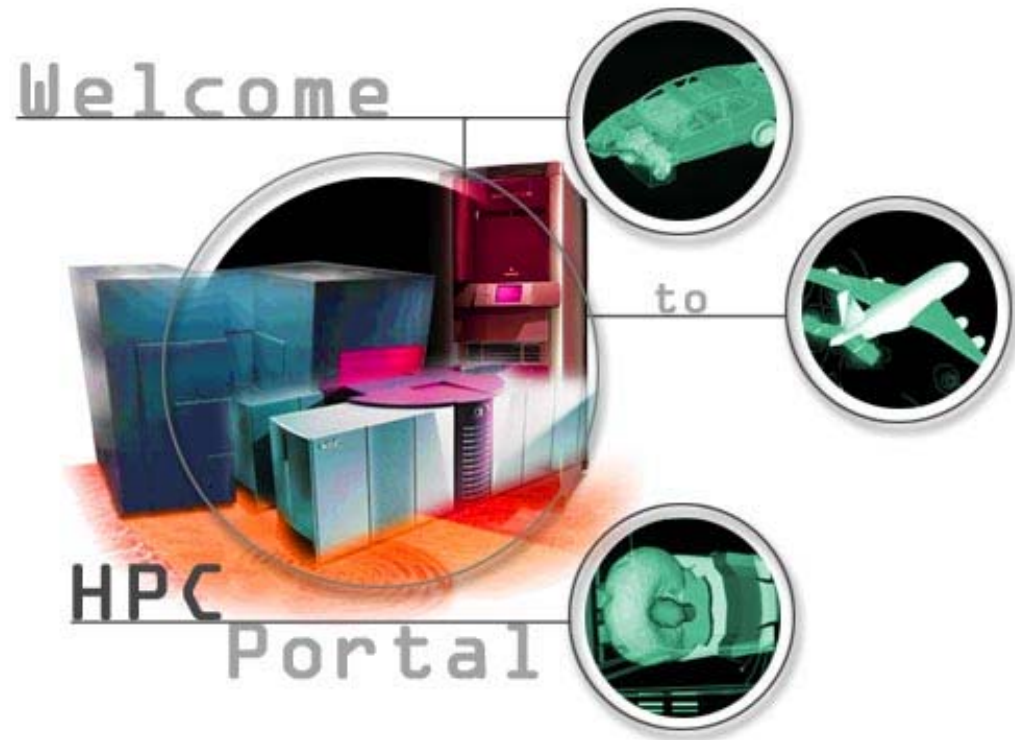
- Develop a relocatable version of DWD's weather prediction model
- Goal: *weather prediction on-demand* as an ASP solution



- Coupled simulation of aircrafts (e.g. structural mechanics and electromagnetic compatibility)
- Goal: internal HPC portal for EADS engineers



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



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



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



SGI Onyx2 (4 PE)
SGI O2000 (128 PE)

FZJ



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



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

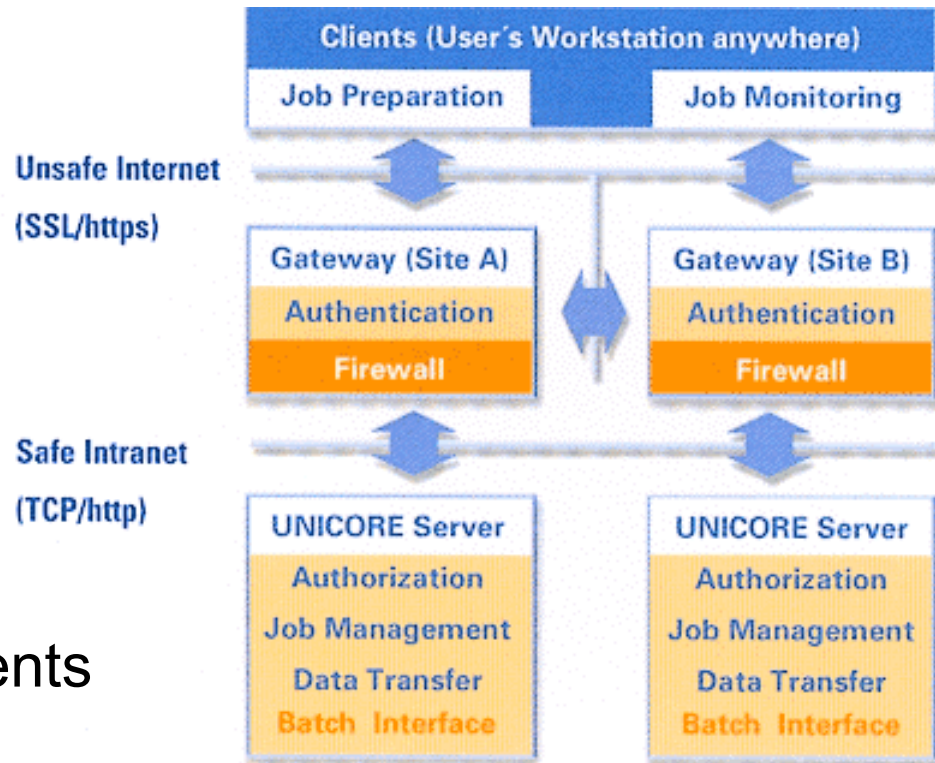


IBM SP3 (8 PE)
NEC SX5 cluster (40 PE)
IBM Power4 (256 PE, 1.3 TFLOPS)
COMPAQ Linux Cluster (24 PE)

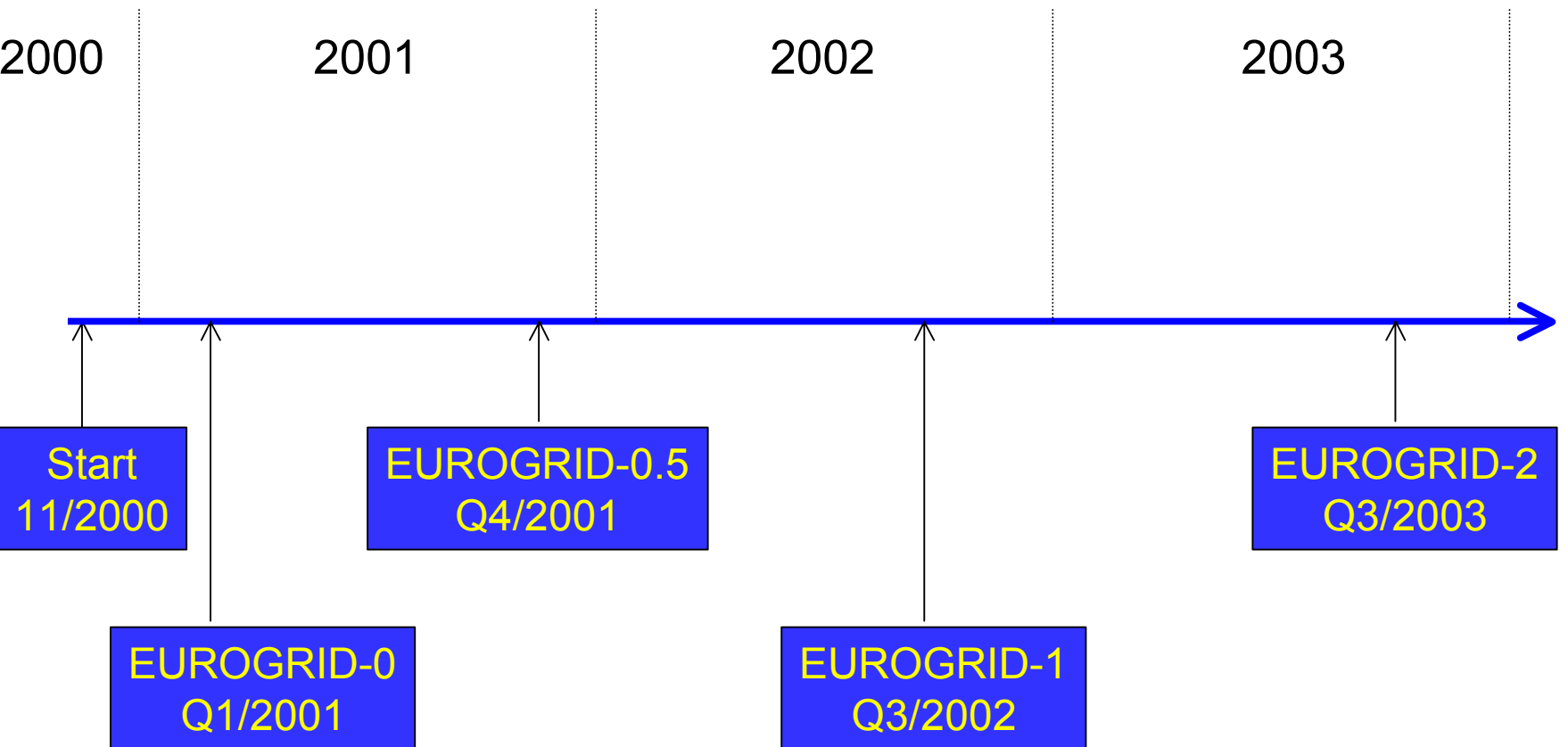


EUROGRID Infrastructure and Components

- 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



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?



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