

サイエンティフィック・システム研究会 グリッドコンピューティングフォーラム

欧米におけるグリッドプロジェクトについて

2004年12月1日

情報・システム研究機構 国立情報学研究所
リサーチグリッド連携研究センター

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National Research Grid Initiative

世界におけるグリッドプロジェクト例

- USA
 - Extensible Teragrid Facility (ETF)
 - DOE Science Grid
 - Open Science Grid (OSG)
- EU FP6
 - EGEE
 - DEISA
 - CoreGRID
 - UNIGRID
- UK
 - e-Science
- France
 - ACI Grid
 - Grid5000
- Germany
 - D-Grid
 - VIOLA

他にも Nordugrid, SweGrid(Sweden)INFN grid (Italy)など。

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米国

- Extensible Teragrid Facility (ETF)
- DOE Science Grid
- Open Science Grid (OSG)

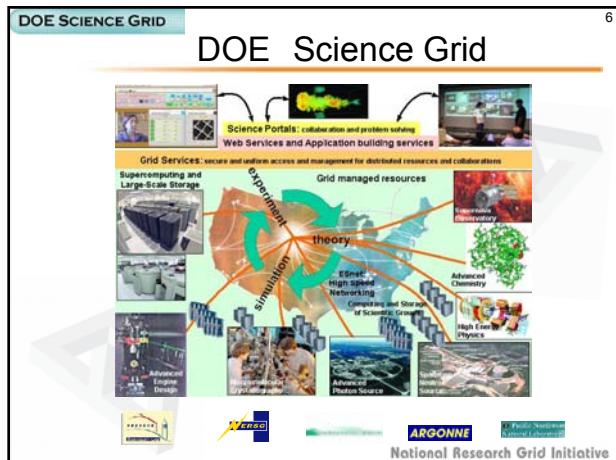
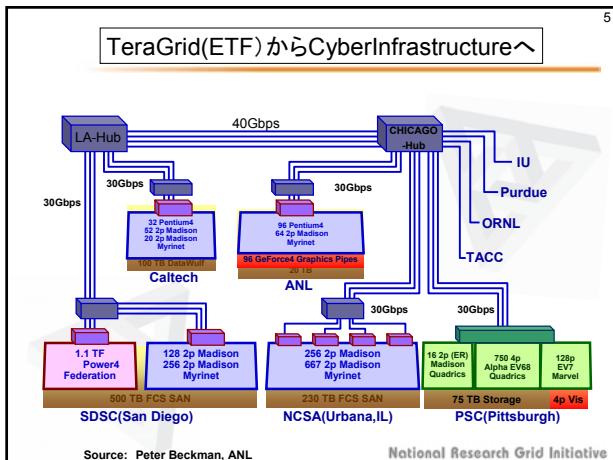
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Teragrid Network Topology

NSF TeraGrid
Extensible Terascale Facility

Argonne, NCSA, IU, ORNL, PSC, TACC, Caltech, SDSC

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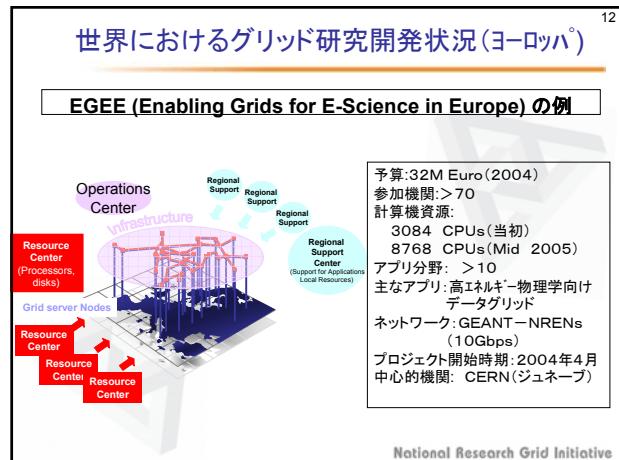
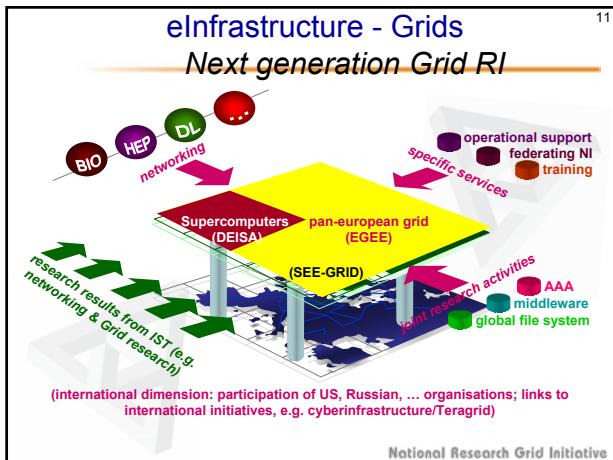
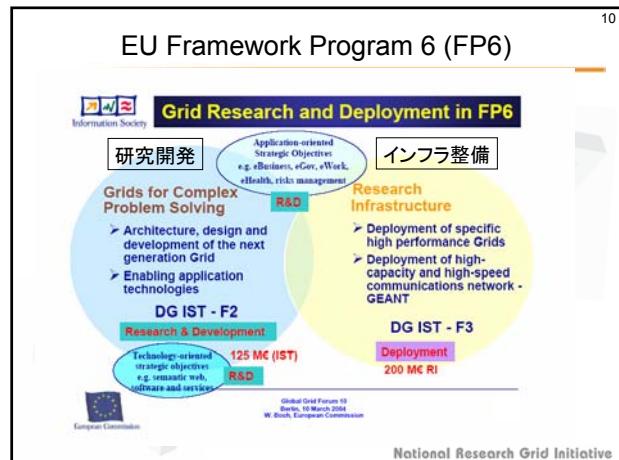
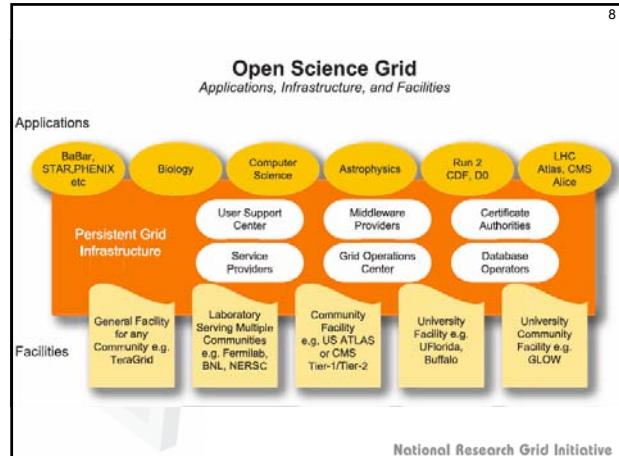


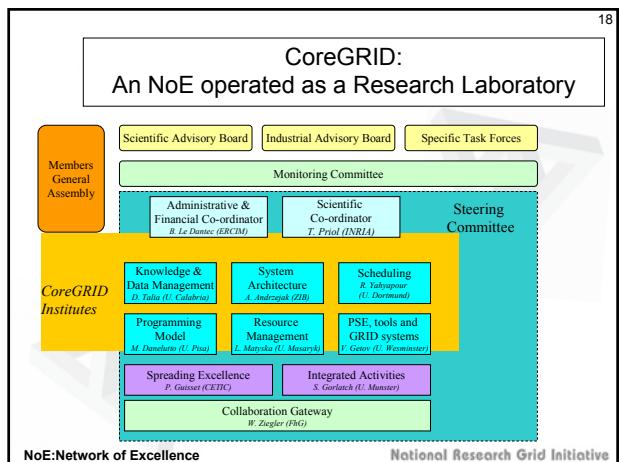
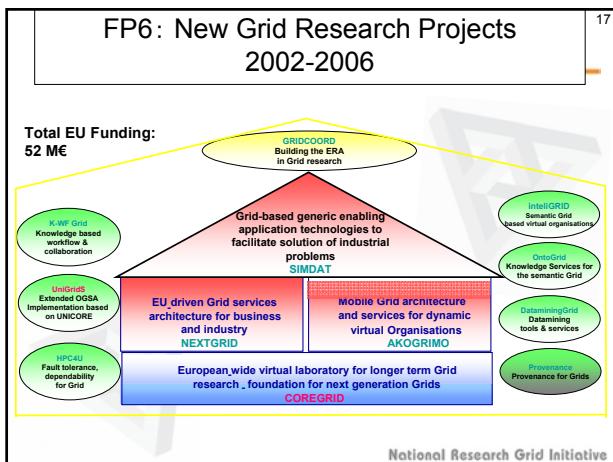
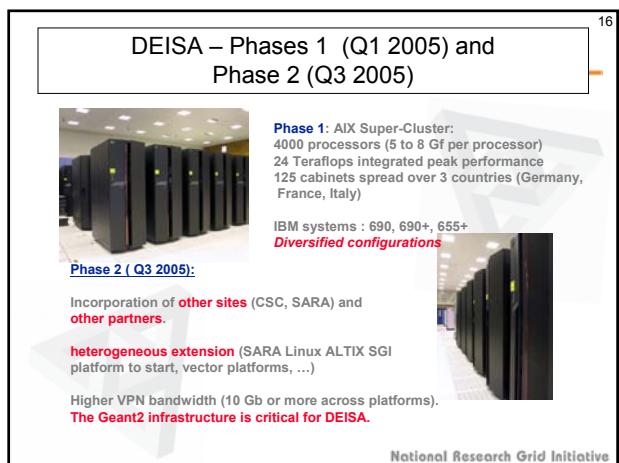
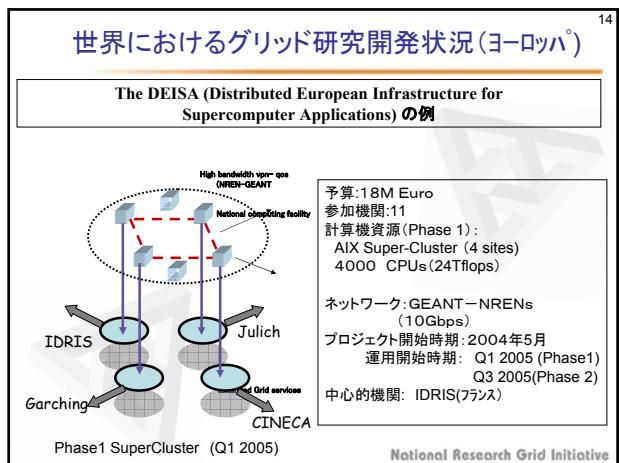
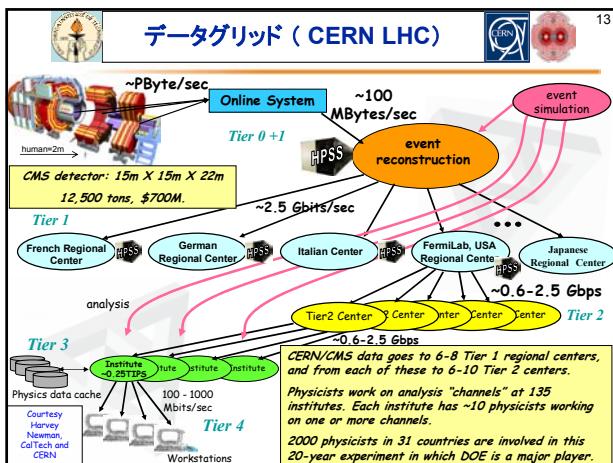
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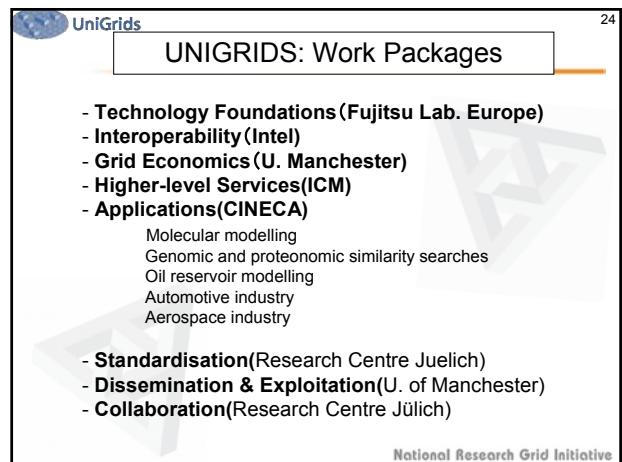
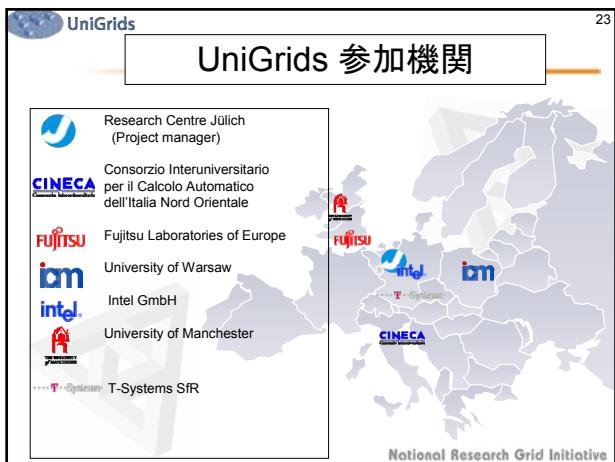
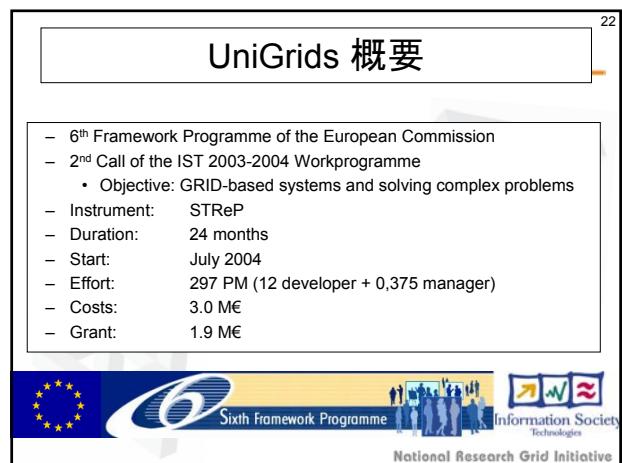
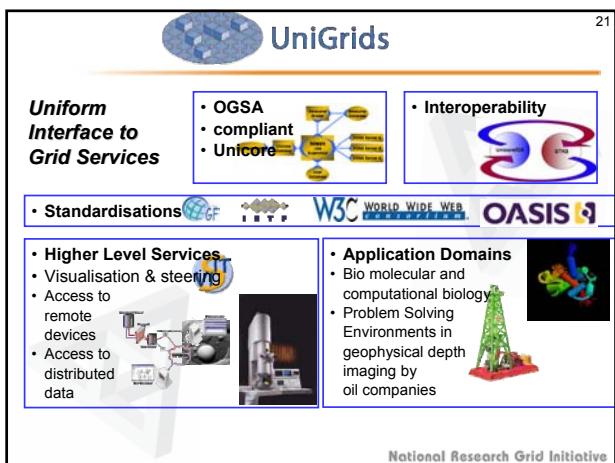
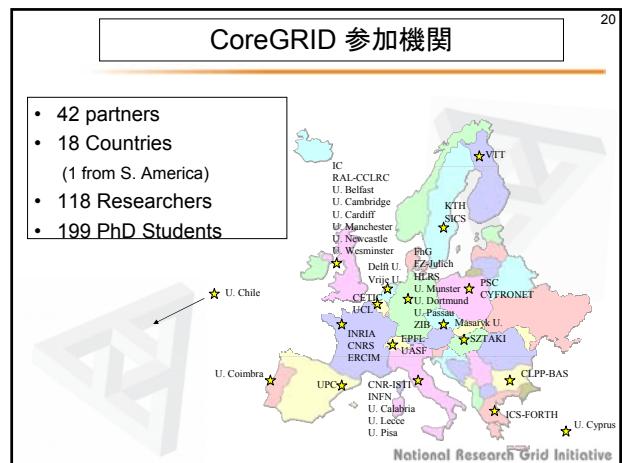
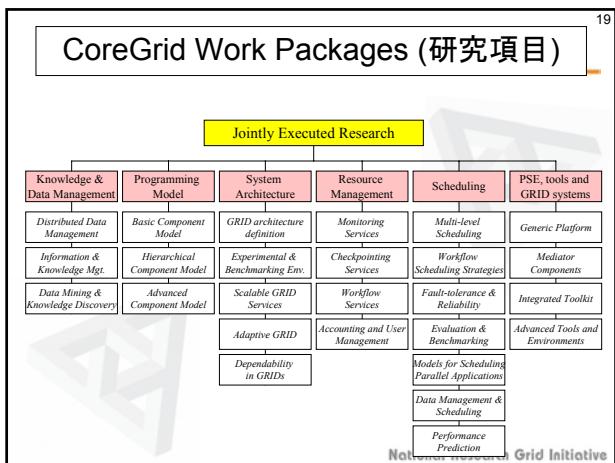
Griphyn,iVGDL,PPDGからOpen Science Grid(OSG)へ

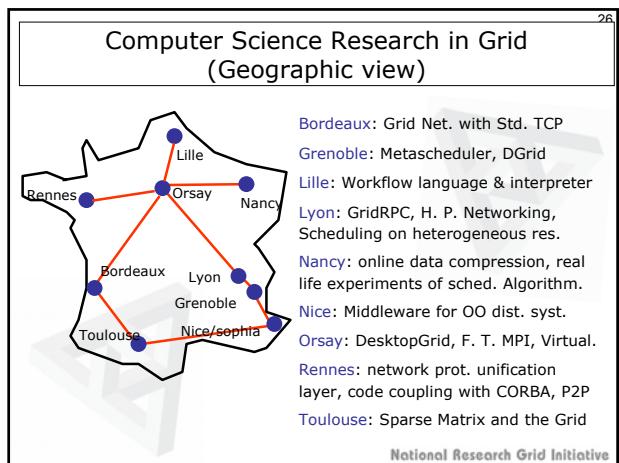
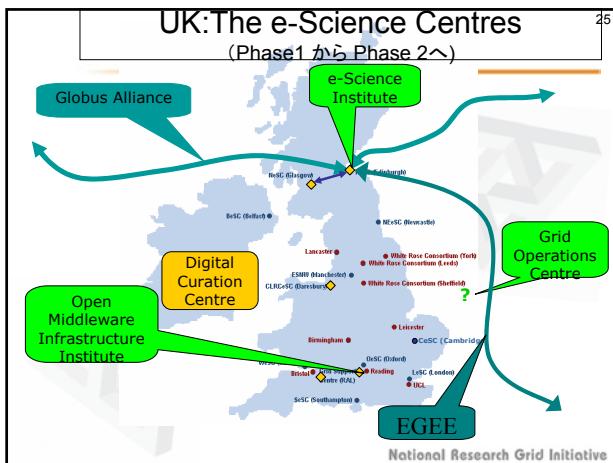
- Building a community driven engineered Grid infrastructure for large-scale science:
 - Building from Grid3, a 25 site >3000 CPU loosely coherent grid infrastructure through partnering of NSF iVGDL, GriPhyN, DOE PPDG, US LHC software and computing.
 - Commitment from US LHC Tier-1 and Tier-2 centers and DOE Laboratories to make resources accessible by and make contributions to the consortium - esp LHC ramp up over the next 4+ years.
 - Peering with other Grids, especially EGEE/LCG in Europe.
 - Partnering with Grid infrastructures in the US especially TeraGrid as well as university campus Grids.
 - Reaching out to scientific communities beyond the original physics drivers: e.g., biology, chemistry, astronomy.
 - Outreach & education to enable remote and small community participation.

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French ACI Grid Incentive

27

- Programme Director : Thierry Priol
- Scientific council : Brigitte Plateau
- Budget: ~8 M€* (including 8 PhD grants)
 - This is incentive funding !
- Call for proposals :
 - 2001 : 2,25 M€, 18 funded projects
 - 2002 : 3 M€, ~ 12 funded projects
 - 2003 : 1 M€, ~ 5 funded projects (Grid'5000)
 - 2004 : 1 M€, ~ 6 funded projects (Grid'5000)

* Computing and network infrastructures, permanent researchers salaries already paid by the state

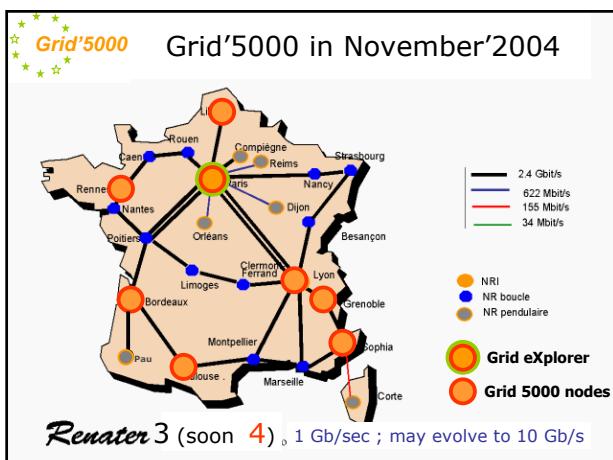
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ACI GRID projects

28

- Peer-to-Peer
 - CGP2P (F. Cappello, LRI/CNRS)
 - Application Service Provider
 - ASP (F. Desprez, ENS Lyon/INRIA)
- Algorithms
 - TAG (S. Genaid, LSIT)
 - ANCG (N. Emad, PRISM)
 - DOC-G (V.-D. Cung, UVSQ)
- Compiler techniques
 - Méta compil (G.-A. Silbert, ENMP)
- Networks and communication
 - RESAM (C. Pham, ENS Lyon)
 - ALTA (C. Pérez, IRISA/NRIA)
- Visualisation
 - EPNS (O. Coulaud, INRIA)
- Data management
 - PADOUÉ (A. Doucet, LIP6)
 - MEDIASGRID (C. Collet, IMAG)
- Tools
 - DARTS (S. Frénot, INSA-Lyon)
 - Grid-TLSE (M. Dayde, ENSEEIHT)
- Code coupling
 - COUMEHY (C. Messager, LTHE) - Climate
 - GenoGrid (D. Lavenier, INRIA) - Bioinformatics
 - GeoGrid (J.-C. Paul, LORIA) - Oil reservoir
 - IDHA (F. Genova, CDAS) - Astronomy
 - Guilande-fr (I. Romary, LORIA) - Language
 - GrIIPS (C. Blanchet, ICP) - Bioinformatics
 - HydroGrid (M. Kern, INRIA) - Environment
 - Medigrid (J. Montagnat, INSA-Lyon) - Medical
- Grid Testbeds
 - CIGI-CIMENT (L. Desbat, UJF)
 - Mecagrid (H. Guillard, INRIA)
 - GLOP (V. Breton, IN2P3)
 - GRID5000 (F. Cappello, INRIA)
- Support for disseminations
 - ARGE (A. Schaff, LORIA)
 - GRID2 (J.-L. Pazat, IRISA/INSA)
 - DataGRAAL (Y. Denneulin, IMAG)

Many are continuing their work through the Grid'5000-project



The German E-Science Programme

30

- A 5 years programme starting 2004
- Proposed funding scheme
 - Government: 100 MEuro
 - Research communities: 100 MEuro
 - Industry: 100 MEuro
 - Equal funding of middleware and applications development
 - No funding of infrastructure hardware components, operations and networking cost**

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A German Grid Initiative: D-GRID

31

- Initially driven by the HGF centers and the DFN-Verein (2002)
- Meanwhile: More than 100 further partners in academia and industry
- Aim at a coordination of Grid activities in Germany
- Deployment of a new generation networking infrastructure (Example: Project VIOLA)
- Promotion of open standards for interfaces and protocols (GGF)

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Timeline

32

- 2003: Steering committee established (Prof. Hegering, Prof. Hiller, Prof. Maschuw, Prof. Reinefeld, Prof. Resch)
- 2004: Preparation of a scientific programme (Presentation in June)
- 2004: Call for development of generic middleware components
- 2005: Call for development of prototypical applications
- 2007: Production quality national grid infrastructure
- 2008: Commercial uptake of services

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D-Grid: e-Science Framework

33

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VIOLA: Vertically Integrated Optical testbed for Large Applications

34

- Partially funded by Federal Ministry of Education and Research
- Budget: 16 M€, 27.5 PJ/a
- Grant period: May 2004 – April 2007
- To serve as a platform for D-Grid – the German e-Science initiative
- Deployment of a UNICORE-based Compute Grid with Meta-Scheduling capabilities (compute & network resources) on the testbed
- Consortium:
 - NIC, Research Centre Jülich
 - Fraunhofer Institute for Media Communication
 - Fraunhofer Institute for Algorithms and Scientific Computing
 - Research Centre caesar
 - University of Bonn
 - Technical University Bonn-Rhein-Sieg
 - Technical University of Aachen (RWTH)
 - T-Systems International
 - DFN – German Science Network (consortium leader)
 - Alcatel
 - Siemens
 - GasLINE (associated)

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Project structure: Vertical Integration

35

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Optical Testbed

36

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