EGEE vision and roadmap to involve industry

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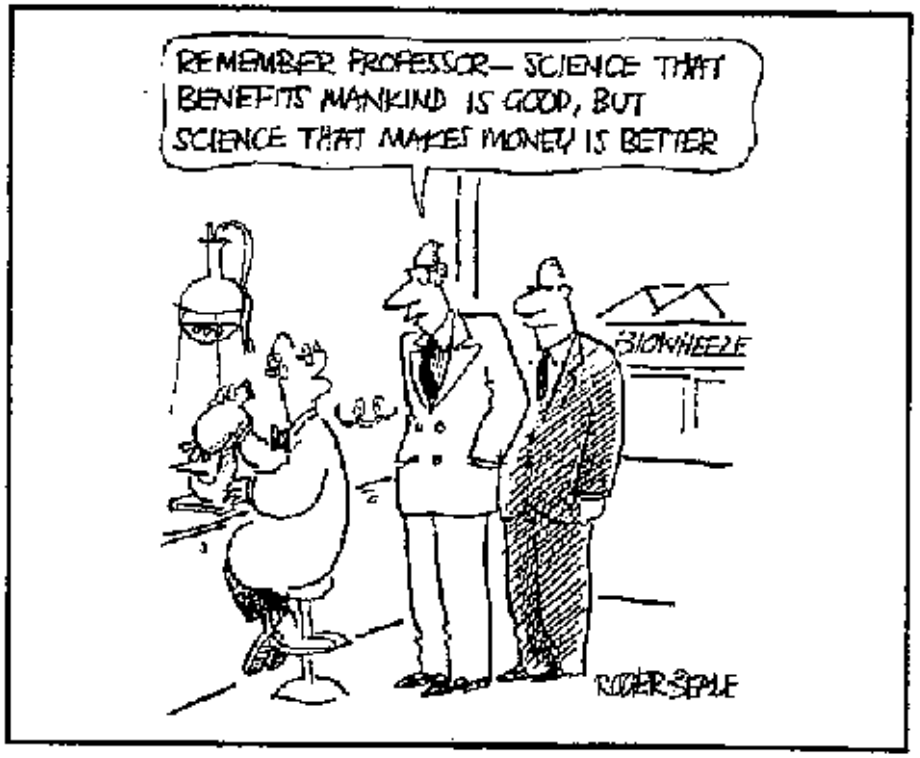
www.eu-egee.org

Information Society and Media

Contents

- What is EGEE
- How EGEE works with Businesses now
- Lessons learnt
- Where we are going in the future

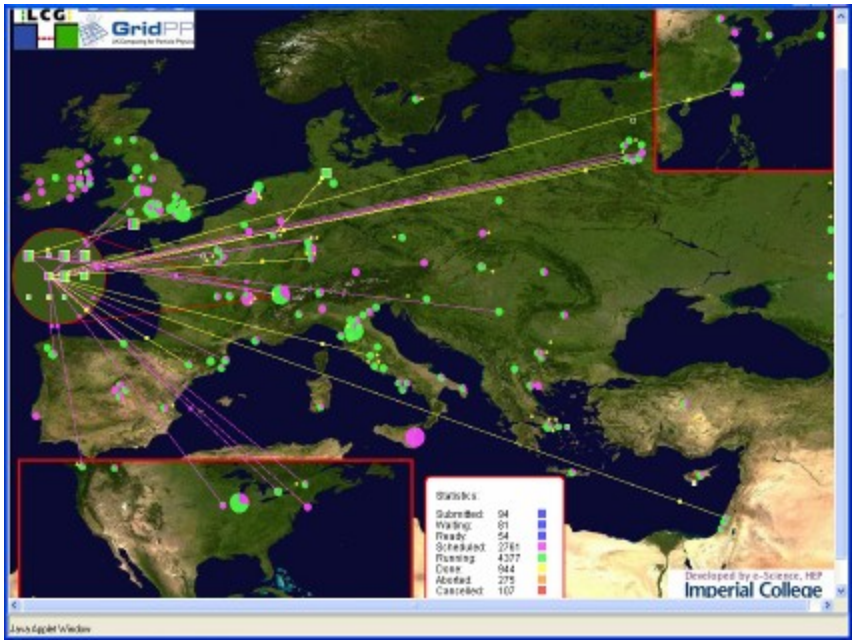


Flagship grid infrastructure project co-funded by the European Commission
Now in 2nd phase with 91 partners in 32 countries

Objectives

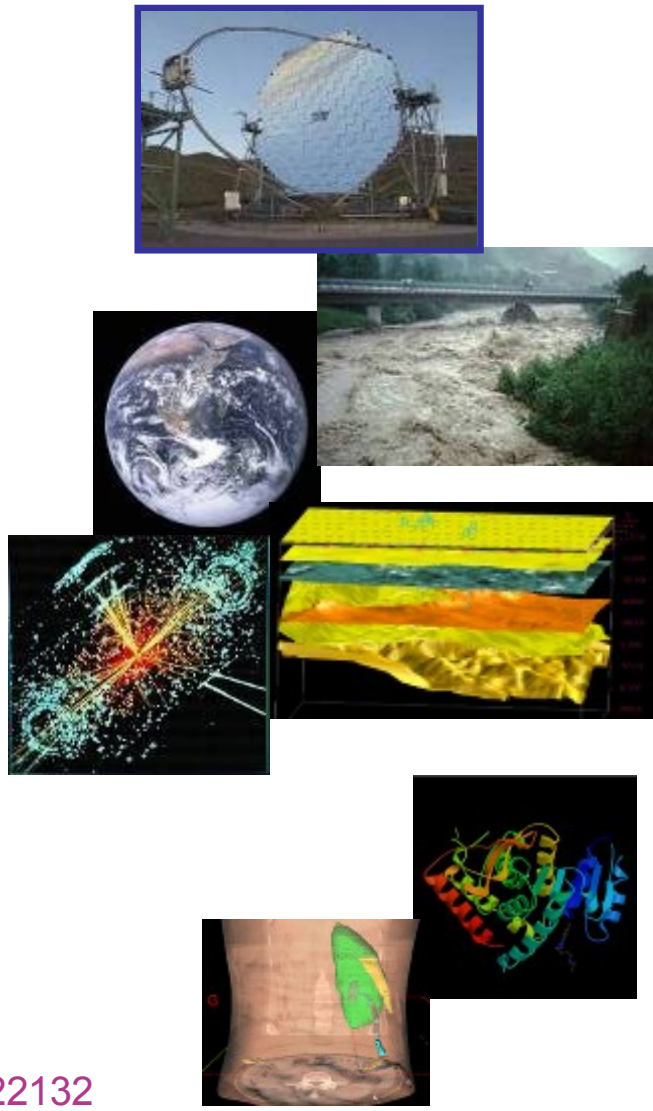
- Large-scale, production-quality grid infrastructure for e-Science
- Attracting new resources and users from industry as well as science
- Maintain and further improve gLite Grid middleware

gLite
Lightweight Middleware for Grid Computing



Applications on EGEE

- **Multitude of applications from a growing number of domains**
  - Archeology
  - Astronomy & Astrophysics
  - Civil Protection
  - Computational Chemistry
  - Earth Sciences
  - Financial Simulation
  - Fusion
  - Geophysics
  - High Energy Physics
  - Life Sciences
  - Multimedia
  - Material Sciences
  - …..



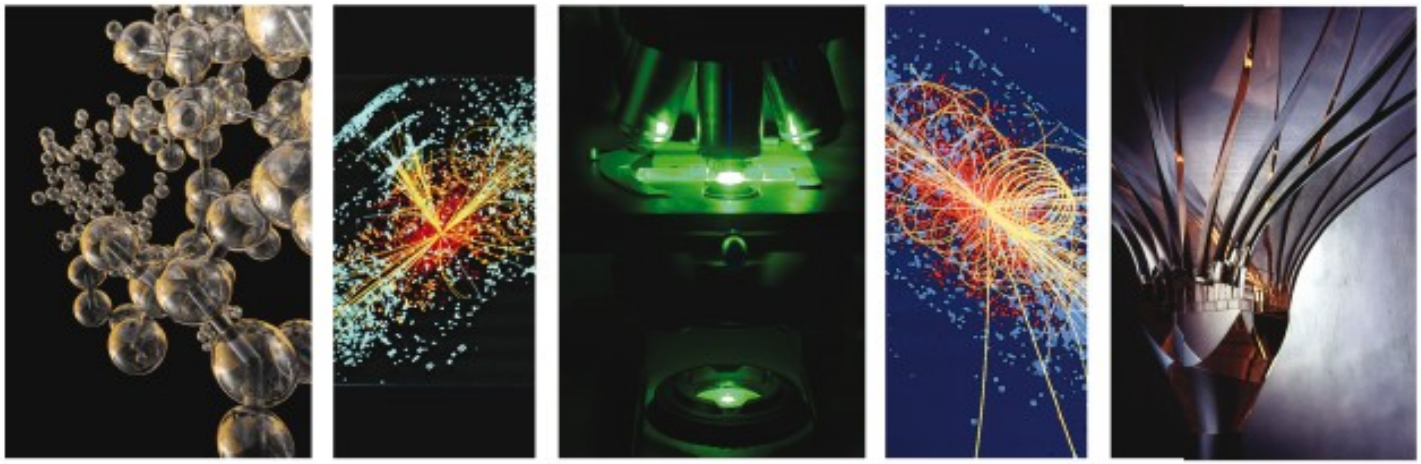
Summary of applications report: https://edms.cern.ch/document/722132

www.eu-egee.org/uf2

Enabling Grids for E-sciencE

EGEE USER FORUM

9-11 MAY 2007 MANCHESTER (UK)



Co-located with OGF 20

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OpenGridForum
OPEN FORUM | OPEN STANDARDS

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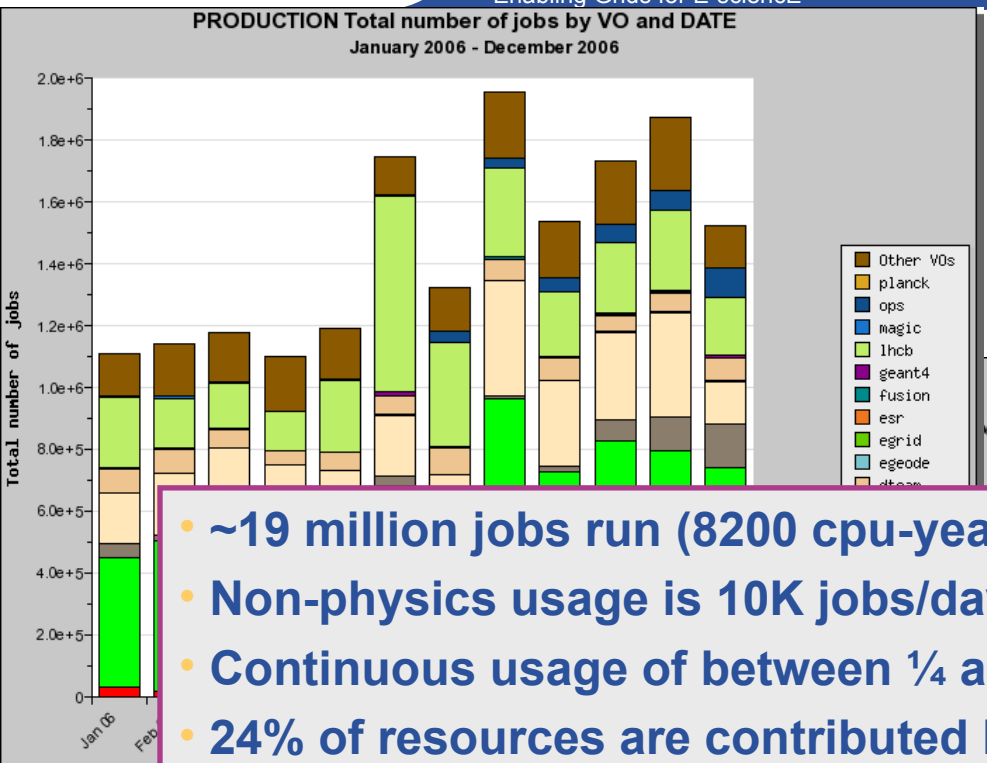
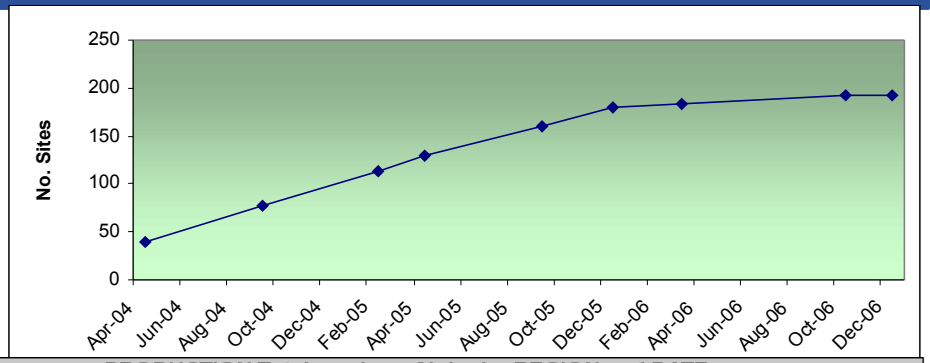
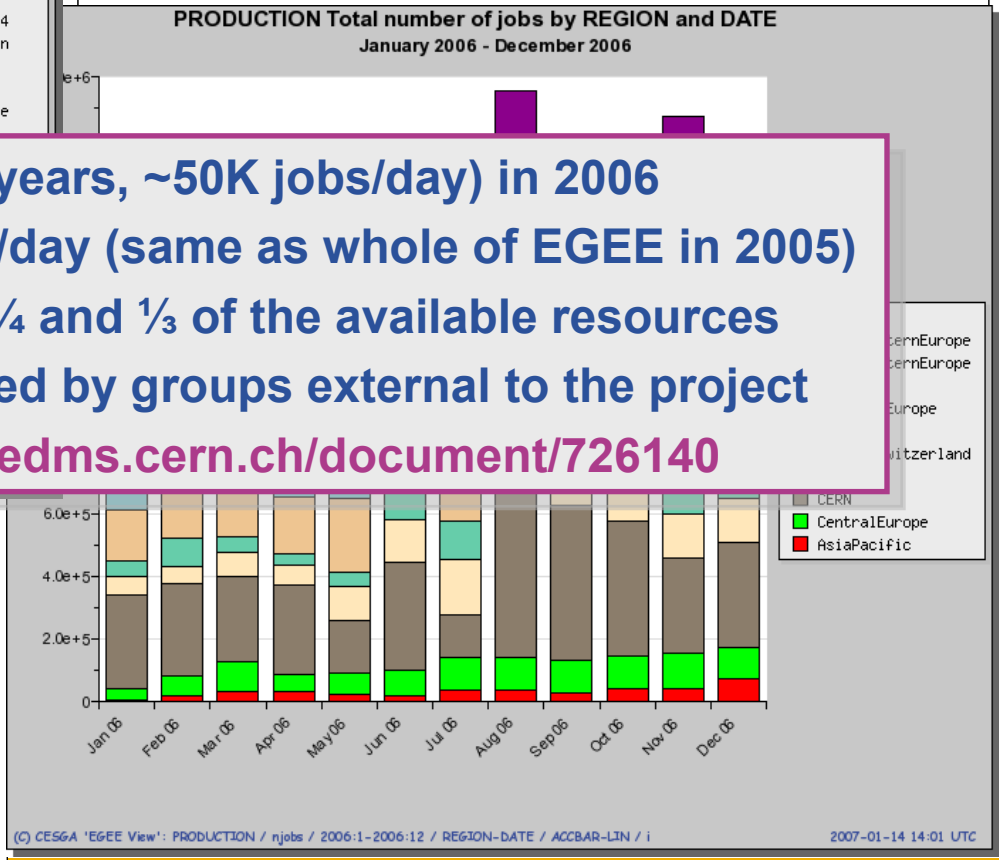
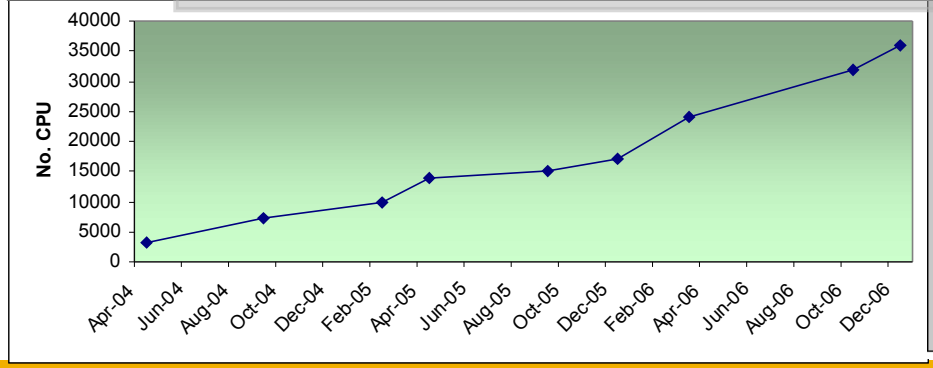
Production Usage Status









- ~19 million jobs run (8200 cpu-years, ~50K jobs/day) in 2006
- Non-physics usage is 10K jobs/day (same as whole of EGEE in 2005)
- Continuous usage of between ¼ and ⅓ of the available resources
- 24% of resources are contributed by groups external to the project
- Grid Operations report: https://edms.cern.ch/document/726140

What attracts Businesses to EGEE?

- **Credible**
  - A flagship European project operating on a global scale
  - Mission-critical for the LHC (Large Hadron Collider) - Starting 2007
  - Access to a team of grid experts with proven deployment experience
- **Flexible**
  - Supporting applications from a wide range of domains
- **Secure**
  - Security model with authentication, authorization and audit trails
- **Open**
  - Allows groups to work in multi-administered domains, deploy additional services and interoperate with other infrastructures
- **Environment to gridify applications & get operations experience**
  - Demonstrate them to customers & bosses
- **Production quality middleware**
  - Distributed under a business friendly open source license and supported by a large community
- **Evolutionary path to emerging grid standards**
  - Backward-compatible upgrades
- **Visibility:**
  - 200+ sites in 40+ countries for +150 Virtual Orgs.
  - An excellent shop-window for products, services and expertise
- **Dynamic**
  - New applications, resources, services and users can be easily added

Existing Business Collaborations

Businesses collaborate with EGEE in a variety of roles

- **As a partner**
  - Signatories of the project contract with specific responsibilities
  - Tune the project to business needs and pass on knowledge
- **As associate**
  - Collaborate on subjects of joint interest
- **As a user**
  - Prototype applications on EGEE infrastructure or deploy gLite middleware on private infrastructures
- **As attendee at "Industry day" events**
  - Focussed on single business sector and promote/explain grid via overview talks and success stories from industry

EGEE Business Partners

CEA Commissariat à l'Energie Atomique	Fusion
CGG Compagnie générale de Géophysique	Geophysics
CS SI CS Systèmes d'Information S.A.	QA & Tech. Transfer to SMEs
CRSA Centrale Recherche S.A.	Finance
DATAMAT	Middleware & Earth Sciences
Telefónica Investigació y Desarollo S.A.U.	Telecoms
Metaware	Industrial dissemination

Example Business Associates

- **GridWiseTech**
  - Developing EGEE LCG API & web portal with user-friendly access to EGEE infrastructure
  - Used resources to create new medical device,
  - Saving time & reaching higher quality already at the prototype stage

- **NICE**
  - Developing EGEE compatible GENIUS Grid portal and EnginFrame

- **Platform Computing**
  - Making gLite middleware better exploit the LSF local resources management system

EGEE and CERN openlab project

CERN openlab[1] is contributing to the EGEE programme of work

- **HP sponsored examples**
  - event on long-term future of gLite
  - Integration of SmartFrog[2] to aid virtualisation
  - Integration of gLite and Tycoon[3] market-based resource allocation software
- **Intel Sponsored examples**
  - Effective use of Multi-core processors in a grid environment

1: http://cern.ch/openlab
2: http://www.hpl.hp.com/research/smartfrog/
3: http://www.hpl.hp.com/research/tycoon/

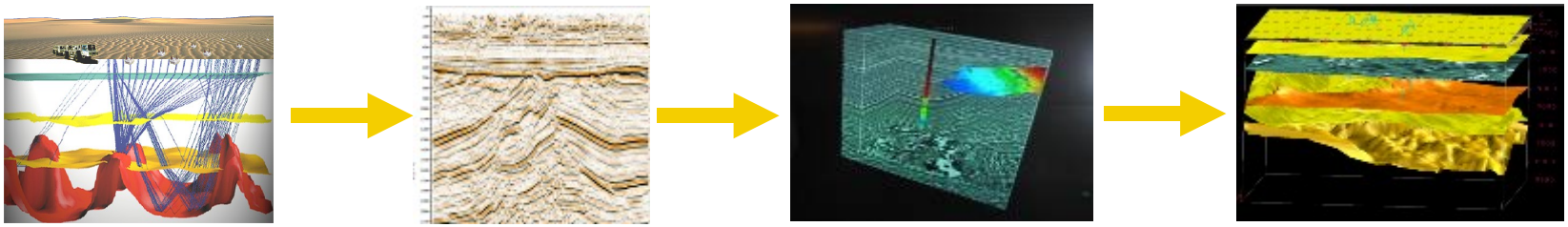
gLite Business Applications

- **Finance and insurance**
  - BE11-Risk Management in Finance - Grid for financial products pricing
  - ECP-CRSA Fininfo AXA Telefonica ID
- **Earth Sciences**
  - BE18-EGEODE Seismic imaging & reservoir simulation
  - CGG TNO PetroSoft NICE
- **Earth Observation**
  - BE07-Earth Observation - Grid enabled services for atmospheric retrieval parameters of importance for pollution, health and meteorological applications
  - GMV ESRIN-ESA ATOS ORIGIN CNR TERRADUE
- **Health care**
  - Health-e-Child: Grid-based biomedical information platform for Paediatrics
  - SIEMENS AG Lynkeus Srl etc.
- **Fusion**
  - Grid gateway for accesssing EGEE and super computer centres
  - CS SI CNRS
- **SMEs and small ISV**
  - Grid platform for plastic industry (CS SI CNRS; PEP)
  - Content Based Image Retrieval (CBIR) application (Cambridge Ontology Ltd)
- **Portals (based Grid engine)**
  - Genius (INFN; NICE); P-Grade (Sztaki); Elisa (CS SI; CNRS)

http://project-eu-egee-itf.web.cern.ch/project-eu-egee-ITF/Applications/Applications.htm

Example Business Applications

- **EGEODE**
  - Industrial application from Companie Generale de Geophysique running on EGEE infrastructure
    - Seismic processing platform
    - Based on industrial application Geocluster© used at CGG
    - Ported to EGEE for Industry and Academia



- **OpenPlast project**
  - French R&D programme to develop and deploy Grid platform for plastic industry (SMEs)
  - Based on experience from EGEE (supported by CS)
  - Next: Interoperability with other Grids

EGEE Industry days

Paris	Apr'06	Kick-off
Cambridge	May'06	SMEs
Ischia	July'06	Data grids
Geneva	Sep'06	Multiple tracks
Catania	Oct'06	SMEs
Helsinki	Nov'06	Biomedicine
Pisa	Jan'07	Finance
Budapest	Feb'07	Large enterprises
Madrid	Mar'07	Engineering

These events generate interest which then lead to some companies working with EGEE to port applications, follow training, identify new requirements etc.

Example results of Industry Days

Total UK

- Attended the industry day in Paris
- Ported application to GILDA testbed
- Presented the results of their work in the EGEE'06 Business Track

Cambridge Ontology

- 2 person startup company attended Industry day in Cambridge
- Wanted to use grids for **Content Based Image Retrieval System**
- With support from Qi3 and EGEE they were awarded mini-PIPSS funding grant by UK's PPARC
- Ported their application to grid using gLite and GridPP sites
- Now growing and attracting private funds

Establishing relations of trust with businesses is a slow and labour intensive task

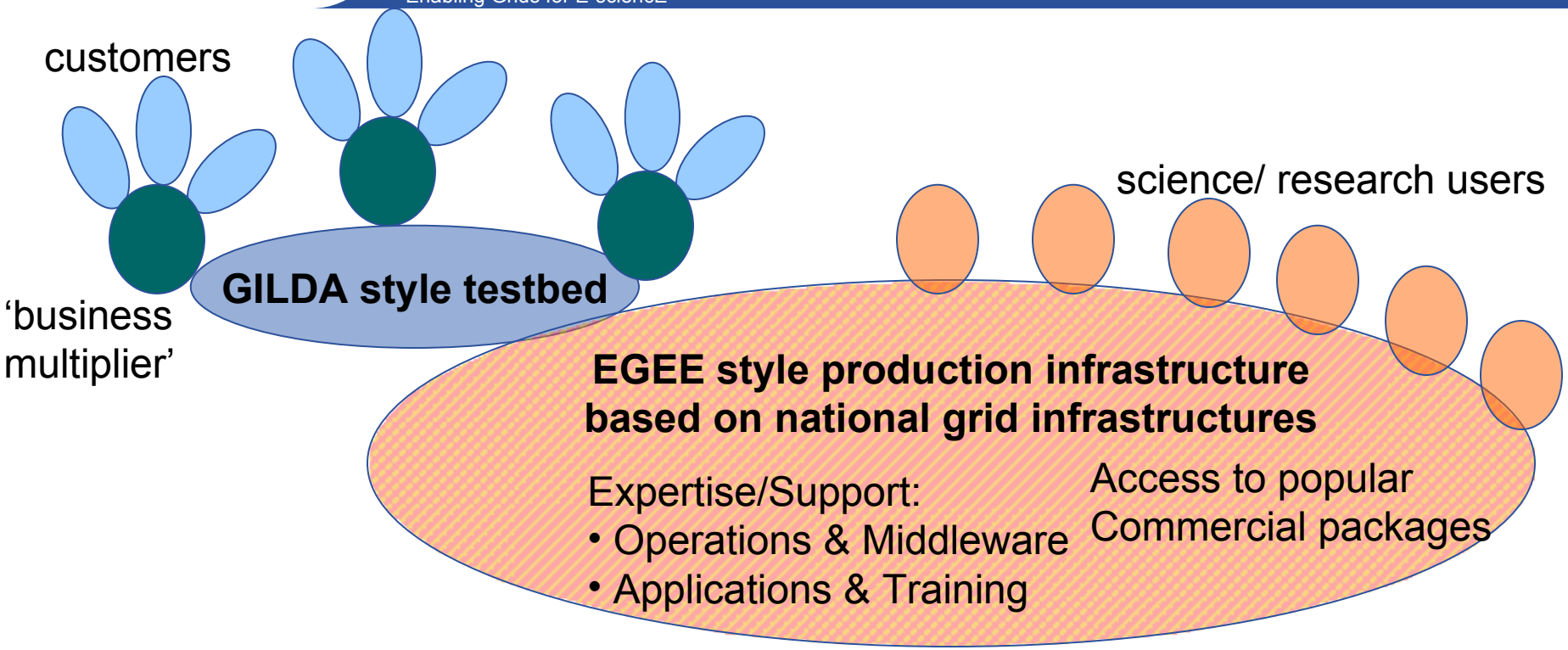
Grids and Business – key points

- **Complexity** – grid technology is complex to use and operate
- **Security** - sensitive data with sensitive applications
- **Standards & Policies** – to encourage long-term investment
- **Training** – need to offer training tailored to businesses
- **Software license management** – how users access commercial packages & how ISPs generate revenue
- **Applications** – need to support legacy applications
- **Portability** – across multiple platforms and implementations
- **Networking** – costs of network services is prohibitive
- **Guaranteed QoS** – service level agreements
- **Business models** – what can be charged for as a service
- **Accounting** - tracking resources usage in multi-admin context

Going Forward

- **EGEE intends to build on it initial successes with various business sectors in the context of the European 7th Framework**
- **Foster relations with businesses based on targeted approach**
  - Targeted sectors (Finance, Earth observation, Bio, etc)
  - More attention in SME, start-up (innovative applications and portals) and collaborative projects (Partner grids)
  - Innovative solutions & policies & funding schemes & collaboration between industry and Research in commercial Grid adoption (pre-competitive procurement)
- **Set the way for commercial exploitation of EGEE technology**
  - Provide solutions in challenges for grid adoption by Industry: Business model; Accounting/billing; Commercial software license policy; Security; SLA; Standardization; etc
  - Prepare the future for commercial exploitation of EGEE (long-term support of gLite; Network; IT Providers)
- **Create self-sustainable EGEE Grid\e-Infrastructure Competence Centres "for Industry" in order to provide technical support to the business community**

A picture for the future



Business Models: Considering Not-for-profit structure to support gLite	**Standards:** Push for interoperability to allow free choice of middleware	**New Business:** Competition GRIDBIZ
Grid market: Negotiated exchange of resources	**Networking:** Testbed sites with dual networks (GEANT & Commercial)	**Training:** Commercial survey

EGEE'07 Conference

Building Bridges…

- Between Science and business
- Between users and infrastructures
- Between countries
- Between scientific disciplines
- Between projects

http://www.eu-egee.org/egee07