Grid Computing in Germany and the Quest for Sustainability

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EDG: (research)
„DataGrid is a project funded by European Union. The objective is to build the next generation computing infrastructure providing intensive computation and analysis of shared large-scale databases, from hundreds of TeraBytes to PetaBytes, across widely distributed scientific communities."

EGEE: (deployment)
„The EGEE project brings together experts from more than 50 countries with the common aim of building on recent advances in Grid technology and developing a service Grid infrastructure which is available to scientists 24 hours-a-day. “

EGI: (sustainability) → convergence ???
„EGI.eu is a foundation established under Dutch law to create and maintain a pan-European Grid Infrastructure (EGI) in collaboration with National Grid Initiatives (NGIs) and European International Research Organisations (EIROs), to guarantee the long-term availability of a generic e-infrastructure for all European research communities and their international collaborators. “
• In Germany:
  – A very diverse set of Grid initiatives
• NGI-DE is the German branch of EGI
  – Partner: KIT (coordination), BADW-LRZ, FZJ, DESY, LUH-RRZN, DFN, FhG, D-Grid GmbH
  – Supported particularly by Gauß-Allianz e.V.
    • Association of large academic compute centers in Germany
    • Has the potential for sustainable deployment of HPC and Grid services
• DGI-2: The „D-Grid Integrationsprojekt“
  – Maintenance and running of the services and infrastructure used by D-Grid communities in 2011/12
  – Adaption of services to requirements, structures and processes of the European Grid Infrastructure (EGI), with the aim of maintaining and establishing interoperability with other European Grid providers
  – Laying the foundations for a sustainable Grid infrastructure as of the end of 2012
Excerpt from the D-Grid project list

- AstroGrid
  - Collaborative research environment for astronomy
- C3-Grid
  - Collaborative Climate Community and Processing Grid
- In-Grid
  - In-Grid will enable engineering projects for Grid-based application and efficient use of common compute and software resources
- Gap-SLC
  - Usage of short-lived certificates in portal-based Grids
- Many more, very diverse, past and current projects
  - Not „just“ High-Energy Physics
In the context of DGI-2, currently three middlewares are supported
- Globus
- Unicore
- gLite

There are services built around these
- Either in a national or in an international context

Participating partners provide huge amounts of computing power

Users have a very diverse set of use-cases and expectations

Grid „products“ need to cater for these
Complex Environment. Convergence ???
Product Definition (1)

Taken from MBA thesis „Open Source and Business: A Contradiction in Terms?“ / Dr. R. Berlich
Product Definition (2)

Potential
Augmented
Expected
Basic
Core benefit
product

Taken from MBA thesis „Open Source and Business: A Contradiction in Terms?“ / Dr. R. Berlich
DGI-2 partners already run and maintain numerous IT-services, such as networks, HPC-systemes and storage for local, regional, national and international Users

- This is the foundation on which sustainability can be built
- Sustainability is more an integration than a building effort
- Central Grid services will become part of the standard offers of participating institutions

Need to find suitable „business-models“ around it

- Active discussion in the context of EGI and NGI-DE
- Open Source as one incubator
- Cannot give a recipe
• Taking a „business plan“ approach, central questions need to be asked
  – What is the actual product we are „selling“ and on which we want to base sustainable operation?
    • Probably the answer is different for each NGI and even each sub-community
  – What is our core product?
    • Provision of computing resources?
  – Is the available user base large enough to actually support sustainability?
  – If not, what do we do in terms of business development?
    • Where do we want to be in 1, 2, 5 years from now?
  – What do we want to be sustainable?
Sustainability means
- Ensuring the long-term availability of Infrastructure
  - Hardware
  - Software
  - Services
  - Know-How

Means of ensuring sustainability include
- Binding man-power and knowledge
- Identifying funding schemes
- Identifying new user communities and usage scenarios

But in the end:
- We can pay our own bills and maintain our market position
• **Groundwork**
  – Need to understand the term Grid Computing in a wider scope
  – It is the deployment scenarios and applications that define what Grid Computing means
  – No matter what Grid Computing will be called in 20 years, its deployment scenarios will remain

• **Need to build business model on deployment scenarios**
  – *Collaboration* as one of Grid's biggest strengths
Marketing, Business Development

Taken from MBA thesis „Open Source and Business: A Contradiction in Terms?“ / Dr. R. Berlich
• Grid Computing (in Germany and internationally) has a sizeable user base and uses established technologies
• Grid deployment scenarios will remain (under whatever name), and there already exists a strong foundation for sustainable operation, through the participating organizations
• Sustainability needs to be organized in the form of a business plan, or else ...
• And there are many open questions that remain in this field
• However: We don’t start from scratch. Sustainability is more an „integration“ than a „building“ effort
Question?! Questions!

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