# Future Developments in the EU DataGrid

**The European
DataGrid Project Team**

http://www.eu-datagrid.org

# **Overview**

➢ Where is the DataGrid project going?

   ➢ How to preserve the work done in DataGrid after the project ends

   ➢ WebServices and Open Grid Services Architecture

      ➢ Where Grid computing is heading in the coming years

# Interaction with Sister Projects

- ◆ CrossGrid
  - ▪ Using the same security certs.
  - ▪ Testbed sites install EDG software
    - • Extending it for needs of intensive interactive applications
  - ▪ Participating in the EDG testing activities
  - ▪ Representatives in each projects architecture & management groups

- ◆ DataTAG (EDT)
  - ▪ EDT is deploying EDG sw to investigate inter-operability with US projects (iVDGL, GriPhyN, PPDG)
  - ▪ Results feedback into EDG software releases
    - • (e.g. GLUE compatible information providers/consumers)

- ◆ NorduGrid
  - ▪ Using the same security certs.
  - ▪ Involved in EDG architecture work
    - • Good ideas for gatekeeper and MDS configuration
    - • Helped develop GDMP and GSI extensions for Replica Catalog
    - • Involved in Glue schema work
    - • Security policy
  - ▪ Mware testing
  - ▪ Working in WP8 (HEP applications)

- ◆ iVDGL/GriPhyN/PPDG
  - ▪ US members in EDG architecture group
  - ▪ Looking for common packaging and toolkit usage solutions

**No strict boundaries with a large cross-fertilization of ideas, software and people
DataGRID is learning from the experiences in these projects**

# Plans for the Future

- **Further developments in 2003**
  - Further iterative improvements to middleware driven by users needs
  - More extensive testbeds providing more computing resources
  - Prepare EDG software for future migration to Open Grid Services Architecture

- **Interaction with LHC Computing grid (LCG)**
  - LCG deploys LCG-1 service in July
  - Main components of EDG 2.0 release build the basis for LCG middleware

- **New EU project**
  - Make plans to preserve current major asset of the project: probably the largest Grid development team in the world
    - EoI for FP6 (www.cern.ch/egee-ei)
    - **EGEE – Enabling Grids for E-Science and industry in Europe**

# OGSA: A major development in distributing computing resources and services

- A new **conceptual framework to  distribute computing** and services bringing together aspects of web services and grid computing

- The Open Grid Services Architecture is based on the definition of a **Web Service** as **a set of related application functions that can be programmatically invoked over the Internet**.

- To invoke a Web service, applications make use of the service definition information in a Web Services Description Language (**WSDL**) document

- Work on the impact and the possible implementation of an OGSA-based Grid is being carried out (  to define possible architectural frameworks and agree on standards ) within GGF

# The Web Service architecture

- Three primary players , pillars
  - 1. Providers of the services
  - 2. Directory functions, i.e. Service Broker
  - 3. Service Requesters

**SOAP** (Simple Object Access Protocol)

interconnects 1,2,3

**WSDL** (Web Services Description Language)

**UDDI** (Universal Description,

            Discovery & Integration)

Service Broker

Publish WSDL

Find UDDI

Bind SOAP

Service Provider

Service Requester
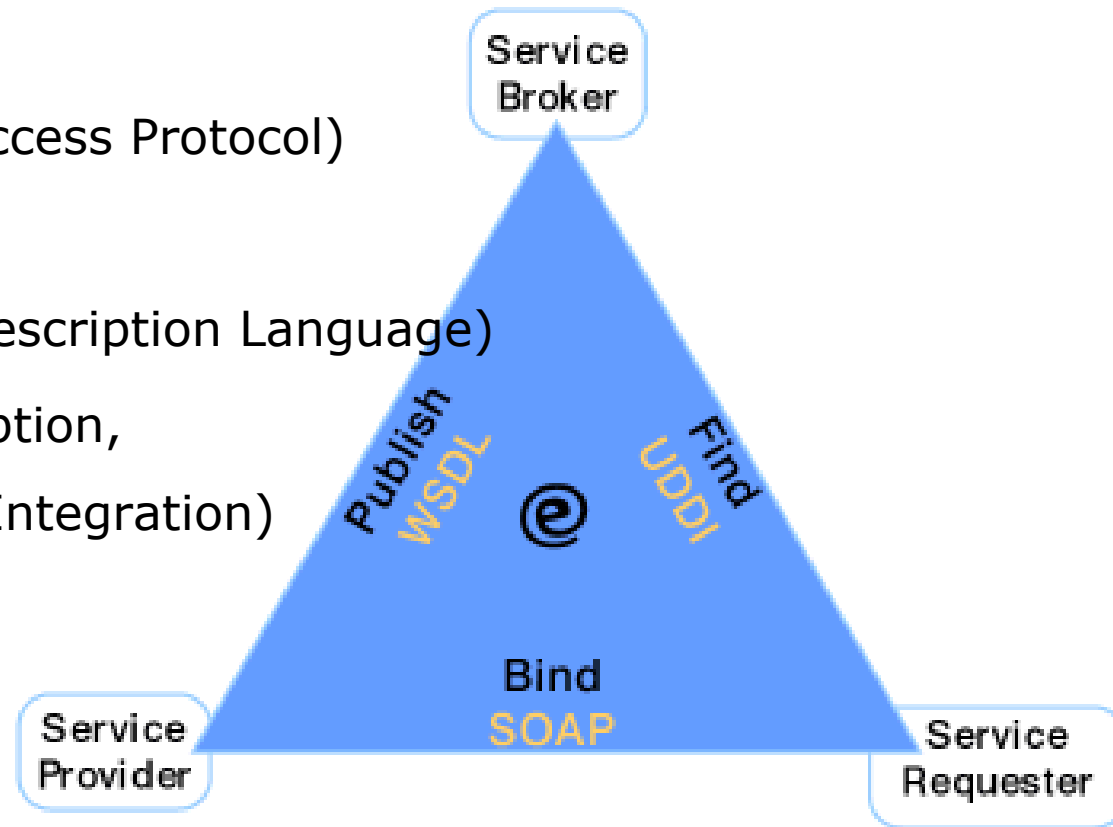
# OGSA Features vs. Web Services

- Web Services is a **conceptual framework** to access services to build dynamic applications over the internet, have them executed

- Dynamic (in the WS scheme) means here we do not necessarily know the format of all the information which will be involved along the path done by our application while executing, but we will access this information anyhow. This is done through **a query to the UDDI directory**.

- OGSA is further concerned by the **creation of transient instances of web services**, by the management of service instances, to address the real issue of creating and destroying dynamically accessible interfaces to the states of distributed activities.

# OGSA and DataGrid

- Next major version of Globus toolkit (version 3) will be based on OGSA structure

  - Beta release foreseen for Spring 2003

- DataGrid members are participating to the OGSA specifications

- Mapping between existing DataGrid middleware components and OGSA and being defined and we are following closely the evolution of OGSA

- EGEE will 'OGSAfy' existing EDG mware

# Outlook

- The work is not finished!
  - Support for release 2.0
  - Application evaluation by December 2003

- The project is following the development of the OGSA paradigm for distributed computing.

- EDG mware has been taken over by other projects

- Follow-up project to support and further develop EDG mware