

Bilateral Research and Industrial Development
enhancing and integrating **Grid Enabled technologies**

Bridge

Project
Presentation

GRID @ ASIA

Bridge

Gilbert Kalb



Fraunhofer Gesellschaft

Third Grid@Asia Workshop
11 to 13 December 2006
Seoul –The WestinChosun



EU Funded Project - Start: January 1st, 2007

Bilateral

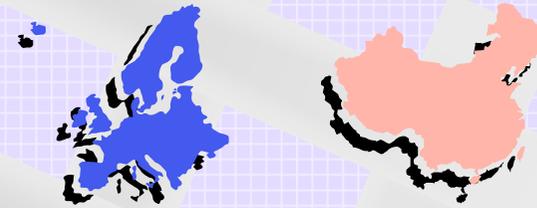
Research and

Industrial

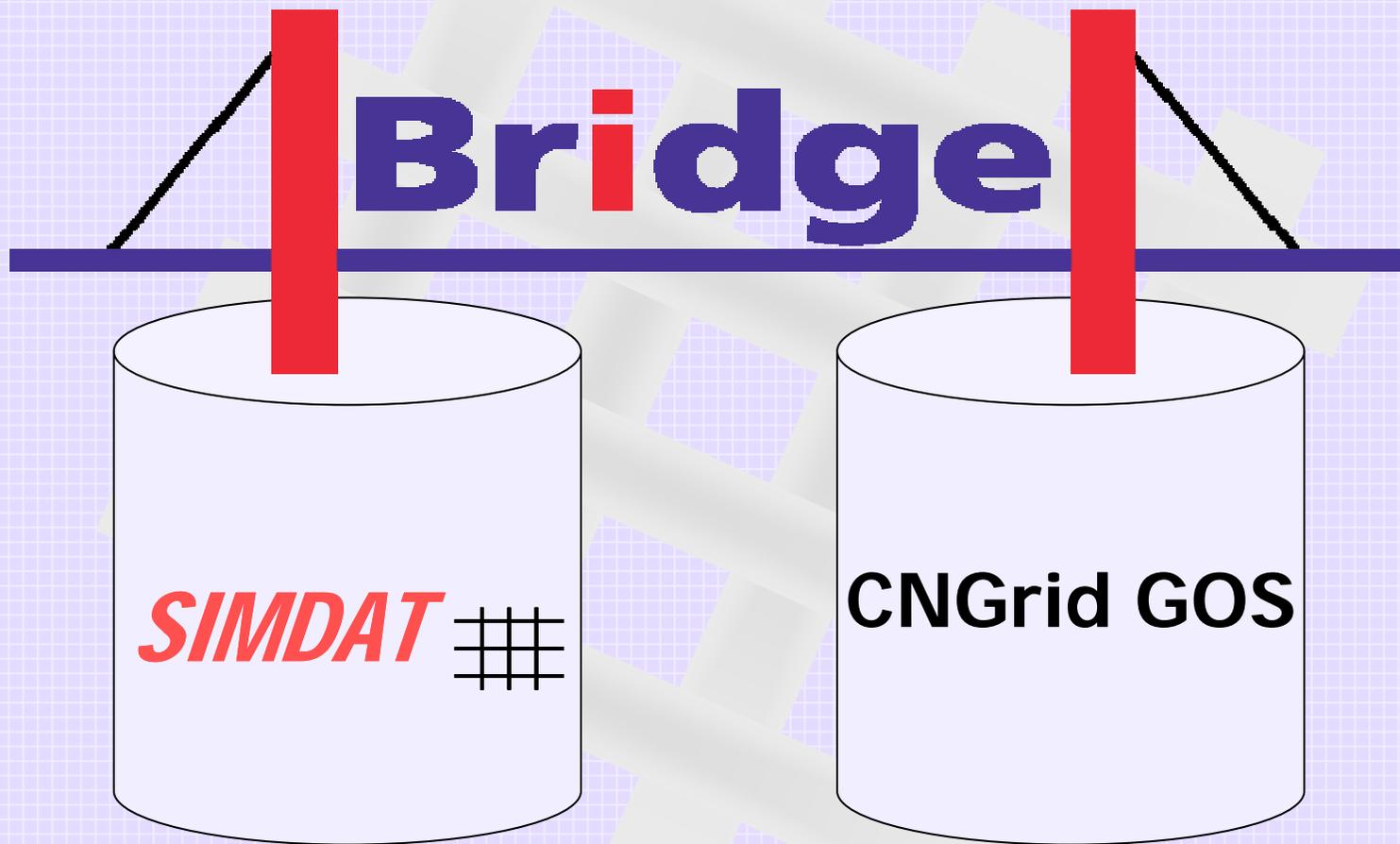
Development enhancing and integrating

Grid

Enabled technologies

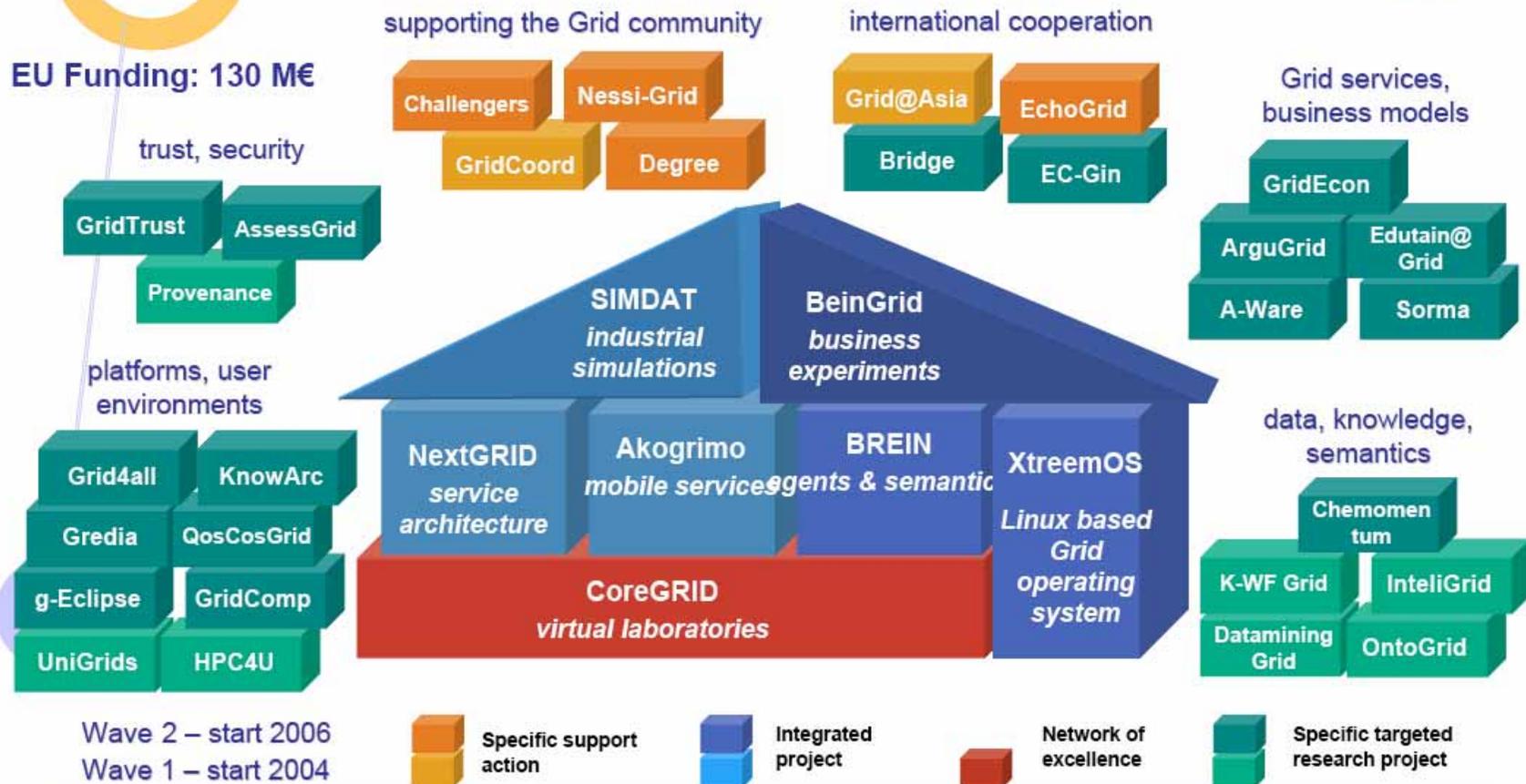


Bridge Foundations



Grid Research Projects under FP6

EU Funding: 130 M€



Information Society and Media Directorate-General – European Commission
Unit Grid Technologies
ITU – GGF Workshop – Geneva, 23-24 October 2006



Bilateral Research and Industrial Development enhancing and integrating Grid Enabled technologies

Bridge Objectives

Develop, enhance and interconnect European and Chinese Grid middleware technology

Set up integrated Grid test bed using European and Chinese middleware components for application demonstration

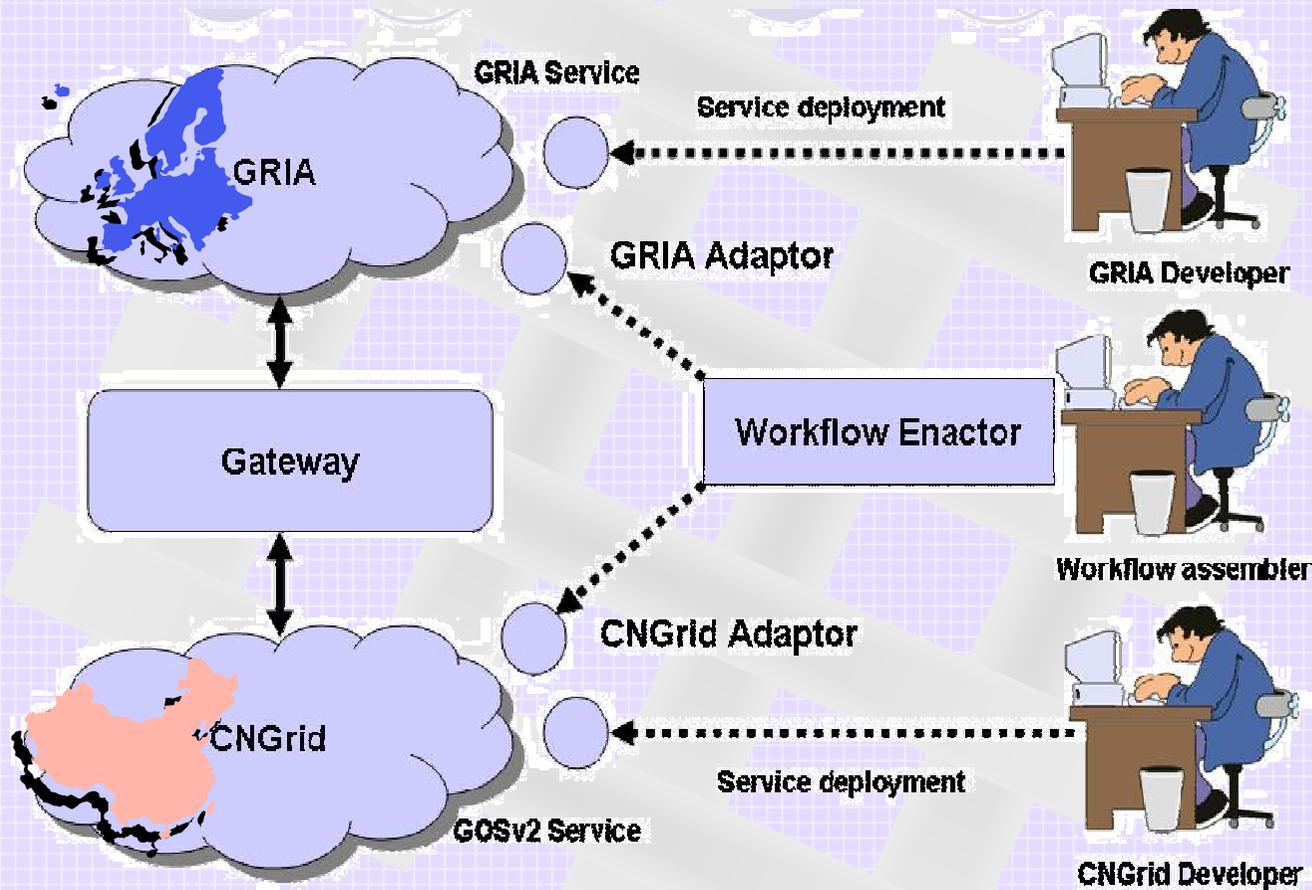
Set up joint application showcases using distributed workflow and data access technology

Disseminate the results of the project to industrial and academic communities

Demonstrate the benefits of Grid technology for international cooperation



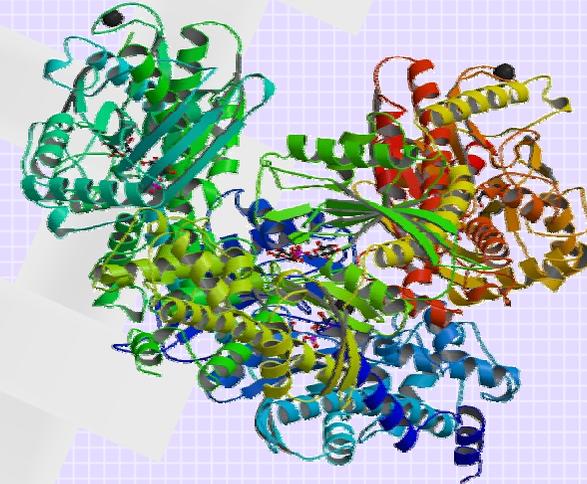
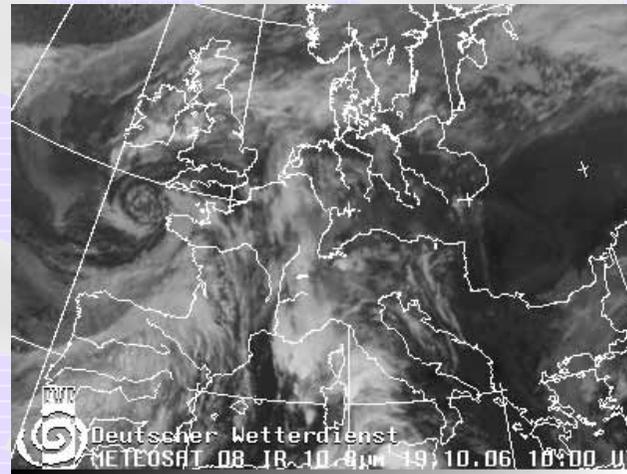
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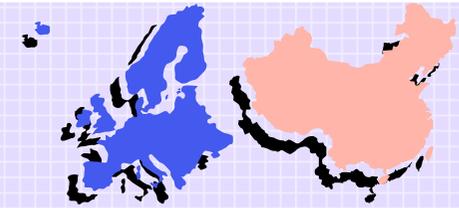
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Application showcases

- ⇒ **Aerospace**
- ⇒ **Meteorology**
- ⇒ **Drug Design**



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Meteo:

Seamless access to heterogeneous distributed data repositories

Aero:

Multi-disciplinary collaborative configuration design

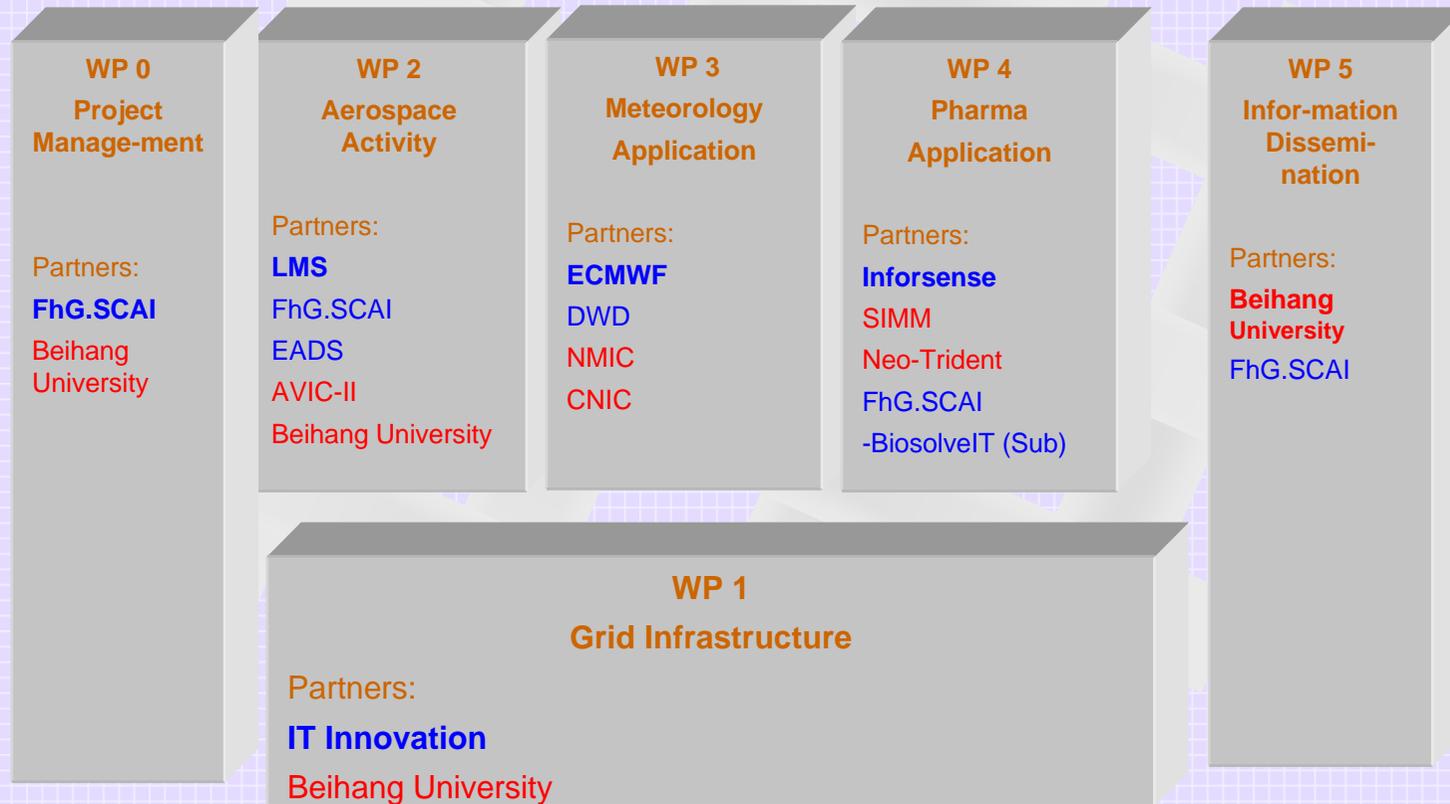
Pharma:

Algorithmic interoperability between different protein docking tools

Extended interoperability of Grid infrastructures

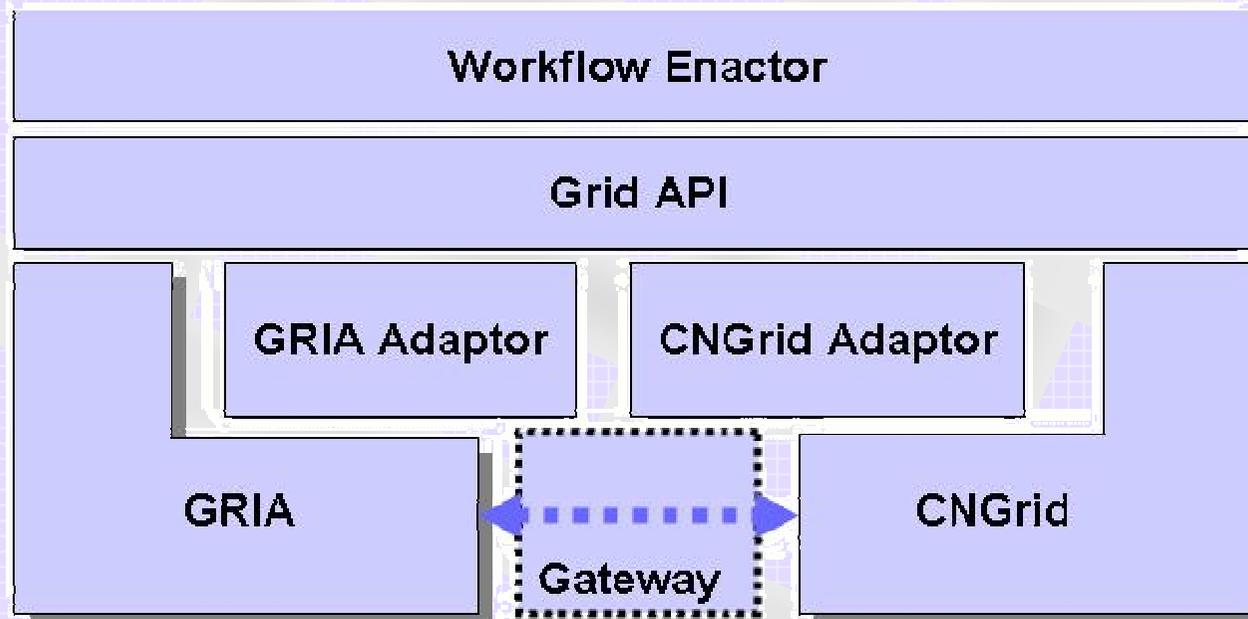


Work Packages: Approach & Structure



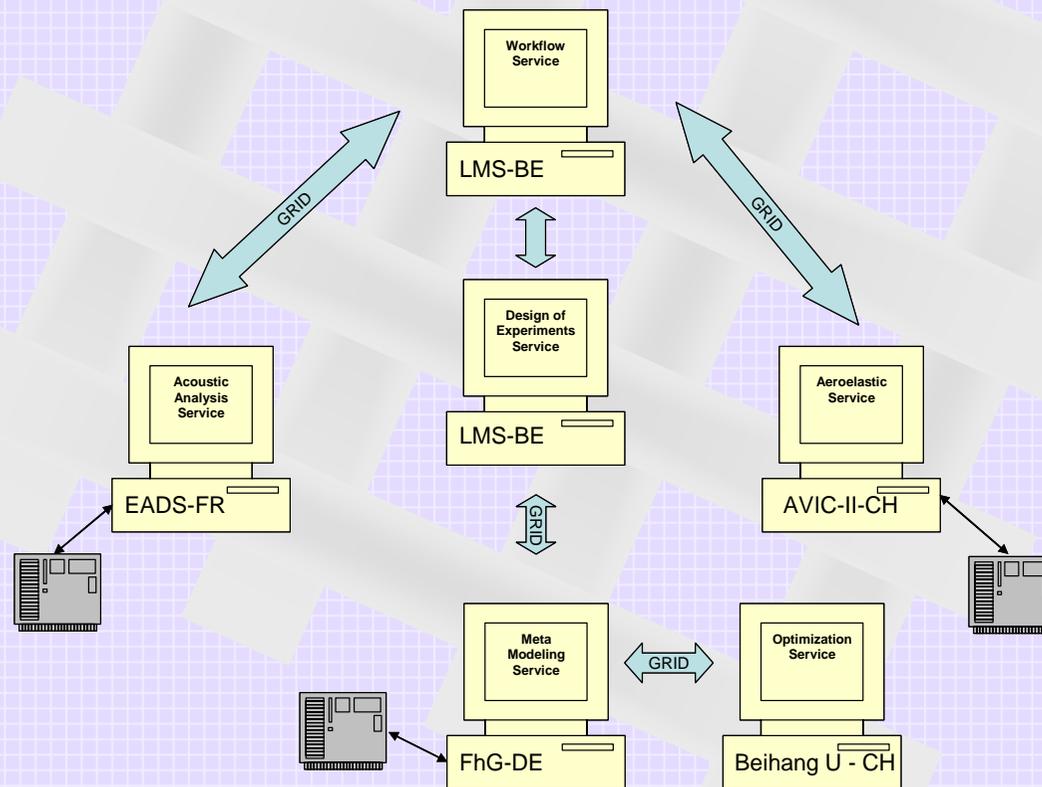
WP1: GRID Infrastructure

Key areas of interoperability



WP2: Aerospace Activity

Workflow, optimization, GRID



WP3: Meteo Activity

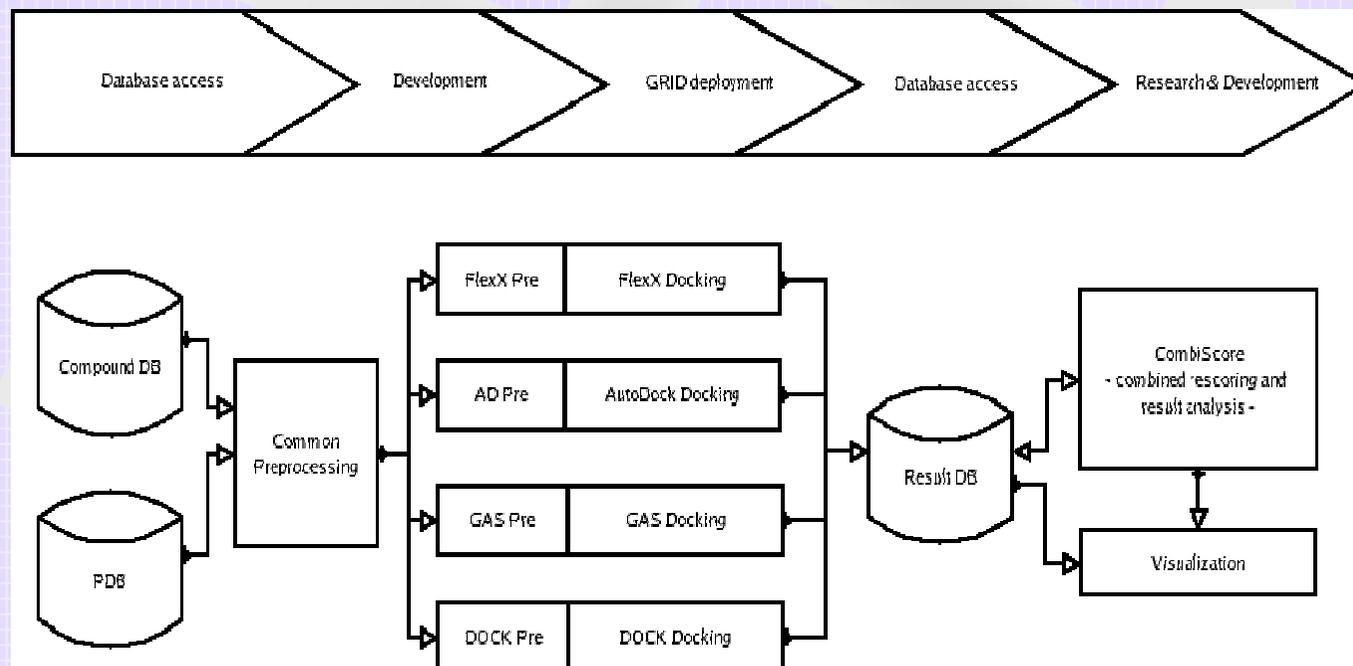
THORPEX Interactive Grand Global Ensemble (TIGGE):

- WMO programme THORPEX will provide appropriate risk management tools for decision makers of all nations.
- First phase: building the TIGGE for daily output of global Ensemble Prediction System from around the world (~200GB per day)
- ECMWF and CMA will each host a copy of the database

Meteo activity in BRIDGE:

- Provide GRID enabled access to the TIGGE database, focussing on resource usage optimisation
- Provide multi-language cataloguing and data discovery
- Analysis Services: Risk Assessment Modules on regional disasters and planning

WP 4: Pharma DockFlow



WP4: Pharma Activity - Dockflow

Grid-based Virtual Screening and Molecular Docking Application:

- “Proof of concept” scientific experiment for identifying novel potential lead candidate drugs against Bird flu / Dengue fever / Malaria.

An integrated Virtual Screening Platform:

- Develop an integrated solution based on existing docking tools available to both the European and Chinese partners within a single platform.
- Development of an algorithmic approach towards interoperability of docking results is a real challenge and will be one of the main contributions of this task.
- Continued development of CombiScore to provide a unified score and visualization method to facilitate lead identification

Workflow Execution Models for Virtual Screening:

- Developing interoperability methods between Chinese and EU workflow tools
- Enable interactivity within workflow execution
- Production of reusable, validated “canned” virtual screening workflows authored by domain experts that can then be published for execution by a wider audience.

Bridge Partners

FhG/SCAI

Project overall co-ordination
response surface models, docking

LMS

Integration and development of OPTIMUS
software for the aerospace application

IT Innovation

Infrastructure, distributed data access,
semantics, security and workflow

ECMWF

Co-ordination of meteorology application
and database development

DWD

Implementation of a multi language
thesaurus for the meteorology application

Bridge Partners

EADS

Aerospace activity, aero acoustics service

InforSense

Extension of grid-based workflow for protein docking applications and wf interoperability

CNIC, CAS1

Scientific data Grid, middleware for distributive data integration, risk analysis

Beihang University

Co-ordination of Chinese project part, Grid infrastructure and optimization services

AVICII

Aerospace activity, aeroelasticity service, provider of the aerospace model

Bridge Partners

NMIC

Meteorological activities, distributed data retrieval and sharing

IMM, CAS

Pharmaceutical activities, wf processes for new drug discovery, docking service

Neo
Trident

Pharmaceutical activities, verification of results and system integration

Research Challenges

To achieve interoperability between GRIA and CNGrid GOS

To implement complex and interactive workflows from different domains using European and Chinese resources, and interoperability between individual workflow representations

To achieve functionality of Grid services based on heterogeneous infrastructures, through the three application domains

Key technology advancements

Mechanism which achieves mapping between heterogeneous platforms

Cross-platform:

Dynamic policy management

Data processing and storage

Monitoring and management

Workflow management

Quality of Service control

Key technology advancements



Interconnection of CNGrid and European Grid Infrastructure

Depei Qian
Beihang University
Feb. 20, 2006



What we need to do for interconnection

- **Supporting Grid software interoperability study, deploy different software in the environment**
- **Deploying current applications and developing an deploying new applications on extended infrastructure**
- **Supporting harmonized security mechanism**
- **Supporting testing and training**



Project Start: January 1st, 2007

Thank You

Kick-off Meeting: January 22nd, 2007

