



DESIGNER, INTEGRATOR & OPERATOR OF MISSION CRITICAL SYSTEMS

Industrial partners in EGEE Turning experience into business From SME's to large company

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Content

- **CS SI : Industrial partner in EGEE**
- **Preliminary studies for Grid implementation**
 - e.g. CNES intranet Grid prototype based on gLite
- **Applied Grid for SMEs**
 - ELIS@ solution
 - The business model adopted
- **Grid Hub portal**
 - e.g Grid Portal Proposal for Fusion application environment
 - From EGEE Grid to supercomputer



CS SI

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- **CS SI is an IT services company with about 3500 employees**
- **CS SI's main customers belong to major economic sectors, such as aviation, space, defence, energy, banking and automotive**
- **Ranking first in France for industrial and critical applications and in top five position in computing infrastructure services**
 - For instance, CS SI contributes to the operation and management of the GÉANT pan-European Network
- **Involved in Grid technology from 2000**



Involved in Grid technology from 2000

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- **Industrial partner in EGEE-II since DataGrid**
 - Activity manager for Quality Assurance of the project (JRA2)
 - Operation of Regional Operation Centre (SA1)
 - Middleware application validation (NA4)
 - Support Fusion community (NA4)
- **A fruitful experience in merging academic and industrial best practices**
- **Common projects (CS / IN2P3) for promoting EGEE toward industry:**
 - CNES intranet Grid prototype based on gLite
 - Openplast : An Applied Grid for SMEs (based on ELIS@ solution)



Grid Market perception

- **SMEs are willing to share infrastructures, commercial software and collaborative distributed environment**
- **Large companies (industry, banks and insurance groups) are willing to use EGEE first as an Intranet Grid in order to optimise their inter-site infrastructure and make more efficient usage of their existing resources. Close attention is paid to the security aspects in this form of deployment**
 - Depending on the results of such usage as Intranet Grid and security policy, the Intranet Grid could be opened to external collaboration
- **Large cooperative projects are willing to submit jobs on super computer infrastructure and also doing data management, pre and post processing on grid clusters such as EGEE**
- **From SMEs to large companies, a complete workflow is needed between the cooperatives actors**



Preliminary studies for Grid implementation



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e.g. CNES intranet Grid prototype based on gLite

Preliminary studies for Grid implementation

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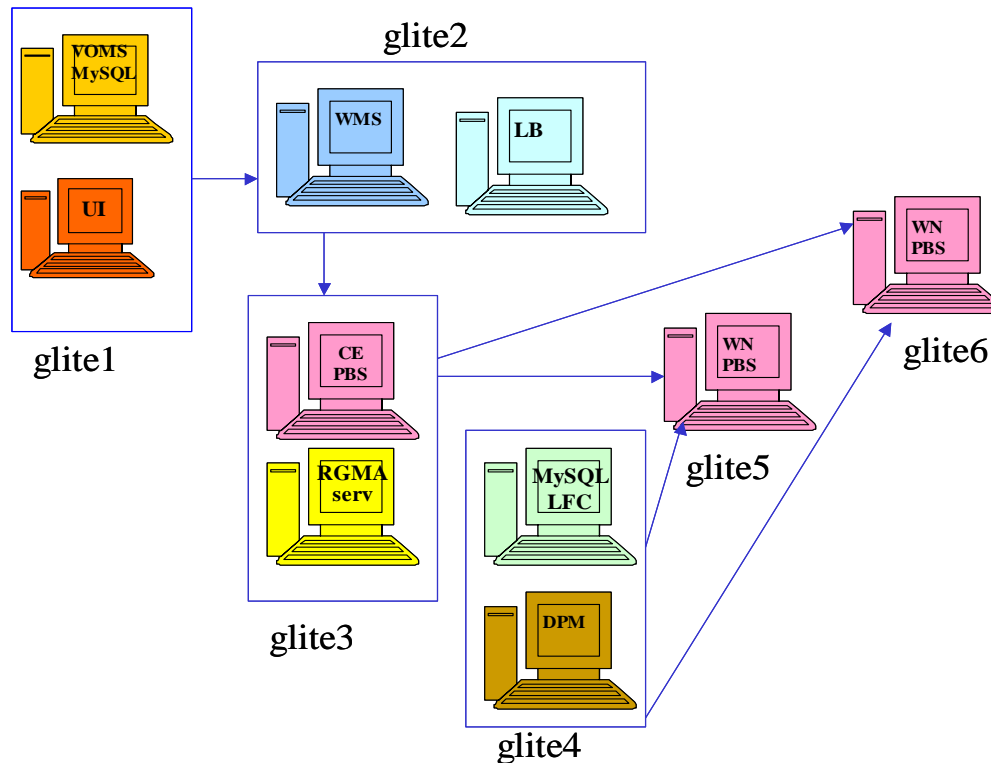
- **Most of Grid implementation starts with preliminary studies and prototype implementation:**
 - Preliminary analysis of Users needs, Applications and Security requirements
 - Target architecture proposal
 - Benefits
 - Implementation of Grid prototype
- **Approach based on fixed price offer**



Preliminary studies for Grid implementation

- e.g: CNES (French Space Agency) wishes to evaluate a grid for the data processing for ground segment project and for scientific collaborations

- After a survey of various technical solutions and grid middleware solutions, CS SI proposal has been chosen, based on gLite prototype



- Glite 1**
 - 1 VOMS
 - 1 UI
- Glite 2**
 - 1 WMS
 - 1 LB
- Glite 3**
 - 1 CE
 - 1 R-GMA
- Glite 4 :**
 - LCG Catalog
 - DPM Server
- Glite 5 : 1WN**
- Glite 6 : 1 WN**

Applied Grid for SMEs



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ELIS@ solution

The business model adopted

« Applied grid for SMEs » means

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- Grid which hosts a representative panel of applications dedicated to an industrial sector.
- Grid which is supported by representative actor of the targeted industrial sector (e.g PEP)
- Grid for which the partnerships with software editors are essentials to enhance the panel of hosted applications
- Grid where representative industrials must participate to enhance the set of **core** business services (Polymer suppliers, Injection moulding machine producers, ...)
- ELIS@ solution



ELIS@ - Objectives

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IN2P3

Centre de Calcul



Enterprise grid with Local Infrastructure and Services for Applications

- Applied Grid for industrial companies
- Access to on-demand applications
- Applicative services specific to applicative areas such as :
 - Mechanic
 - Molecular Modelling
 - Plasturgy Simulation
 - Genomic Analysis
- Cooperative project management within the supply chain from the contractor to sub-contractors
- Open source portal for industry

Issued from National R&D project : RUGBI, OpenPlast, ...

ELIS@ Advantages

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- **Web Portal** : User interface available from any computer
- **Data management MMI** : virtualised view of grid storage elements
- **Generic and Interoperable workflow engine** : Globus 2.4, 4.0, EGEE (gLite),
- **Applicative Services**
 - Workflow submission and monitoring through the portal
 - Permanent or on-the-fly applications and databases deployment by the workflow
 - Project and study case management MMI
 - Data management
 - Project costs monitoring and management



ELIS@ - Screenshots

- Examples:
 - Resources
 - Job Submission
 - Statistics

PORTAIL GRILLE CS-SI - Expérimentation ViSaGe

Calcul | Données | Droits | Statistiques

Utiliser une application | Gérer mes workflows

Choix du site d'exécution :

Nom du site	Statut	Temps d'attente	Temps d'exécution total
<input checked="" type="radio"/> la grille (service d'allocation)	ACTIF	0:00:18	0:00:35
<input type="radio"/> CS-Grenoble-Cluster-AMD-4.0	ACTIF	0:00:29	0:00:06

PORTAIL GRILLE CS-SI - Expérimentation ViSaGe

Calcul | Données | Droits | Statistiques

Utiliser une application | Gérer mes workflows

Workflow graph-1-12092006-978

Statut : actif

Niveau de sécurité : authentification
 Date de création : 2006/09/12-13:52:22
 Date de soumission : 2006/09/12-13:52:32
 Date d'activation : 2006/09/12-13:52:32
 Temps d'attente : 0 seconde(s)

+ Job job-1-1-12092006-978

Statut : en attente

Description : HELLO - Etude ?
 Niveau de sécurité : authentification
 Gestionnaire de batch : pbs
 Nombre de processus utilisé(s) : 1
 Date de soumission : 2006/09/12-13:52:32
 Site utilisé : CS-Grenoble-Cluster-AMD-4.0
 Application utilisée : HELLO

Actions : [Mettre à jour le statut](#) - [Interrompre le workflow](#) - [Supprimer le workflow](#) - [Visualiser le schéma](#) - [Visualiser les données et les résultats associés](#)

PORTAIL GRILLE CS-SI - Expérimentation ViSaGe

Calcul | Données | Droits | Statistiques

Historiques de mes travaux | Temps moyens de mes travaux | Temps

Semaine

- CS-Grenoble-Mini-Cluster-Globus-2.4
- CS-Grenoble-Mini-Cluster-Globus-2.4
- CS-Grenoble-Cluster-AMD-4.0
- CS-Grenoble-Cluster-AMD-2.4
- SEANODES
- IRT
- EADS

Répartition par états des calculs soumis

Complété
 Annulé
 Echoué

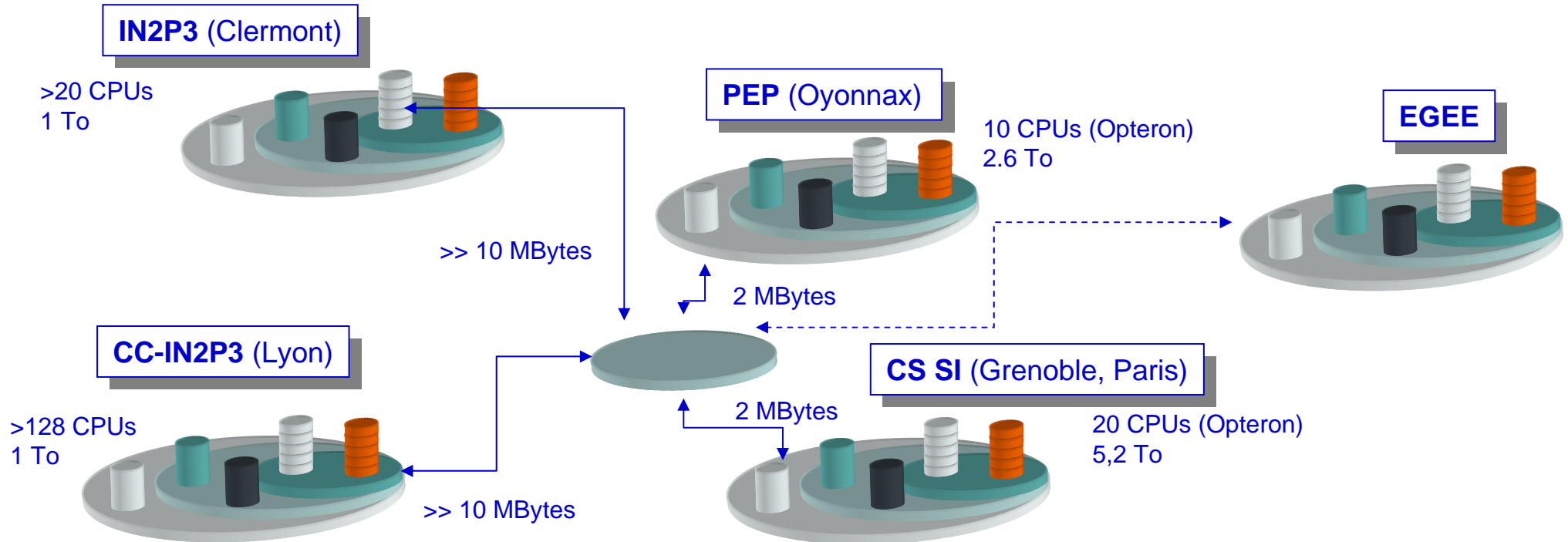
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 (0)4.76.85.99.18)

[Se déconnecter](#)

ELIS@ OpenPlast Grid

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Openplast Grid services have been developed by CS SI
 Workflow Engine have been developed by CC-IN2P3



ELIS@ Business model for SMEs: e.g Plasturgy (OpenPlast)

- **Starting point: The Business Plan, which defines:**
 - Actors and Responsibilities
 - Based on well knowledge of application needs and usage
 - Integrates:
 - Hosting basis costs (exploitation, administration, ...)
 - Licences costs
 - CPU and storage costs
 - Other costs (network, dissemination, sustainability, dissemination, ...)
 - Business perspectives; Period
- **Models and attempt to pricing**
 - Basic subscription including hosting
 - On demand: CPU; Storage; Commercial software
 - Fixed price CPU usage: Hosting + 1 CPU + 50Go
 - On demand: Commercial software
 - Fixed price full Application suit usage
 - Administration + 1 CPU + 50Go + licence for: Fluent, Moldflow 2D, Ansys non parallel, Cast3M)
 - Depending on the model: From 500 € to 4000€ per user per month
- **Discussion are on going with commercial software editors in order to improve the Grid licensing**
 - Make available license tokens shared within several customers
 - Distinction of the licensing for pre/post treatment from main treatment
 - etc



Grid Portal Proposal for Fusion environment



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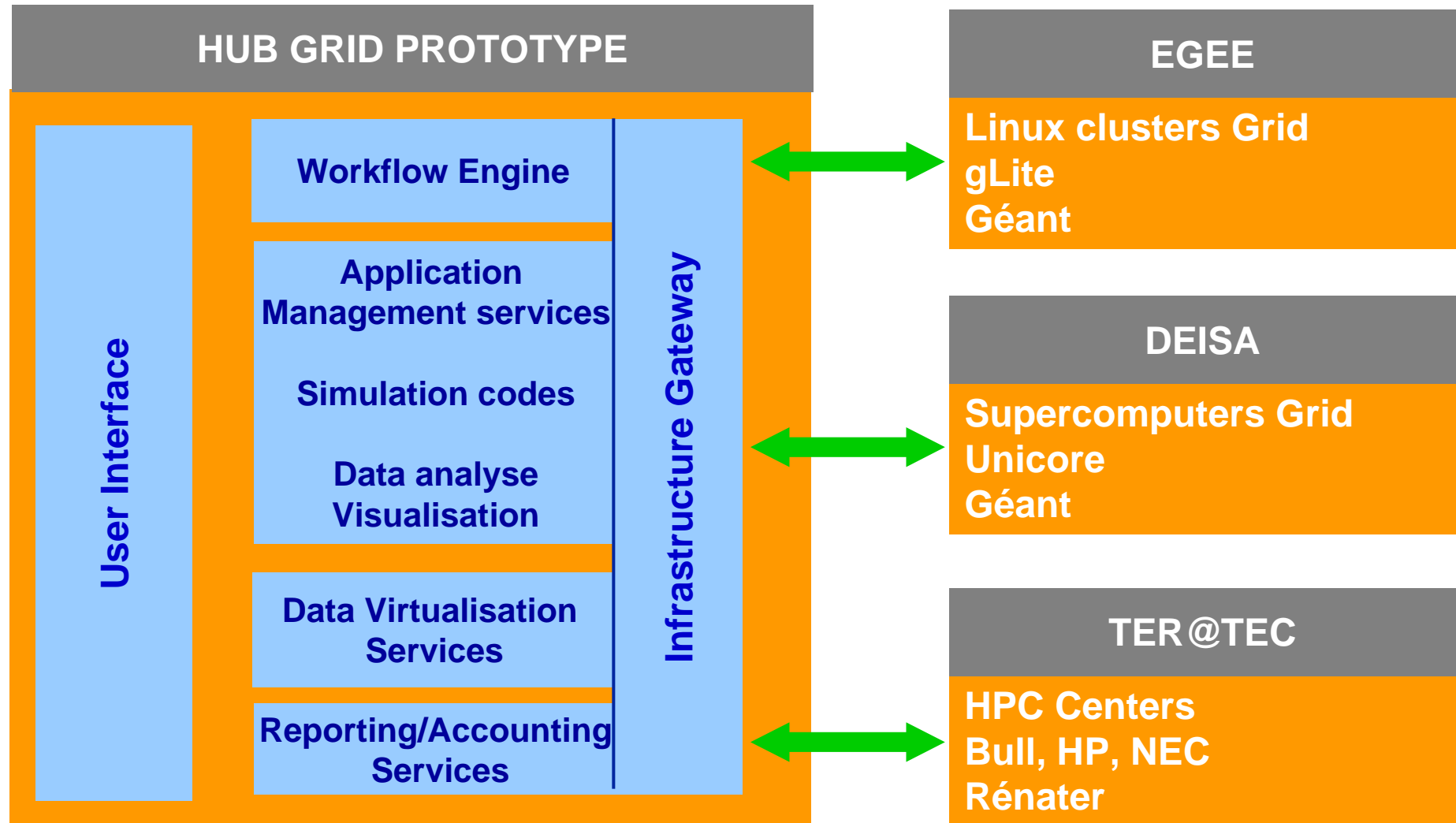
Fusion Grid Hub

- **From the « Fusion » information gathered we see that applications need both:**
 - Grid infrastructure
 - Like EGEE for computing codes compliant with clusters, pre and post simulation data processing, or experimental data analysis
 - High computing infrastructure
 - like DEISA for gyroscopic simulation and simulation codes compliant with hardware architecture
- **CS proposal is to set up a unified access to different grids by building a grid “hub” demonstrator dedicated to fusion**
- **This demonstrator would include :**
 - A portal for the usage and management of grid resources
 - A set of grid services to access different infrastructures :
 - Resource management service
 - Job submission and monitoring service...
 - Grid interoperability services to query different Information Systems
 - Application services
 - Application and data deployment on CE and SE
 - **Automated job chain**, pre and post processing, data visualization
- **This demonstrator could be based on the grid CS Portal ELIS@**



Fusion Hub Portal

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ELIS@: On going works

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- **Move to a pre-industrial environment for Plasturgy (OpenPlast) with an applied Business model**
- **Virtualisation of grid storage and cooperative project management workflow**
- **Interoperability with EGEE and super computers**
- **Real time and interactive visualisation**
- **Fostering other disciplines (Bio, Micro and Nano technology, Fusion, Aerospace)**
- **Extending agreement with commercial application editors**
- **Initiate business dissemination**

