Trading Grid Services in the UK e-Science Grid

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‘Marketplace for Computational Services’ project

Project Status

- Kick off meeting in February 2003
- Global Grid Forum (6, 7, 8, …) activity:
  - Grid Economic Services Architecture WG
  - Resource Usage Service WG
- Use cases collected from UK partners
- Exploratory Implementation for AHM 2003

Infrastructure Architecture

- Data Intensive X Scientists
- Data Intensive Applications for Science X
- Simulation, Analysis & Integration Technology for Science X
- Generic Virtual Data Access and Integration Layer
- Job Submission, Brokering, Workflow, Authorisation
- Resource Usage, Structured Data Access
- Grid Banking Services (1+)
- Data Storage Resource
- Data Transport

Grid Economic Service Architecture

- GESA enabled client ‘obtains’ a GSH
  - Grid Service Handle (GSH) provides unique service ID
  - Represents a service & cost for use
  - Changes in price & status through new service & GSH
- GSH passed to an existing client
  - Retains existing client interface for economic services
- Key Issues:
  - Information needed to make the selection (SDE)
  - Two (Multi?) stage commit to support pricing
  - Enable wide ranging exploration of grid economic models

New Economic SDEs & Services

- Trust, Reputation & Reliability (0+)
  - Can I rely on this service? Will it deliver?
  - Has this service been audited for performance & integrity?
  - Allow SDE to updated by signed statements?
- Compensation & Liability (0+)
  - Who can I complain to and can I prosecute?
  - How could the contract be broken?
- Grid Banking Services (1+)
  - Declare which GBS are acceptable
- Resource Usage Service (1)
  - Declare which RUS is used by the service
Exploratory Implementation

- Use of service specification documents developed within the project & GGF.
- Focus on core services:
  - Computational Grid Service (LeSC)
  - Resource Usage Service (eSNW)
  - Grid Banking Service (SeSC)
- Demonstrate through a Simple Maths service

Economically enabled Grid Service

Select a factory service to generate a service instance with which to initiate negotiations.
Administrative Interface to the Grid Banking Service

Create Accounts...

Examine your account transactions

Browse Current Accounts...

Use the Counter Service

... on service destruction, cost calculated & money transferred...
Conclusions

• Exploratory implementation of GESA
  – Validate use of OGSI for stateful services
  – Extend basic Grid Service with economic capability
  – Development of CGS, RUS, & GBS services
• Demonstrated use of GT3
  – Many problems expected from a new infrastructure
    • Documentation, documentation, documentation
  – See LeSC, eSNW & SeSC stands
• Next Steps
  – Develop & Refine current implementation
  – Engage in the definition & development of WS-Agreement

Acknowledgements

• Development Teams
  – LeSC: Miqdad Asaria, William Lee, Anthony Mayer
  – eSNW: Jon MacLaren
  – SeSC: Kushan Nammuni
• Management Teams
  – LeSC: John Darlington, Steven Newhouse, Oliver Jevons
  – eSNW: John Brooke
  – SeSC: Simon Cox, Trevor Cooper-Chadwick
• http://www.lesc.ic.ac.uk/markets