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Trading Grid Services in the UK e-Science Grid



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'Marketplace for Computational Services' project

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Market for Computational Services

- UK Core e-Science Programme project
- Interfaces & protocols to trade Grid Services
- Funded by Department of Trade & Industry
- Collaborators
 - London e-Science Centre
 - e-Science North West
 - Southampton e-Science Centre
 - UK Grid Support Centre









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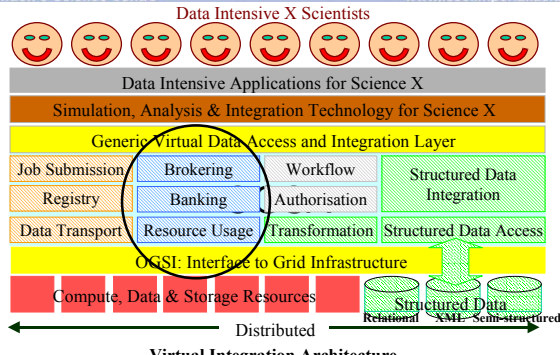
Project Status

- 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

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Infrastructure Architecture



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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

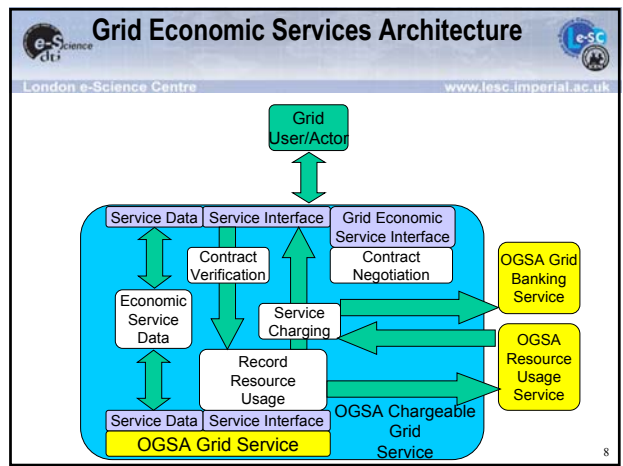
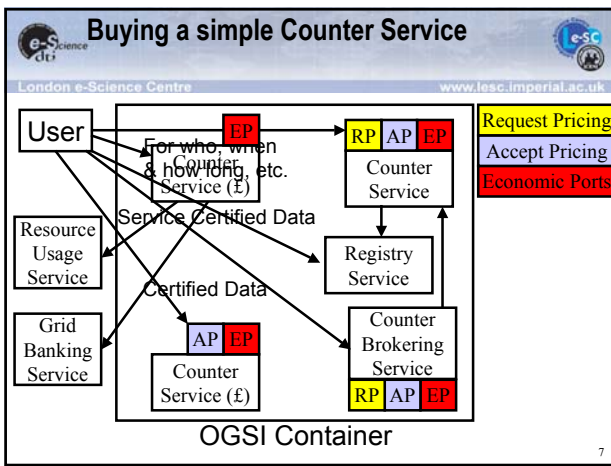
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New Economic SDEs & Services

- Trust, Reputation & Reliability (0+)
 - Can I rely on this service? Will it deliver?
 - Has this service been audited for performance & integrity?
 - Allow SDE to be 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+)
- Resource Usage Service (1)
 - Declare which RUS is used by the service

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- ### 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

Name	Handle	State
Sample Chargeable Grid Service Factory	http://10.100.0.0:10000/ogsa/chargeablegrid/	ACTIVE

Examine Pricing Options

Chargeable Grid Service

SDE Name	SDE Value
Pricing Mechanism	FixedPrice
Duration	100
max	200
min	50
amount	124
Pricing Mechanism	Action
Duration	100
default	100

Pricing Mechanism: FixedPrice Currency Name: Pounds Product Name: Sample Maths

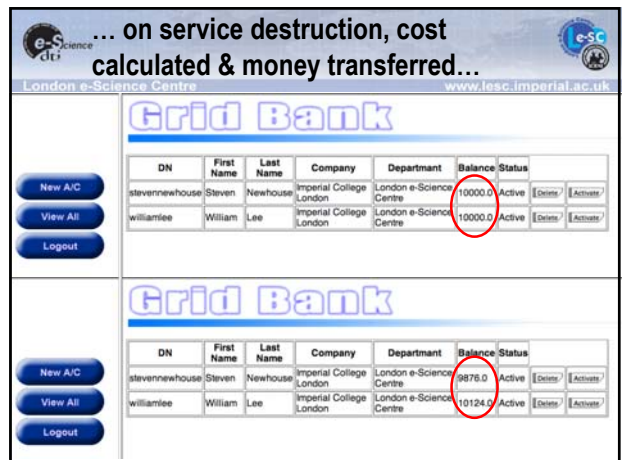
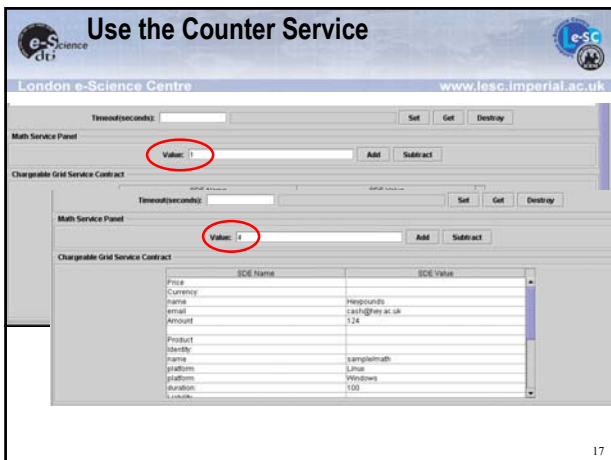
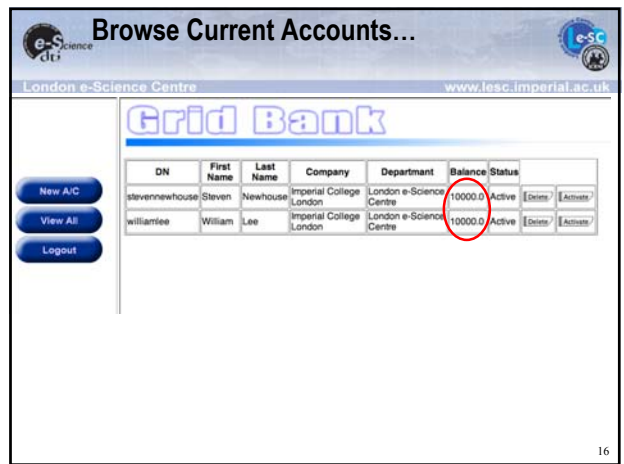
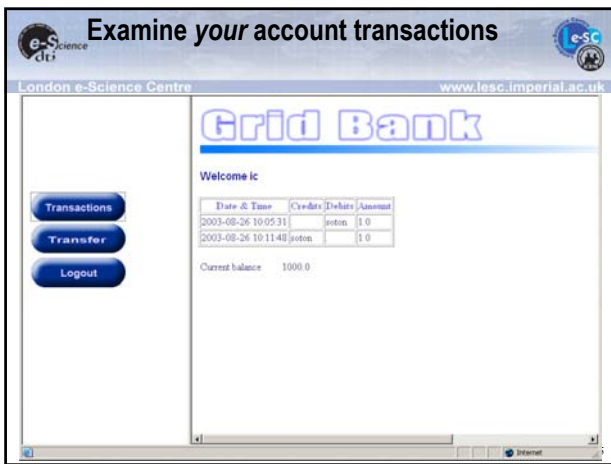
Examine Offer

Chargeable Grid Service Pricing

SDE Name	SDE Value
Price	100
Currency	Pounds
email	cash@imperial.ac.uk
Amount	124
Product Name	Sample Maths
platform	Linux
platform	Windows
duration	100
currency	Pounds

Accept Pricing

Examine the offer ('terms & conditions') and accept or decline.



- **Exploratory implementation of GESA**
 - Validate use of OGSF 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

- **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>