SIMDAT Architecture

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Four sectors of international economic importance:
- Automotive
- Pharmaceutical
- Aerospace
- Meteorology

Seven Grid-technology development areas:
- Grid infrastructure
- Distributed Data Access
- VO Administration
- Workflows
- Ontologies
- Analysis Services
- Knowledge Services

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Demanding Application Drivers

- Integration of the product design process chain (CAE/CAD/CAT) including external engineering companies, developers and suppliers
- Multi-disciplinary collaborative configuration design of complex aerospace products
- Drug discovery environment managing the distribution of both public and commercial bioinformatics data and analysis services
- Virtual Global Information System Centre supporting the distribution and integration of large scale meteorology data providers
We need to support dynamic business models

- SIMDAT users’ are driving architectural requirements for Grid trust and resource management
- Generic business collaboration patterns identified
  - Analysis service provision
  - Data publication/subscription
  - Brokering/Supply chain
  - Grid license distribution
- Focus on export policies for IPR management and economics is critical
- Many functional services exist but tend not to be designed to be constrained in this way...
SIMDAT Architecture

Problem Solving Environments

Workflow

Information

Data

Security

Core

Execution Management

Resource Management

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SIMDAT Technologies

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SIMDAT Interfaces

Functional

Business Models

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GRIA Overview

• Open source Grid middleware aimed at supporting B2B collaborations
• V4.3.0 has easy-to-use yet powerful functionality
  – business-to-business accounting and QoS services
  – distributed file transfer, storage and processing
  – OGSA-DAI database services (new in GRIA v4.3)
  – Taverna workflow tools and service also available separately
• Off the shelf security components
  – transport and message level security
  – dynamic authorisation linked to business processes and trust
  – firewall friendly
• Standards compliance
  – WS-I Basic Profile and WS-I Basic Security Profile
“Fast” Virtual Organisations

- GRIA’s dynamic federation
  - user-driven, transient
  - no prior infrastructure
  - optimises provider-consumer value exchanges
- Service Level Agreements
  - regulate use of resources
  - replace VO-level controls
- Good for fast collaborations
  - market-based services
  - lightweight, short-lived project collaborations
GRIA Developments for 2006 in SIMDAT and Other Projects

• GRIA 5.0 (Q1 2006)
  – **Standardised message structure** including WSRF and WS-I doc/literal profile.
  – **Dynamic Contextualised Security** based on WS-Trust/WS-Federation security token patterns
  – **End-to-end accounting services** supporting service provider/client liabilities, client side aggregation and account token issuing/verification
  – **Simplified quality of service** model based on SLAs offering coarse grained resource promises and softer cut-offs.

• GRIA 6.0 (Q4 2006)
  – **Dynamic workflow adaptation** (GridVM) allowing service providers to publish business process appropriate to business goals that can be enacted by clients at the point of use
  – **Standardised management component** allowing service providers to flexibly configure services that are required to fulfil business goals.
Conclusions

• Grid infrastructure successfully deployed in the 1st phase
• Real world application use cases driving architecture and infrastructure developments
• Architecture based on Grid solution portfolio
• Exploring implications for dynamic trust and resource management