Service-Grids based on UNICORE.
Outline.

- Service Grids: Vision, Strategy and Activities
- The Role of UNICORE in Service-Grids for the Technical Computing Market
- Service-Models and Examples for Customer-Environments
- Release-Management
- New Business Models
Vision & Strategy.
Motivation for Service Grids.

Our Customers are
- Geographically Distributed Organizations
- Virtual (temporary) Organizations

The Infrastructure Challenge
- Discovery and reservation of resources with dynamically changing availability (compute, data, networks, application services)
- Having each type of component under control, T-Systems has the potential to optimize service – environments for grid users

Competition & Cooperation
- Working across organizational boundaries
- Work is organized in projects
- Data often relates to multiple projects
Service-Grids.
Target-Architecture (2007-2010)

Resource-Providers

- Corporate Resources
  - Compute
  - Data
  - Applications
  - Services
  Resource-Information

- Provider Resources
  - Compute
  - Data
  - Applications
  - Services
  Resource-Information

Grid-Provider

- Grid-Infrastructure
  - Transport Infrastructure
  - AAA
  - Functionality
    + Compute-Grid
    + Data-Grid
    + Application-Grid

- Workflow
- Billing
- Brokerage
- Integration
- SLAs

Grid Service-Provider

dynamic, secure

dynamic, seamless, transparent
Service Grids.
Actual Activities – Resource-Provider

Provision of Resources as a Web-Service:
- Compute
- Storage
- Networks
- Applications
- Services

Provision of Information about Resources
- Price and Price Model
- Service-Levels (Availability, Performance, Operations-hours,...)
- Scope (Internal, Community, Public,...)
- WSDL-Compliant.
Service Grids.
Actual Activities – GRID-Provider

Provision of Transport Infrastructure
- Managed Network Services
  - Dynamic Provisioning
  - Reporting
  - Accounting
- Quality of Service

Provision of AAAA infrastructure
- Authorisation
- Authentification
- Accounting
- Audit

Operation of Grid-Middleware
- Application-Grids (e.g. UNICORE)
- Enterprise-Grids (e.g. InnerGrid)
- Data-Grids (e.g. Data-Finder)
Value Added Services based on UNICORE. Realisation.

- Customer-specific Solutions and Generic Services based on UNICORE.
  - Vertical Integration into Customer’s Value-Creation Chain
    - Modularisation and Horizontal Integration parallel to productive use
  - Actual Focus
    - Grid-Solutions for the inter-organisational access to resources.
      (Customer-Examples DWD, GRS and Team Shosholoza)
    - Integration of Compute-Services into Service-Oriented Architectures based on Webservices
      (Customer-Example DLR)
    - Second Generation Application Service Providing as a generic model for SMEs
    - Release Management for UNICORE and UNICORE/GS: Stable Production vs. Development
UNICORE based Access to Computing-Resources. Delivery-Model for DWD, GRS and Team Shosholoza
Technical Computing/CAE – Business Model.
3-Tier Architecture

Tier 1
- Client
- Test- and Development Environments
  - Compiler/Cross-Compiler
  - Analysis-Tools (Debugger, Performance,...)
  - Applications, Pre- and Postprocessing

Tier 2
- Local
- Production-Environments for Throughput
  - System- and Application Management
  - Integration
  - Cluster, SMP-Server (RISC/Vector)
  - Capacity
  - Capacity-Risk on Customer Side
  - Systems are owned by customer or T-Systems

Tier 3
- Remote
- HPC
  - Top-End Capability
  - Dynamic Provisioning

Grid-Technology
- Service-Desk/Control-Center

T-Systems Solutions for Research GmbH
HPC / Grid Services
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HPC-Services Tier 3.
Virtualisation.

Scope

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<td>Hosting &amp; ASP / Dynamic Provisioning</td>
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Computing Services
- Infrastructure
- Security Services & Solutions
UNICORE in a Production-Environment: View of GRS - Users

The UNICORE-Client shows all USites/VSites reachable for Customers of GRS as of today.
Actual Activities: Application-Integration in the UNICORE-Client
Services: Integration of Compute-Services in a SOA Framework @ DLR based on UNICORE/GS (2006)

UNICORE/GS -> SPS -> Web-Applications -> Exchange -> DB (SQL, Oracle,...) -> SAP R/3

CoMet (Corporate MetaDirectory)
Release Management: Service and Development Aspects

T-Systems SfR offers Service:
- Testing
- Debugging
- Change Integration

Customer needs Stability

DWD
GRS
DLR

Developer wants Innovation

UniGrids
NextGrid
IN-Grid
New Business-Models: Second Generation ASP. Learning from the ISPs......
Services: Second Generation ASP.
Actual Problems to Solve

- Refinement and Expansion of Business-Models
  - Other Markets

- Reliable Services with strict SLAs based on Open Source Components.
  - How can risk be managed?
  - Liability Issues
  - Contracting Functional Descriptions rather than Technical Solutions?

- Model for the Collaboration with ISVs
  - The Licensing Problem if commercial software-components are involved.
Conclusions.

- Service-Grids are still a vision

but:

- Components of Service-Grids are ready for productive use.

- As a vertically integrated solution, UNICORE is ready for integration into delivery-concepts and business models
  - Low technical risk (compared to the actually available toolboxes)
  - Stable environment
  - Low financial risk
Thank you.

T-Systems Solutions for Research GmbH
Solutions & Innovation

Tel: +49-711-6862-330
Mobile: +49 151 121 32995
Fax: +49-711-6862-717
mailto: alfred.geiger@t-systems.com
Internet: http://www.t-systems.com