

Open Workshop on e-Infrastructures, Helsinki October 4 – 5, 2006

Roadmap Parallel Session on last chapter of e-IRG Roadmap:

Crossing the Boundaries of Science

Summary of Discussion



Current Roadmap: Main Topics are about:

- sharing of electronic infrastructure resources
- cross-disciplinary interaction
- advanced ICT collaboration tools
- building communities around the grid
- collaboration and information exchange with industry
- combining efforts from research and from industry



Current e-IRG Roadmap offers two directions which help crossing the boundaries of science:

- collaboration tools and environments

- working together with industry



Suggestion of the Roadmap

- Foster collaboration among researchers and industry
- similarly to the Internet and the WWW
- -collaboration can stimulate and help crossing the boundary of science
- From Science <--> Science
- To Science < - > Industry and Society
- To Industry < - > Industry

Our Vision :

The Three Waves of Grid Computing

2000







The Research Wave

Technology, Prototypes Virtual Organizations Standards GGF, IETF



The Industry Wave

Grid- Enabled Products Enterprise Solutions Interoperability GGF, EGA, IETF, OASIS



The Consumer Wave

Commodity IT Utility Integration Legal, Ethical, Political Orgs

2008

Grid is a Journey . . .



Old World

Static

Silo

Physical

Manual

Application



New World

Dynamic Shared Virtual

Automated

Service

Transitioning from Silo Oriented Architecture to Service Oriented Architecture

Benefits of Grid Computing

- Resource Utilization: increase from 20% to 80+%
- **Productivity**: more work done in shorter time
- Business Agility: flexible actions and re-actions
- On Demand: get resources, when you need them
- Easy Access: transparent, remote, secure
- Sharing: enable collaboration over the network
- Failover: migrate/restart applications automatically
- Resource Virtualization: access compute services, not servers
- Heterogeneity: platforms, OSs, devices, software
- Virtual Organizations: build & dismantle on the fly

Research



Where do we want to be in 2020 ?

- Boundary-less collaboration
- Do new things

- open system, vendor neutral, integrate basic/generic services into infrastructure,

no monopoly in core infrastructure

- Researcher view: transparent, flexible, adaptive, user-friendly, service-based, get the right services, secure, reliable, privacy, pervasive, quality
- access to data repositories and other resources
- secure: authentication and authorization, single sign-on and sign-out
- utility, pay-as-you-go, service providers
- access for every (single) researcher everywhere world-wide

Research



Barriers ?

- immature software, complexity, low quality
- still missing standards
- level of interoperability and integration is low

Research



Next steps ?

- improve infrastructure components and their integration
- enforce/encourage open processes and open standard
- service oriented programming model
- Establish metrics to measure usage, sharing etc for e.g. cost, efficiency, trends,
- awareness of benefits and needs for users
- publish use cases



Industry, Commerce, Business

Where do we want to be in 2020 ?

- global collaboration with suppliers and partners
- global service oriented infrastructure
- dynamic, adaptive services, flexible and collaborative process in an evolving economy
- pay as you go
- utility
- strengthen (European) competitiveness

Industry, Commerce, Business



Barriers ?

- •Sensitive data, sensitive applications (medical patient records)
- Accounting, who pays for what (sharing!)
- •Security policies: consistent and enforced across the grid !
- •Current IT culture is not predisposed to sharing resources
- •Not all applications are grid-ready or grid-enabled
- •SLAs based on open source (liability?)
- "Static" licensing model don't embrace grid
- Protection of intellectual property
- •Legal issues (FDA, HIPAA, multi-country grids)



Industry, Commerce, Business

Next Steps ?

- join and try existing grids initiatives for free
- collaboration of research and industry
- standards
- encourage service providers
- analyze customer needs and provide related services
- analyze issues (legal, ethical, economical,...)





Where do we want to be in 2020 ?

- Benefiting of an enhanced Web x.0 for e-Health, e-Pleasure, e-Govt,

e-Education

- Transparent access to e-Services
- pay as you go or subscription model





Barriers:

- •No easy access so far
- •Users are not clear about the benefits so far
- •Sensitive data, sensitive applications, trust (medical patient records)
- •Security policies: consistent and enforced across the grid !
- •Service level agreements (SLAs)
- •Legal issues (FDA, HIPAA, multi-country grids)

Society



Next steps:

- Build out service infrastructure
- Web access
- Create awareness for the benefits
- Solve security, trust, privacy issues
- Develop and publish use cases which demonstrate the benefits