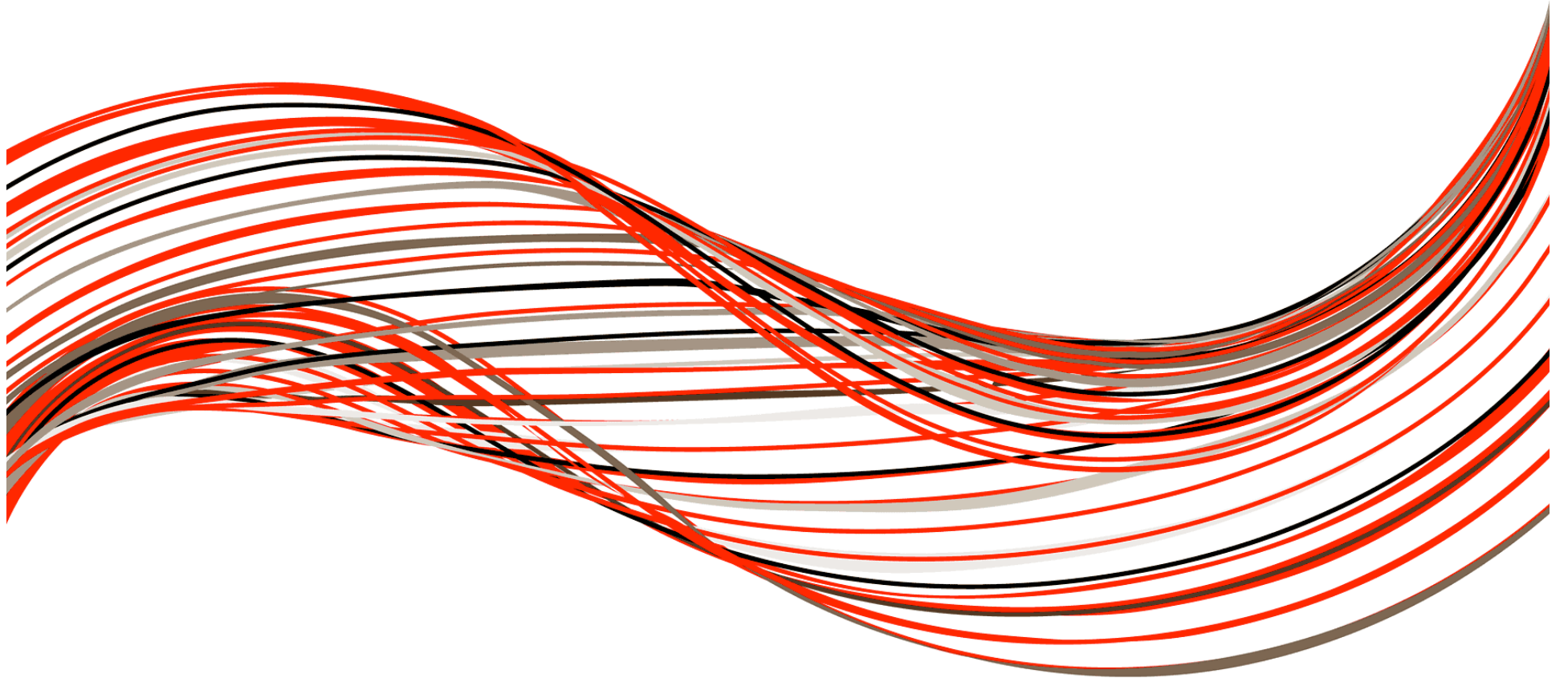




THE POSSIBILITIES ARE INFINITE



1st March 2006

W3C

Technical Plenary 2006

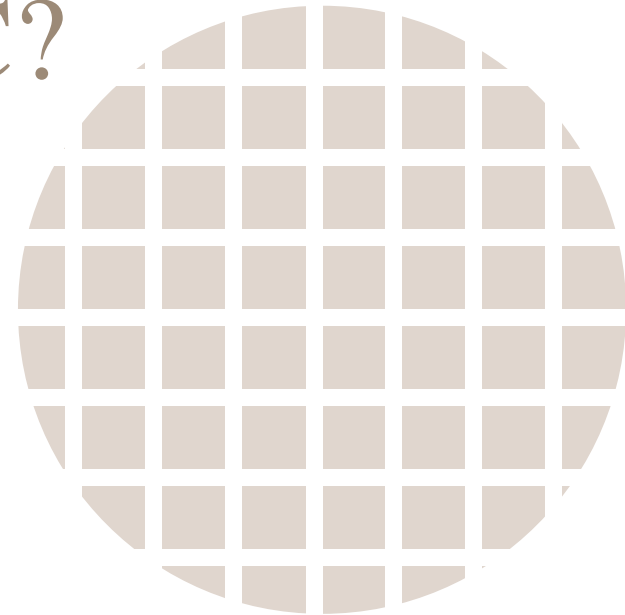


THE POSSIBILITIES ARE INFINITE

What is the Grid and Why Does it Matter to W3C?

Dr. David Snelling

- Fujitsu Laboratories of Europe
- Vice Chair Standards Global Grid Forum
- Co-chair OASIS/WSRF-TC



Notions of Grids

- Parallel Processing Systems
 - Parallel processing for single applications



Increasing Revenue and complexity

Notions of Grids

- Clusters
 - Networks of Workstations, Blades, etc.
 - Cycle scavenging, Homogeneous workload
 - Business model: Lower marginal costs
- Parallel Processing Systems
 - Parallel processing for single applications



Increasing Revenue and complexity

Notions of Grids

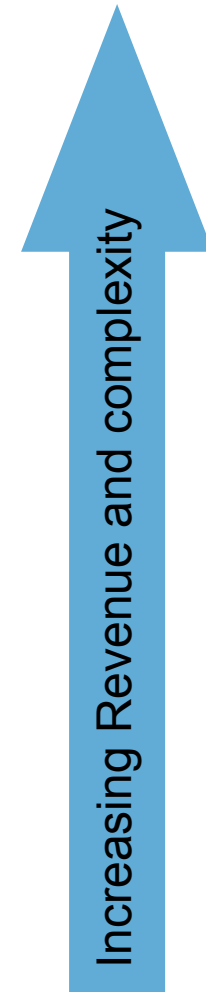
- Enterprise Grids
 - Virtualization of enterprise resources and applications
 - Aggregation and centralization of management
 - Business model: Reduce total cost of ownership
- Clusters
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Increasing Revenue and complexity

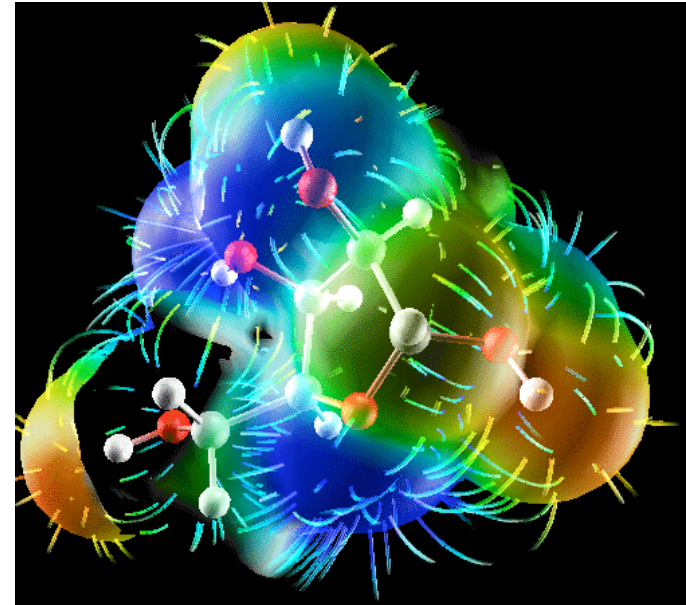
Notions of Grids

- Collaboration Grids
 - Multiple institutions, secure, widely distributed, VOs
 - Service level agreements & commercial partnerships
 - Business model: Increase overall revenue
- Enterprise Grids
 - Virtualization of enterprise resources and applications
 - Aggregation and centralization of management
 - Business model: Reduce total cost of ownership
- Clusters
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Parallel Processing and Cluster Grids

- Parallel Processing
 - Tightly coupled distributed systems
 - Standards:
 - MPI and OpenMP
 - Aimed at High Performance Computing
 - Code portability and performance matter
- Cluster Grids
 - Loosely coupled distributed systems
 - Efficient scheduling of nodes for throughput
 - No standards, lots of players
 - Queuing systems: LSF, PBS, LoadLeveler, ...
 - Specialist systems: CyberGRIP, gridMatrix, ...



Enterprise Grids Today

- Enterprise Grids are about
 - Virtualization: Uniform encapsulation of resources:
 - Compute, data, applications, support, ...
 - Integration: Creation of a structured whole from the parts.
 - Automation: Most management tasks, mostly automatic.
- Examples
 - Fujitsu's Triole Strategy
 - Oracle's 10g Platform
 - Sun's N1 Suite
 - HP's Adaptive Enterprise
 - IBM's "On Demand" Business
- Run your required services as efficiently as possible.



Collaboration Grids Today

- Production First Generation Collaboration Grids
 - UK National Grid Service and TeraGrid
 - Running Globus GT2
 - Team Shosholoza and others
 - Running Unicore
- Web Service Collaboration Grids
 - Experimental Deployment
 - Globus GT4, Unicore/GS
 - Barriers
 - Confusion wrt Plain Web Services
 - Politics of the Standards Process
- Create new business opportunities through collaboration using Enterprise Grid technology as a basis.
 - Requirements beyond Enterprise Grids:
 - Discovery, Security, Virtual Organizations (VOs), Decoupling, Composition ...



Convergence: Enterprise & Collaboration Grids

- Technical Convergence
 - From Enterprise Grids
 - Sophisticated virtualization
 - Management infrastructure
 - Automation
 - From Collaboration Grids
 - Multi-domain security
 - Cyber partnerships (VOs)
 - Outsourcing
- The Need for Standards
 - Within the Enterprise
 - Flexibility!
 - Between Enterprises
 - Interoperability!

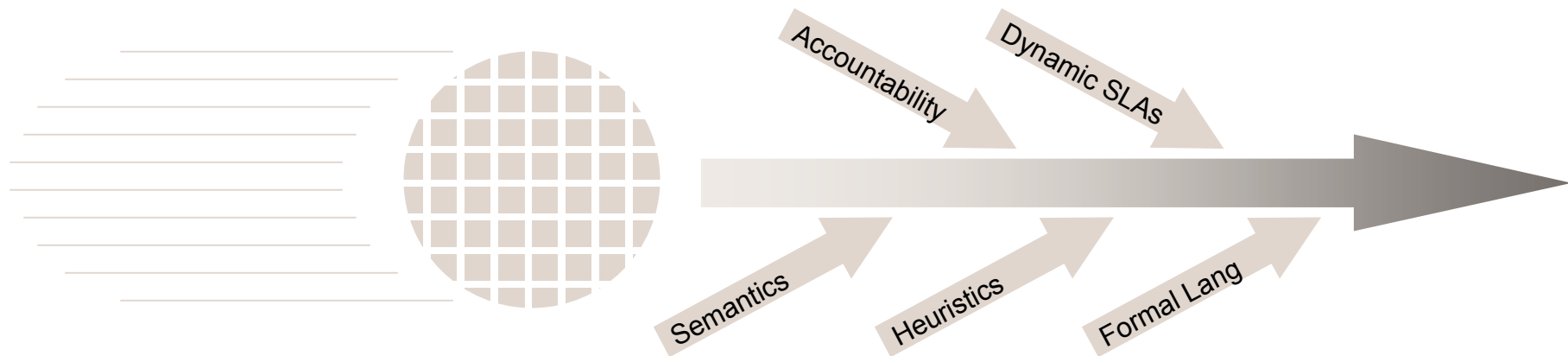


Why is Grid Important to the W3C?

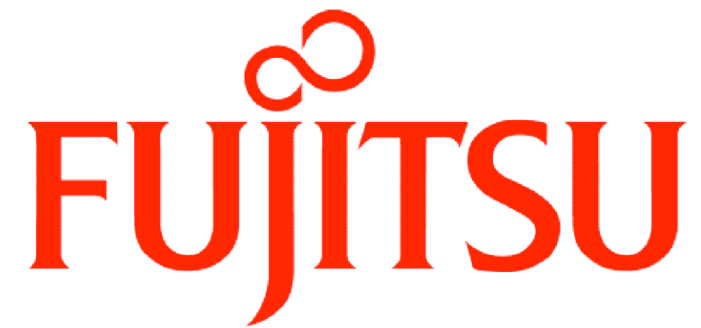
- Cluster and Enterprise Grids
 - Consumers of the W3C
 - Technology for management standards
 - These Grids are the “Power Behind” the WWW.
 - Isolated inside the corporate boundary
 - Mostly orthogonal concerns
- Collaboration Grids
 - Extend outside the corporate boundary
 - Across the whole Web
 - Overlapping concerns
 - Naming, Identity, and Addressing
 - Service and Resource Discovery
 - Dynamic Composition
 - ...

The Future of Grids

- Once the standards are in place we can move forward ...



- Next Generation Grids
 - Distributed, dynamic accountability
 - New dynamic business relationships
 - “On the fly” Service Level Agreements (SLAs)
- Service Oriented Knowledge Utilities[†]
 - Semantics, Heuristics, Formal Languages



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