OGF and Standards

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based on material by:

Dr. David Snelling, Fujitsu Laboratories of Europe

"The good thing about standards is that there are so many to chose from."

Andrew S. Tanenbaum

- In 2006, the Open Grid Forum (OGF) has been formed as a merger between
  - The Global Grid Forum (GGF)
  - The Enterprise Grid Alliance (EGA)

- Now, at least, there is one *standards organization* less to chose from...

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Motivation

- Need for Standards
  - Stability, Choice, Flexibility, Competition, Collaboration, ...

- To Develop Standards we Need Clarity
  - Definitions of concepts
  - Organization of work through Architectural Frameworks

- We also Need a Roadmap
  - Accelerate the development of the "right" specifications
  - Track gaps and requirements
  - Demonstrate progress
  - Support planning in industry and research

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Grid Domains of OGF

- ## Collaboration Grids
  - Multiple institutions, secure, widely distributed, VOs
  - Collaborative agreements & commercial partnerships
  - Financial Model: Increase overall revenue

- ## Enterprise Grids
  - Centralized management of multiple platforms
  - Aggregation of enterprise resources and applications
  - Financial Model: Reduce Total Cost of Ownership (TCO)

- ## Clusters
  - Networks of Workstations, Blades, etc.
  - Cycle scavenging, Homogeneous workload
  - Financial Model: Lower marginal costs

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Parallel Processing and Cluster Grids

- Parallel Processing
  - Tightly coupled distributed systems
  - Standards:
    - MPI and OpenMP
  - Aimed at HPC
  - Code portability and performance!

- 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, ...

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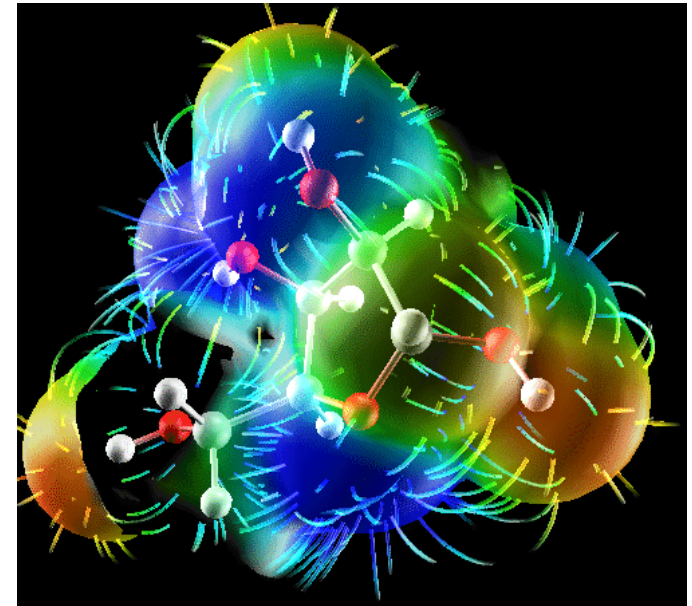
Enterprise Grids Today

- 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.

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Collaboration Grids Today

- 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
  - 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)
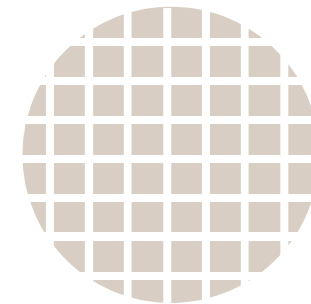   - Outsourcing

- The Need for Standards
  - Within the Enterprise
    - Flexibility!
  - Between Enterprises
    - Interoperability!

- Forrester's
  - "Digital Business Networks"[†]

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† http://www.forrester.com/go?docid=38314

How OGF can help:

Open forum for grid innovation and outreach

Open standards for grid software interoperability

Uses Cases

Alignment & Prioritization

Architectures

OGF Events

Requirements

Requirements Workshops

Technical Strategy Committee

OGF Technical Strategy & Roadmap

Standards Groups & Workshops

Milestones

Best Practices

OGF Document Series

Alignment & Prioritization

Specifications

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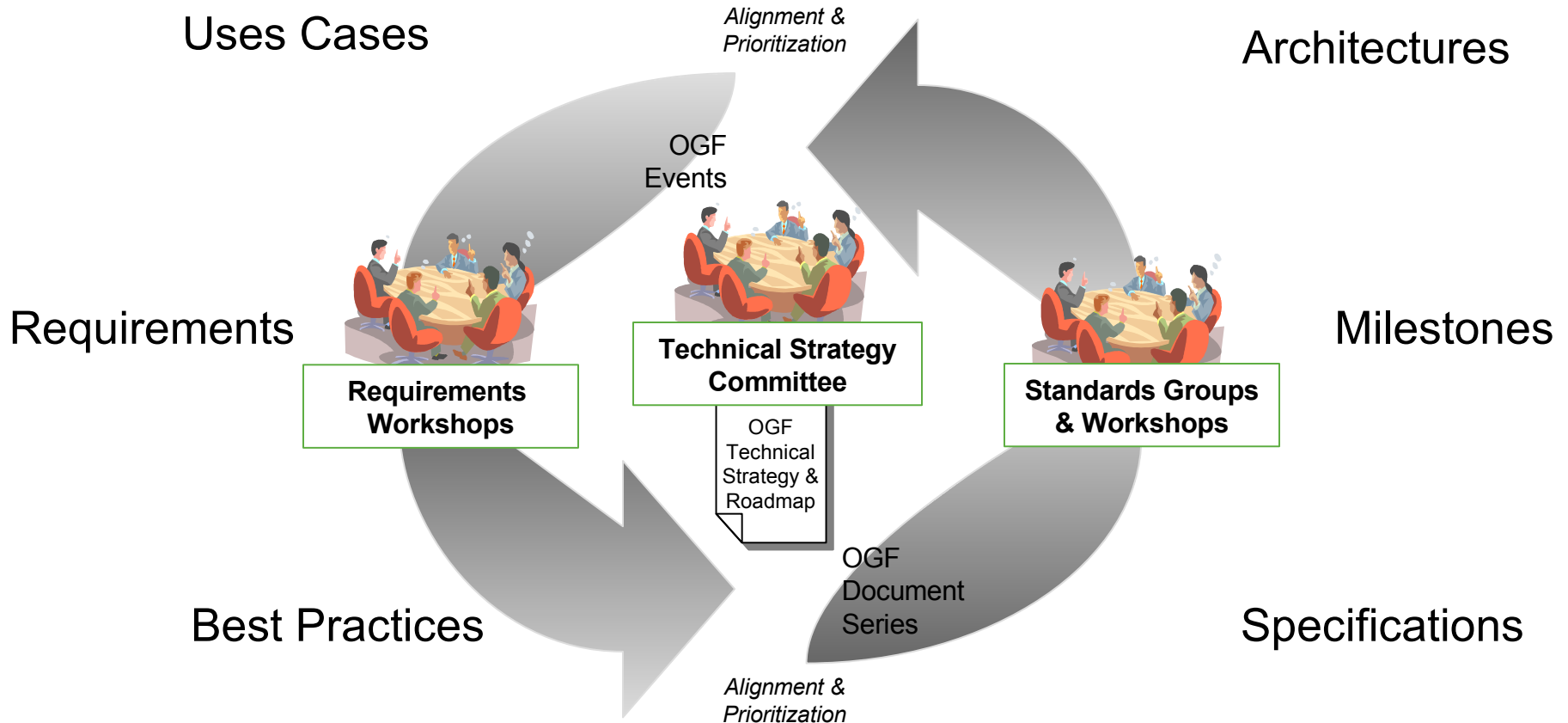
Standards Overview

- Set in the context of
    - e-Science
    - Enterprise
- Promote
    - Uptake
    - Interoperability
- Run by a Process
- Output in the form of Documents

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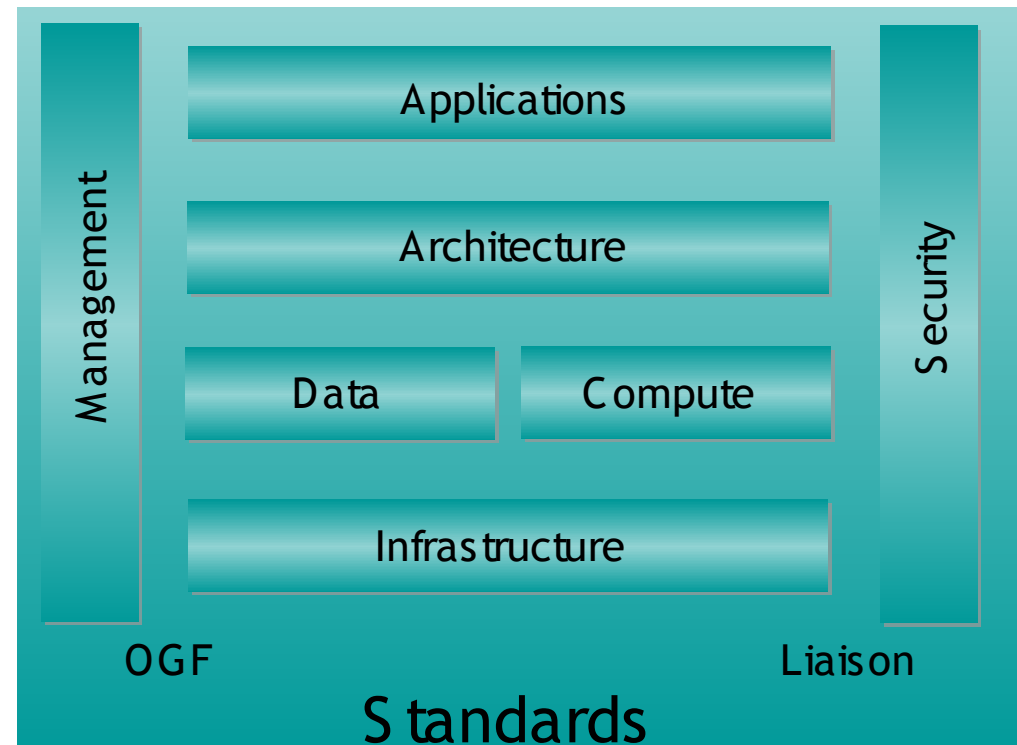
Standards Development

- Short Version of the Process
  - A group of people interested in creating a standard hold a BoF (optional).
  - Grid Forum Steering Committee Approves a WG
  - In an open forum, the WG writes the specification
  - GFSG Review
  - Public Review
  - Final approval and publication
- Complex Open Process, …
  - but things can move very fast when there is energy available.

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Setting Strategy in OGF

- Planning Technical Strategy in a Volunteer Run Organization?
- Do
  - Observe activity
  - Identify synergy
  - Encourage elements on the critical path
  - Point a way forward (roadmap)
  - Communicate community priorities across the community
- Don't
  - Try telling people what they should do

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Technical Strategy Committee

- Role
  - Develop a Technical Strategy for OGF
  - Maintain a roadmap of OGF activity
  - Communicate with the community
- Current Membership
  - D. Snelling (chair), S. Newhouse, A. Merzky, G. Fox, R. Fogle, H. Eiron, I. Foster, C. Kantarjiev, T. Maguire, and J. Replogle (secretary)
- GridForge Project: TSC
  - A very early draft strategy document available

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"Moon Shot" Goal

The Open Grid Forum should commit all its available resources to the goal that before this decade is out, commercial and academic organizations will build real operational grids using Open Grid Forum defined components.

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Topics of Standardisation

- Grid APIs

- Job Submission

- File Movement

- Application Provisioning

- Data Provisioning and Data Grids

- Grid Security

- Open Grid Services Architecture (OGSA)

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OGSA: Status February 2006

OpenGridForum

	SYSTEMS MANAGEMENT	GRID COMPUTING	UTILITY COMPUTING

Use Cases & Applications

Distributed query processing   Data Centre

Collaboration   Persistent Archive   ASP   Multi Media

Core Services

VO Management

OGSA Self Mgmt	OGSA-EMS	WS-DAI
Information	WSDM	Discovery
GGF-UR	WS-BaseNotification	Naming
Privacy	Trust	GFD-C.16

Base Profile

| WSRF-RP | WSRF-RL | Data Model |

| WSRF-RAP | WS-Security | SAML/XACML | X.509 |

| WS-Addressing | HTTP(S)/SOAP | WSDL | CIM/JSIM | Data Transport |

| Hole | Gap | Evolving | Standard |

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Roadmap Snapshot

Grid APIs	SAGA	WrkGrp	Dec 06: Spec	Dec 07: Product	Applications
	DRMAA	Interop			Applications
Job Submit	JSDL1.0	Spec 56	Jun 07: Product	Dec 07: Deploy	Compute
	OGSA-BES	Draft	Oct 06: Spec	Dec 07: Product	Compute
	HPCProfile	WrkGrp	Dec 06: Spec	Dec 07: Product	Compute
File Movement	DMI	WrkGrp	Dec 06: Spec	Dec 07: Product	Data
	ByteIO	Interop	Oct 06: Spec	Dec 07: Product	Data
	GridFTP	Product	Dec 06: Deploy		Data
Data Provisioning	WS-DAI	Spec ##	Aug 07: Product	Mar 08: Deploy	Data
	WS-DAIR	Spec ##	Aug 07: Product	Mar 08: Deploy	Data
	WS-DAIX	Spec ##	Aug 07: Product	Mar 08: Deploy	Data
Application Provisioning	CDDLM	Spec 69	Aug 07: Product	Mar 08: Deploy	Management
	ACS	Spec ##	Aug 07: Product	Mar 08: Deploy	Management
Secure Channel	OGSA-SBP-Core	Spec ##	Aug 07: Product	Mar 08: Deploy	Architecture
Establishment	OGSA-SBP-SecChan	Spec ##	Aug 07: Product	Mar 08: Deploy	Architecture
Attribute Based Authorization	OGSA-AuthZ-SAML	Spec 66	Aug 07: Product	Mar 08: Deploy	Security

Implementations of GGF/OGF Specifications

- GFD.56: JSDL   6

- GFD.62: PMA Charter   3

- GFD.24: GSSAPI extensions   6

- GFD.15: OGSI   5

- GFD.20: GridFTP   5

- GFD.52: GridRPC API   4

- GFD.22: DRMAA   4

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Implementations of GGF/OGF Drafts

- GWD.xx: SAML authorization callout   3
- GWD.xx: VOMS attribute certificate format   4
- GWD.xx: Daonity   1
- GWD.xx: OGSA BES   2
- GWD.xx: GGF Usage Record   4
- GWD.xx: Usage Record Service   4
- GWD.xx: WS-Agreement   6
- GWD.xx: OGSA Byte IO   2
- GWD.xx: WS-Naming   1
- GWD.xx: SAGA   3

Implementations of GGF/OGF Drafts

- GWD.xx: CDDLM Smart Frog Language   1

- GWD.xx: CDDLM Component Model   4

- GWD.xx: CDDLM Deployment API   4

- GWD.xx: CDDLM XML-CDL   4

- GWD.xx: ACS   2

- GWD.xx: WSRF OGSA Base Profile   3

- GWD.xx: OGSA BSP Core   3

- GWD.xx: OGSA BSP Secure Channel   3

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Other Implementations

- GGF Derived Specifications
    - RFC3820   5
    - WSRF   5
    - WSN   5

- GFD.16 Certificate Policy Model   40+

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Summary

- Standards Development Process
- Technical Strategy Process
  - This mission is part of that process
- Strategy Snapshot
  - Draft Document:
    - https://forge.gridforum.org/sf/projects/tsc
  - WG's living charters

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