OpenGridForum

OPEN FORUM | OPEN STANDARDS

Assessing Success and Uptake for New Standards in Cloud and Grid Computing

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Globus World
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About the Open Grid Forum:

Open Grid Forum (OGF) is a leading global standards development organization operating in the areas of cloud, grid and related forms of advanced distributed computing.

The OGF community pursues these topics through an **open process** for development, creation and promotion of relevant specifications and use cases.

OGF actively engages partners and participants throughout the international arena through an **open forum with open processes** to champion architectural blueprints related to cloud and grid computing.

The resulting specifications and standards enable **pervasive adoption of advanced distributed computing techniques** for business and research worldwide.

History and Background

- OGF began in 2001 as an organization to promote the advancement of distributed computing worldwide.
- Grid Forum --> Global Grid Forum --> GGF + Enterprise Grid Alliance --> formation of OGF in 2005.
- Mandate is to take on **all forms of distributed computing** and to work to promote cooperation, information exchange, **best practices in use and standardization**.
- OGF best known for a series of important computing, security and network standards that form the basis for major science and business-based distributed computing (BES, GridFTP, DRMAA, JSDL, RNS, GLUE, UR, etc.).
- Have also been working on cloud and Big Data standards (OCCI, WS-Agreement, DFDL, etc.) for several years.
- Cooperative work agreements with other SDOs in place.

Starting Point for OGF Documents:

http://ogf.org/documents

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OGF Document Series

Click on the Document Number (GFD.n) to view the document or view **all the documents in Editor pipeline.**

Showing documents 1-10 of 181. | **First** | **Prior** | Next | **Last** | **All**

Document	Title	Document Type	Author(s)	Publication Date	Area/Group
GFD.200	Web Services Data Access and Integration - The RDF(S) Realization (WS-DAIRDFS) RDF(S) Querying Specification, Version 1.0	P-REC	I. Kojima, S. M. Pahlevi, S. Lynden	2013-01-10	Data DAIS-WG
GFD.198	Distributed Resource Management Application API Version 2 (DRMAA) - C Language Binding	P-REC	P. Tröger, R. Brobst, D. Gruber, M. Mamonski, A. Merzky	2012-11-04	Applications DRMAA-WG
GFD.197	Example set of DFDL 1.0 properties	INFO	S. Hanson	2012-09-06	Data DFDL-WG
GFD.196	Firewall Traversal Protocol (FiTP)	P-REC	R. Niederberger	2012-08-19	Infrastructure FVGA-WG
GFD.195	SAGA API Extension: Information System Navigator API	P-REC	S. Fisher, A. Wilson	2012-03-12	Applications SAGA-WG
GFD.194	Distributed Resource Management Application API Version 2 (DRMAA) [Obsoletes GFD.22, GFD.130 and GFD.133]	P-REC	P. Tröger, R. Brost, D. Gruber, M. Mamoński, D. Templeton	2012-11-04	Applications DRMAA-WG
GFD.193	WS-Agreement Negotiation Version 1.0	P-REC	O. Waeldrich, D. Battré, F. Brazier, K. Clark, M. Oey, A. Papaspyrou, P. Wieder, W. Ziegler	2011-10-10	Compute GRAAP-WG

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OGF Standards

- OGF has extensive set of applicable standards related to federated community grid and cloud computing:
  - Federated Identity Management (FedSec-CG)
  - Managing the Trust Eco-System (CA operations, AuthN/AuthZ)
  - Virtual Organizations (VOMS)
  - Job Submission and Workflow Management (JSDL, BES)
  - Network Management (NSI, NML, NMC, NM)
  - Secure, fast multi--party data transfer (GridFTP, SRM)
  - Data Format Description (DFDL)
  - Service Agreements (WS-Agreement, WS-Agreement Negotiation)
  - Cloud Computing interfaces (OCCI)
  - Distributed resource management (DRMAA, SAGA, etc.)
  - Firewall Traversal (FiTP)
  - Others under development
- Working to gather this information to form an organized description of OGF work - an OGF "**Cloud Portfolio**".

GFD Publication History To Date

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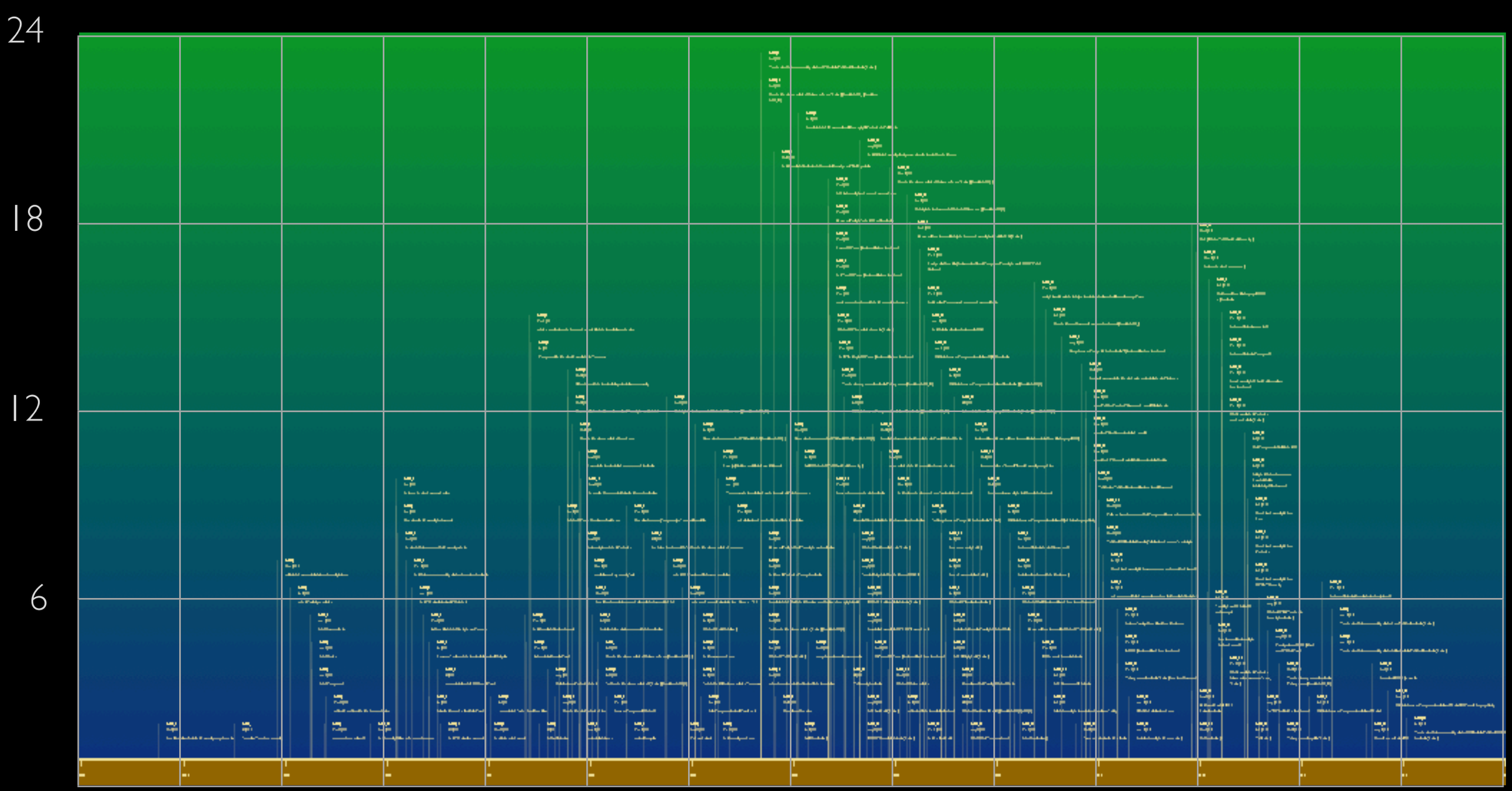


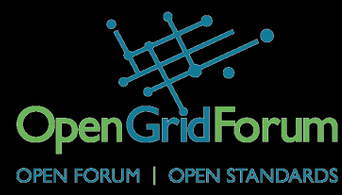
2000 - Early 2013 ...

GFD Publication History: Full Recommendations To Date

▼ REC			
GFD.52	2005	A GridRPC Model and API for End-User Applications	REC
GFD.87	2007	ByteIO Specification 1.0	REC
GFD.88	2007	ByteIO OGSAÂ® WSRF Basic Profile Rendering 1.0	REC
GFD.107	2007	Web Services Agreement Specification (WS-Agreement) [Obsoleted by GFD.192]	REC
GFD.22	2007	Distributed Resource Management Application API Specification 1.0 [Obsoleted by GFD.133]	REC
GFD.108	2007	OGSA® Basic Execution Service Version 1.0	REC
GFD.111	2007	JSDL HPC Profile Application Extension, Version 1.0	REC
GFD.114	2007	HPC Basic Profile, Version 1.0	REC
GFD.90	2008	A Simple API for Grid Applications (SAGA)	REC
GFD.129	2008	The Storage Resource Manager Interface Specification Version 2.2	REC
GFD.133	2008	Distributed Resource Management Application API Specification 1.0 [Obsoletes GFD.22]	REC
GFD.136	2008	Job Submission Description Language (JSDL) Specification, Version 1.0 [Obsoletes GFD.56]	REC
GFD.192	2011	Web Services Agreement Specification (WS-Agreement) [Obsoletes GFD.107]	REC
GFD.74	2012	Web Services Data Access and Integration - The Core (WS-DAI) Specification, Version 1.0	REC
GFD.76	2012	Web Services Data Access and Integration - The Relational Realisation (WS-DAIR) Specification, Version 1.0	REC

Full REC status represents OGF's highest level of output standard:
Requires documentation of multiple implementations in the field and a separate review after at least 6 months of practical experience.

GFD Publication History: Proposed Recommendations



▼ P-REC			
GFD.20	2003	GridFTP: Protocol Extensions to FTP for the Grid	P-REC
GFD.23	2004	A Hierarchy of Network Performance Characteristics for Grid Applications and Services	P-REC
GFD.72	2006	OGSA® WSRF Basic Profile 1.0	P-REC
GFD.75	2006	Web Services Data Access and Integration - The XML Realization (WS-DAIX) Specification, Version 1.0	P-REC
GFD.98	2007	Usage Record - Format Recommendation	P-REC
GFD.101	2007	Resource Namespace Service Specification	P-REC
GFD.109	2007	WS-Naming Specification	P-REC
GFD.110	2007	Information Dissemination in the Grid Environment - Base Specifications	P-REC
GFD.115	2007	JSDL SPMD Application Extension, Version 1.0	P-REC
GFD.130	2008	Distributed Resource Management Application API 1.0 - IDL Specification	P-REC
GFD.131	2008	Secure Addressing Profile 1.0	P-REC
GFD.132	2008	Secure Communications Profile 1.0	P-REC
GFD.134	2008	OGSA-DMI Functional Specification 1.0	P-REC
GFD.135	2008	HPC File Staging Profile, Version 1.0	P-REC
GFD.138	2008	OGSA® Basic Security Profile 2.0 [Obsoletes GFD.86, GFD.99]	P-REC
GFD.144	2009	SAGA API Extension: Service Discovery API	P-REC
GFD.147	2009	GLUE Specification v. 2.0	P-REC
GFD.149	2009	JSDL Parameter Sweep Job Extension	P-REC
GFD.151	2009	HPCBP Advanced Filter Extension	P-REC
GFD.157	2009	Use of WS-TRUST and SAML to access a Credential Validation Service	P-REC
GFD.158	2009	Use of SAML to retrieve Authorization Credentials	P-REC
GFD.159	2009	Use of XACML Request Context to Obtain an Authorisation Decision	P-REC
GFD.172	2010	RNS 1.1 OGSA WSRF Basic Profile Rendering 1.0	P-REC
GFD.171	2010	RNS Specification 1.1	P-REC
GFD.174	2011	Data Format Description Language (DFDL) v1.0 Specification	P-REC
GFD.178	2011	SAGA API Extension: Message API	P-REC
GFD.177	2011	SAGA API Extension: Advert API	P-REC
GFD.186	2011	Data Management API within the GridRPC	P-REC
GFD.188	2011	WS-Iterator 1.0	P-REC
GFD.185	2011	Open Cloud Computing Interface - RESTful HTTP Rendering	P-REC
GFD.184	2011	Open Cloud Computing Interface - Infrastructure	P-REC
GFD.183	2011	Open Cloud Computing Interface - Core	P-REC
GFD.187	2011	OGSA-DMI Plain Web Service Rendering Specification 1.0	P-REC
GFD.193	2011	WS-Agreement Negotiation Version 1.0	P-REC
GFD.194	2012	Distributed Resource Management Application API Version 2 (DRMAA) [Obsoletes GFD.22, GFD.130 and GFD.133]	P-REC
GFD.195	2012	SAGA API Extension: Information System Navigator API	P-REC
GFD.196	2012	Firewall Traversal Protocol (FiTP)	P-REC
GFD.198	2012	Distributed Resource Management Application API Version 2 (DRMAA) - C Language Binding	P-REC
GFD.200	2013	Web Services Data Access and Integration - The RDF(S) Realization (WS-DAIRDFS) RDF(S) Querying Specification, Version	P-REC

OGF Standards In Use In Industry:

- DRMAA: Distributed Resource Management Application API

  Grid Engine, Open Grid Scheduler: (open source); TORQUE and related products: *Adaptive Computing*; PBS Works: *Altair Engineering*; Gridway: *DSA Research*; Condor: U. of Wisconsin / *Red Hat*;

- OGSA® Basic Execution Service Version 1.0 and BES HPC Profile:

  BES++ for LSF/SGE/PBS: *Platform Computing*; Windows HPC Server 2008: *Microsoft Corporation*; PBS Works - (client only): Altair Engineering;

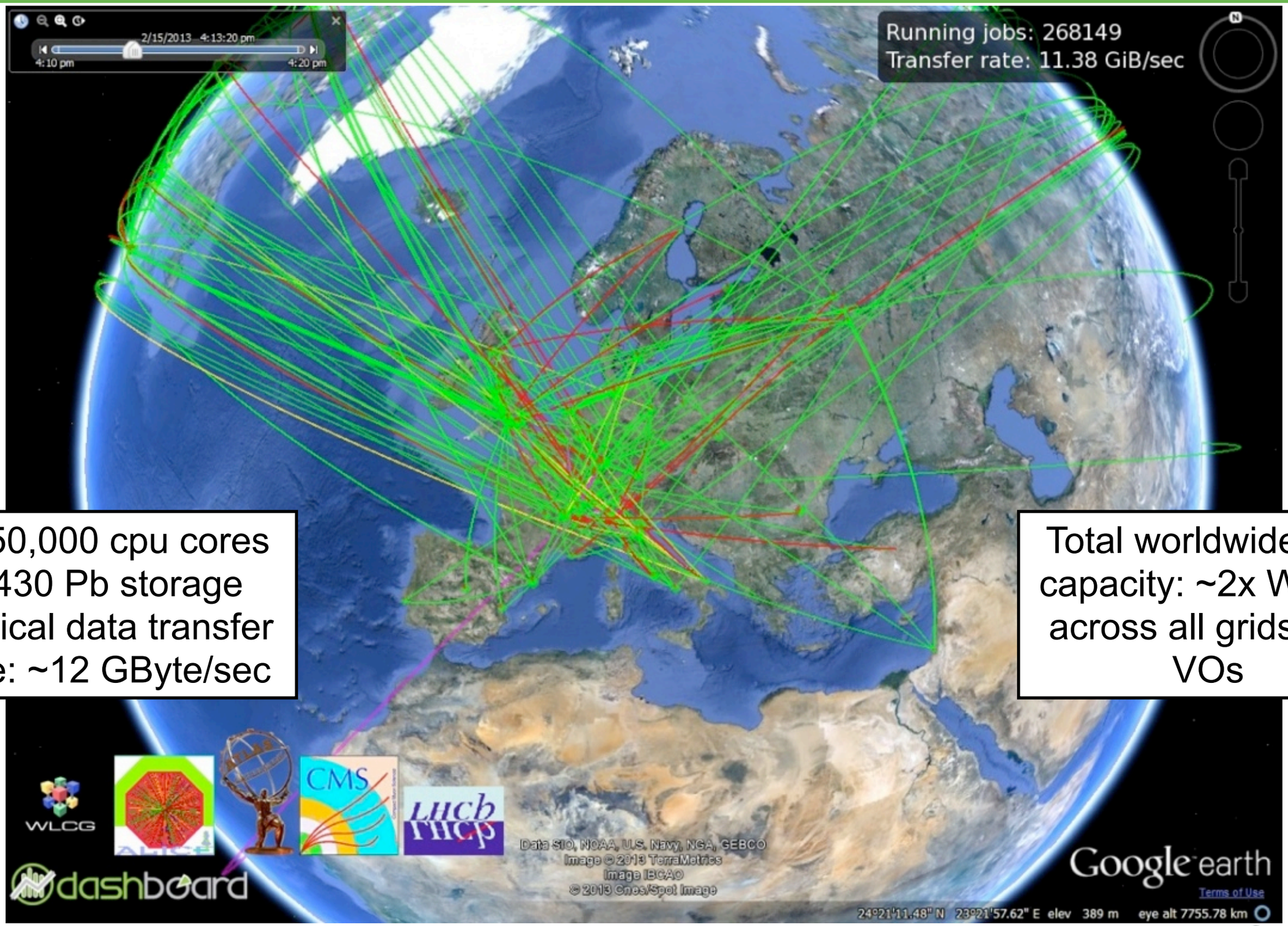
- JSDL: Job Submission Description Language (family of specifications):

  BES++ for LSF/SGE/PBS and Platform LSF: Platform Computing; Windows HPC Server 2008: Microsoft Corporation; PBS Works - (client only): Altair Engineering;

- WS-Agreement (family of specifications):

  ElasticLM License-as-a-Service: *ElasticLM*; BEinGrid SLA Negotiator, LM-Architecture and Framework: (Multiple partners); BREIN SLA Management Framework: (Multiple partners); WSAG4J, Web Services Agreement for Java (framework implementation): *Fraunhofer SCAI*.

Example: Worldwide LHC Computing Grid



~450,000 cpu cores
~430 Pb storage
Typical data transfer rate: ~12 GByte/sec

Total worldwide grid capacity: ~2x WLCG across all grids and VOs

LSN-MAGIC Meeting
February 22, 2012

XSEDE: The Next Generation of US Supercomputing Infrastructure

The Role of Standards for Risk Reduction and Inter-operation in XSEDE

Andrew Grimshaw

XSEDE
Extreme Science and Engineering Discovery Environment

OGF standards power some of the largest supercomputing infrastructures in the world!

XSEDE cloud infrastructure still being written

XSEDE Services Layer: Simple services combined in many ways

- **Resource Namespace Service 1.1**
- **OGSA Basic Execution Service**
- **OGSA WSRF BP – metadata and notification**
- **OGSA-ByteIO**
- **GridFTP**
- **JSDL, BES, BES HPC Profile**
- **WS Trust Secure Token Services**
- **WSI BSP for transport of credentials**
- *… (more than we have room to cover here)*

Examples – (not a complete list)

Basic message (AFS): XSEDE represents a phase change in the engagement of OGF standards with US cyberinfrastructure.

Why Open Standards?

- *Risk reduction*
- *Best-of-breed mix-and-match*
- *Allows innovation/competition at more interesting layers*
- *Facilitates interoperation with other infrastructures*

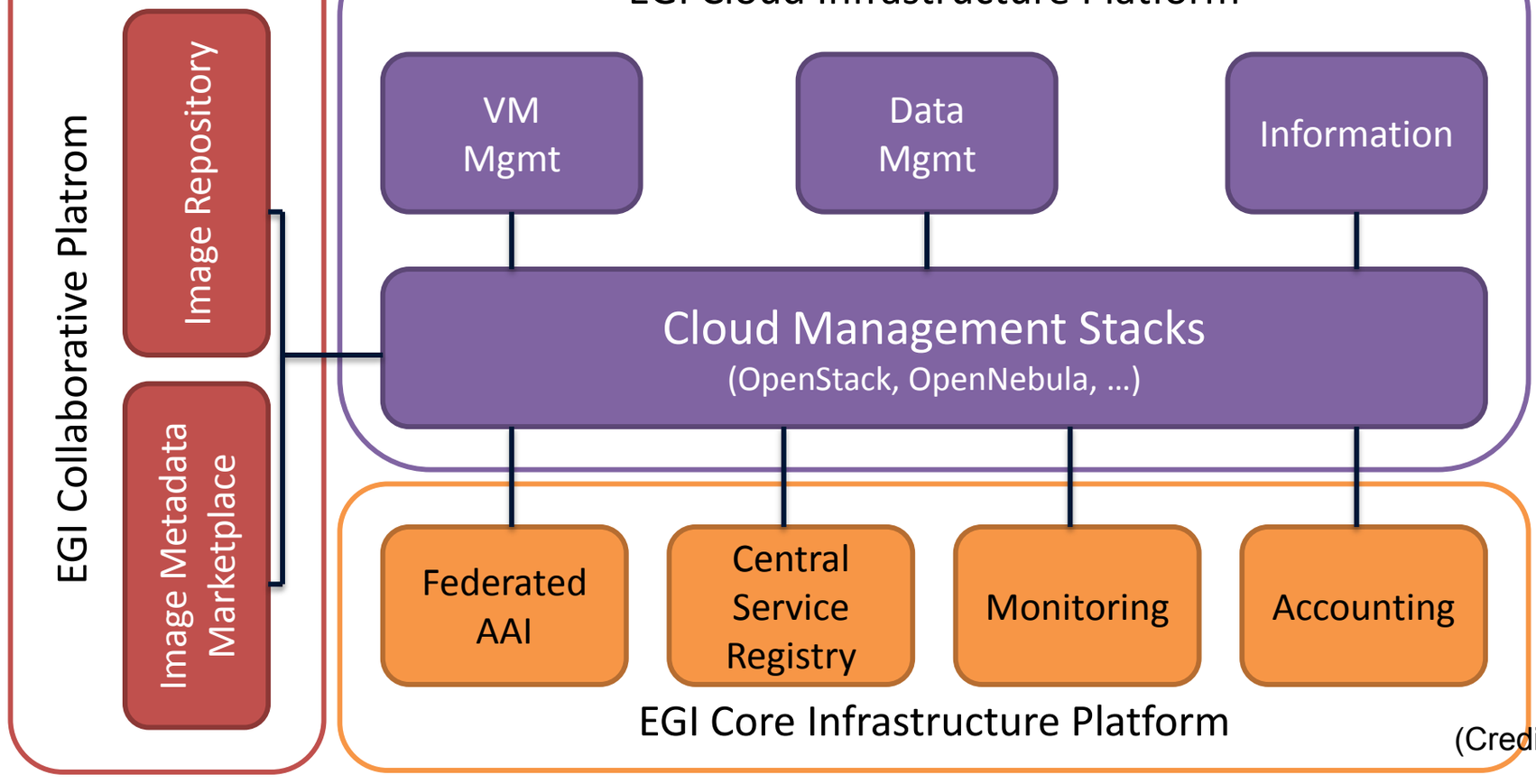
Takeaway message

- *The use of standards permits XSEDE to interoperate with other infrastructures, reduces risks including vendor lock-in, and allows us to focus on higher level capabilities and less on the mundane*

EGI Cloud Architecture:

Architecture

Enable an open ecosystem of services



(Credit: Steven Newhouse)

27/02/2013
EGI-InSPIRE RI-261323

CloudScape V

9
www.egi.eu

EGI Services & Standards:

Services [& Standards]

VM Mngmt
[OCCI 1.1]

Data
[CDMI 1.0
& OVF 1.1.0]

Information
BDII/GOCDB
[GLUE 2.0]

Clients

Brokers

AAI
VOMS
[X509 & EUGridPMA]

Resource Providers
OpenNebula, OpenStack, WNoDeS, StratusLab, Okeanos

Monitoring
Nagios
SAM

Image Mgmt
Marketplace
vmcatcher

Accounting
APEL
[UR *& StAR*]

Message Bus
ActiveMQ

(Credit: Steven Newhouse)

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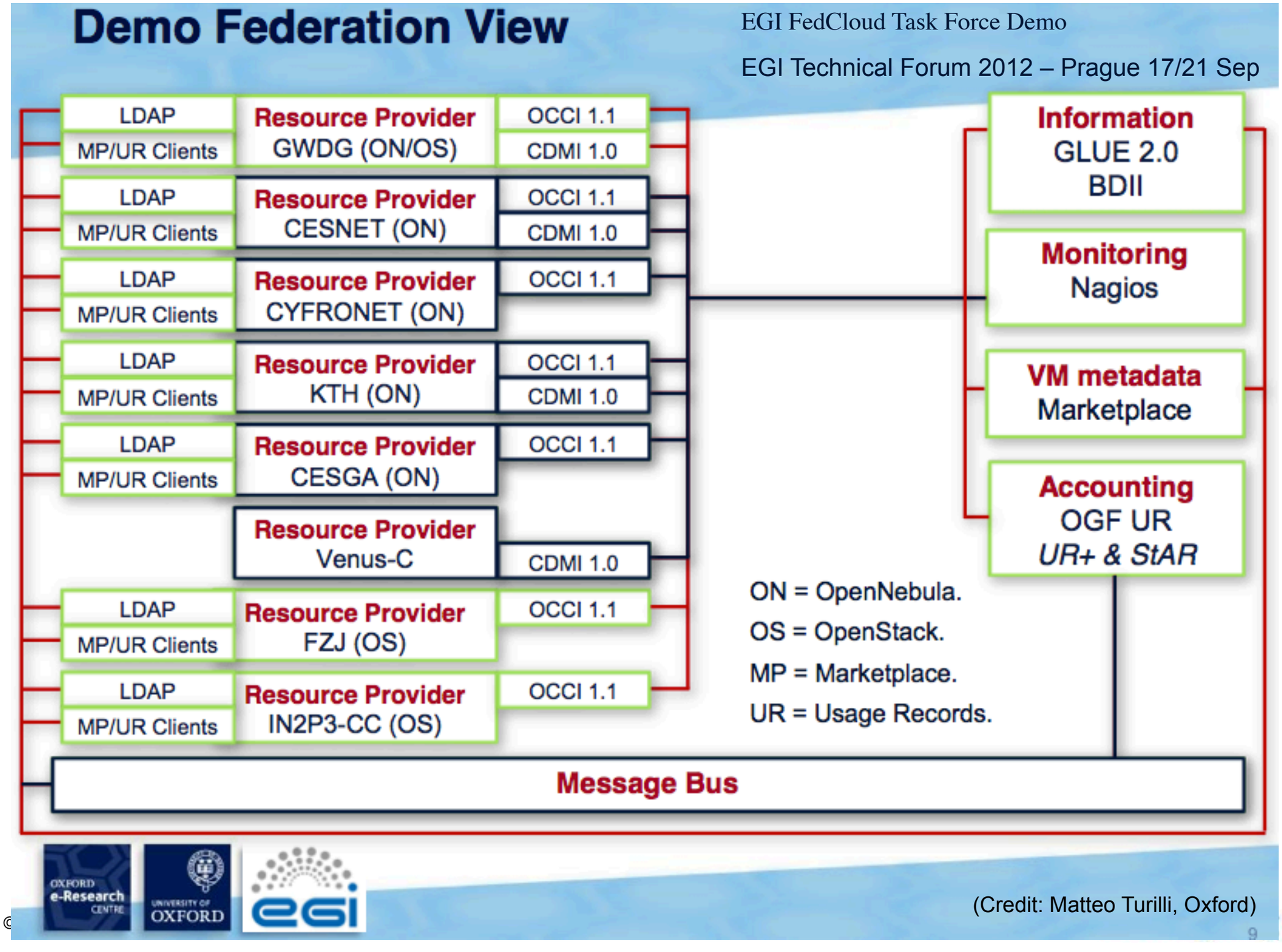
Example of EGI Standards Use: EGI Federated Cloud



(Credit: Matteo Turilli, Oxford)

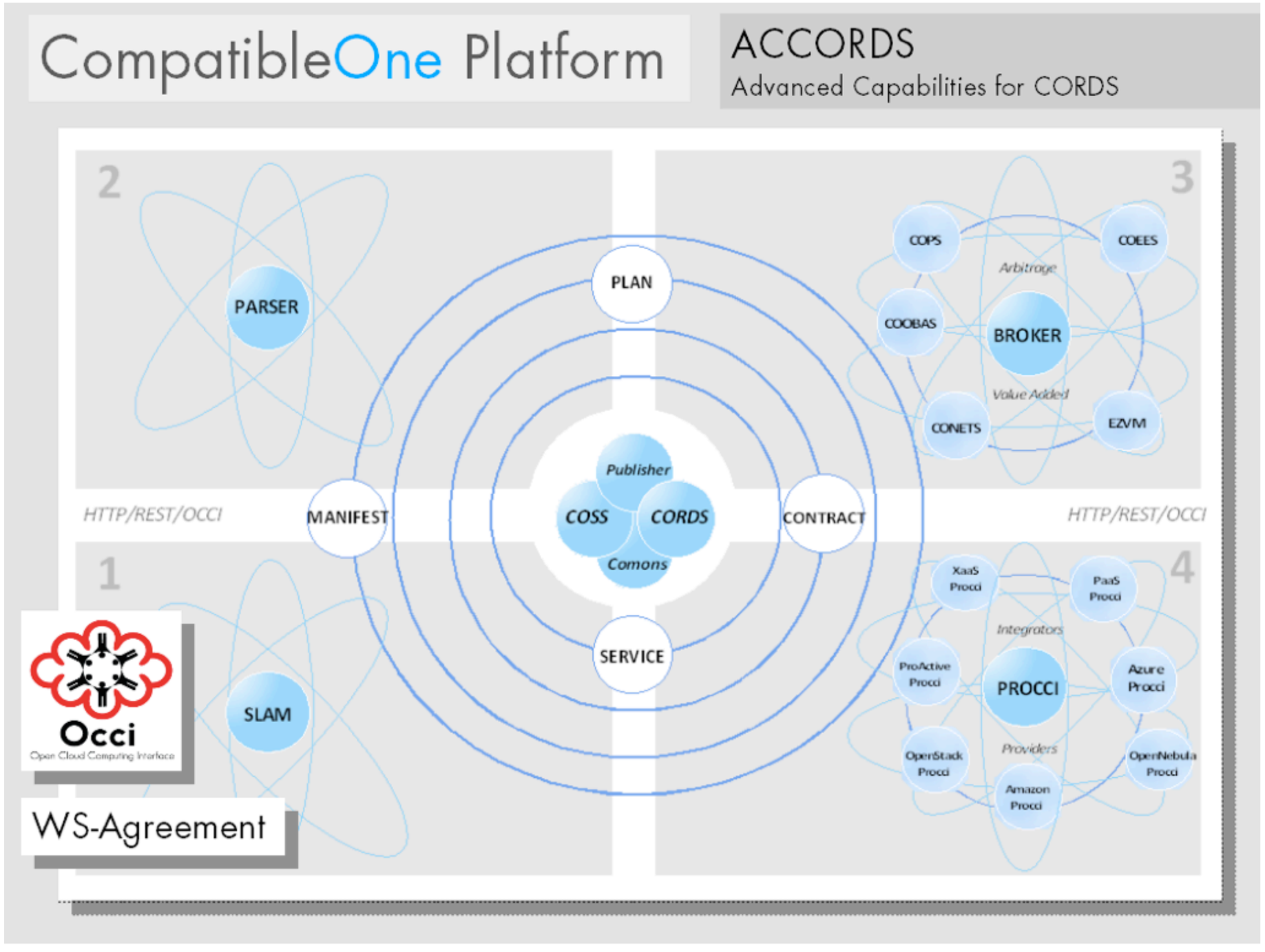
Uptake of OGF Cloud Standards In Industry:

Example:

CompatibleOne

Open Source Cloud Broker project started by industry consortium based in France

Product line heavily based on published OGF standards (OCCI, WS-Agreement, etc.)



OGF Cooperative Agreements In Place as of Early 2013

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OGF and DMTF:

- OGF published the the OCCI Core, Infrastructure and HTTP Rendering specifications as GFD.183, 184 and 185, and is working on a JSON rendering. We created a joint work register with DMTF on OCCI and CIMI and continue to follow their progress towards implementation and testing of the CIMI specification.

OGF and ISO:

- OGF has a Category A liaison with ISO JTC1 SC38 on Cloud Computing and is working with ISO on joint activities.

OGF and SNIA (CDMI):

- OGF has cooperative agreement w/SNIA with respect to CDMI and has co-hosted 8 Cloud Plugfests so far (series continues).

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OGF Cooperative Agreements In Place as of Early 2013

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OGF and OCEAN:

- OCEAN has joined the Cloud Plugfest series as a co-sponsor and as one of the primary sponsors of the upcoming September 2013 Cloud Interoperability Week.

OGF and OW2:

- OW2 is also co-sponsoring the 9/2013 Cloud Interoperability Week & planning to join the Cloud Plugfest series as a formal co-sponsor & active supporter of Open-Source cloud projects.

OGF and XSEDE:

- Co-locating OGF 38 (most tracks) with XSEDE 2013 - networking to meet at TNC'13.

OGF and EGI:

- Co-locating OGF 39 + Cloud Interoperability Week at EGI TF.

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OGF Cooperative Agreements In Place as of Early 2013

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OGF and ETSI:

- Cooperative MoU in place; contributing to ETSI CSC effort. ETSI has joined the Cloud Plugfest series as a co-sponsor.

OGF and ITU-T:

- OGF formal liaison with ITU-T JCA Cloud.

OGF and TM Forum:

- MoU in place; ongoing cross-SDO work on on End-to-End Management of Cloud Service Agreements, including SLAs.

OGF and CSA:

- Cooperative agreement between OGF and CSA in place.

OGF and IEEE:

- OGF co-sponsored IEEE Cloudcom conferences in 2011 (Athens) and 2012 (Taipei); pursuing other engagements.

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Cloud Plugfest Developer Series:

About Cloud Plugfests

The Cloud Interoperability Plugfest project (or "*Cloud Plugfests*" for short) is a g
series designed to promote interoperability efforts on cloud-based software, fra
among vendors, products, projects and implementations. The series supports ongoing and continuing interoperability efforts among and between the sponsoring organizations, and with the cloud community at large. These efforts include organized software demonstrations, in-person developer gatherings, and continuous access to professional-grade cloud testing frameworks and tools.

The July 2013 event will take place at the DMTF Alliance Partners Technical
This will be the **ninth** in the ongoing Cloud Plugfest series, which is proud
the Open Grid Forum (OGF), the Storage Networking Industry Association (SNIA)
Cloud Storage Initiative, the European Telecommunications Standards Institute (ETSI)
and the Open Cloud for Europe, JApan and beyoNd (OCEAN) Project.

Continuing our long-standing pattern of providing multiple convenient opportunities for
participation, remote participation by registrants from other organizations and locations is supported at Cloud Plugfests, subject to the conditions of the participation agreement.

Register for the event!

Navigation
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  - Test Reporting Tool
- Relevant Software Projects

Join The Community!

Purpose
- *Interoperability Testing*
- *Software Development*
- *Community-Based Bug-Finding*
- *Standards Adoption*

News

Next Cloud Plugfest - July 2013 The next event in the Cloud Plugfest event will be the DMTF Alliance Partners Technical Symposium July 22-24, 2013 in Portland, Oregon, USA. The primary activities at this event ...
Posted Apr 3, 2013, 7:26 AM by Alan Sill

Developer-oriented in-person standards and software testing series OPEN TO ALL!

8 events held so far!

Continuing series co-sponsored by OGF, SNIA, ETSI, OCEAN and OW2!

Easy to get involved and join in events!

ETSI Tools Used in Cloud Plugfests:

2012 Cloud Plugfest #3, Sophia - FR / Sta Clara - US, 2012-09-17 to 2012-09-19

(Change Event)

Logged in as: alan.sill@ttu.edu (eventmanager)

+ Event Management
  Users Management
  Event Information
  Session Planning
  Products
  Companies
  Test Session Reports
  Result Summaries
  Change Password
  About

Result Summaries

Results for all configurations

The followin companies is included in these results: GWDG

Number of tests per test session: 82
Number of Sessions: 10
Of the 10 reported sessions 10 were agreed (100.0%)

All results in the following includes non-agreed sessions

Overall Results

Interoperability		Not Executed		Totals	
OK	NO	NA	OT	Run	Results
117 (81.3%)	27 (18.8%)	172 (48.3%)	40 (11.2%)	144 (40.4%)	356

Total: 144

Results Statistics per Test Session

	Interoperability		Not Executed		Totals
	OK	NO	NA	OT	Runs
Minimum	1	0	5	0	4
Maximum	24	8	44	34	24
Mean	11.7	2.7	17.2	4.0	14.4
Deviation	7.68	2.53	10.34	10.05	5.90

Results per Group

	Interoperability		Not Executed		Totals	
Group	OK	NO	NA	OT	Run	Results
Capability	2 (66.7%)	1 (33.3%)	1 (25.0%)	0 (0.0%)	3 (75.0%)	4
Container	0 (0.0%)	4 (100.0%)	16 (50.0%)	12 (37.5%)	4 (12.5%)	32
Create	33 (100.0%)	0 (0.0%)	38 (52.8%)	1 (1.4%)	33 (45.8%)	72
DataObject	2 (25.0%)	6 (75.0%)	9 (50.0%)	1 (5.6%)	8 (44.4%)	18
Delete	17 (100.0%)	0 (0.0%)	23 (57.5%)	0 (0.0%)	17 (42.5%)	40
Discovery Interface	19 (67.9%)	9 (32.1%)	4 (12.5%)	0 (0.0%)	28 (87.5%)	32

PLUGTESTS™ INTEROP EVENTS

ETSI TEST REPORTING TOOL

ETSI World Class Standards

2012 Cloud Plugfest #3, Sophia - FR / Sta Clara - US, 2012-09-17 to 2012-09-19

(Change Event) Logged in as: alan.sill@ttu.ed

+ Event Management
Users Management
Event Information
Session Planning
Products
Companies
Test Session Reports
Result Summaries
Change Password
About

Highlight company...
Scheduler Save
Export to PNG

Products:

CDMI client
CDMI server
OCCI client
OCCI server

Session pools:

Mandatory Sessions (51)
Forbidden Sessions (93)
Unscheduled Sessions (39)

Session Planning

		vcdm CDMI GWDG	OCCI Activeeon	OCCI Prologue	rOCCI GWDG	OpenStack OCCI GWDG	AMQP OCCI GWDG
Mon 17	14:00-15:30		Activeeon Procci-Server-EU GWDG rOCCI-Client-CLI-EU				
	16:00-17:30	TCS CATS-CDMI-Client-IN GWDG vcdm-CDMI-server-EU					
	9:00-10:30						

(Change Event) Logged in as: alan.sill@ttu.edu (eventmanager)| Logout

+ Event Management
Users Management
Event Information
Session Planning
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Test Session Reports
Result Summaries
Change Password
About

Test Session Report

Configuration :	CDMI
Session :	21
Version :	1
Session Status :	closed
Date :	Wed 19
Start Time:	15:30
End Time:	17:00
Area Name :	vcdm CDMI GWDG
Participant :	CDMI client 1:CATS-CDMI-Client-IN(TCS)
Participant :	CDMI server 1:vcdm-CDMI-server-EU(GWDG)
Last Modified :	Wed 19 18:27
Last Modified by :	florian.feldhaus@gwdg.de
Session Comment :	By Silvia from TCS Test Report Florian to review unsupported features and submit

Results

Test Case Id	Test Case Summary	Type	Result	Comment	Logs
Capability_Read_4	To read children of capability object up to a specific range	Interop	OK NO NA OT		
Capability_Read_3	To read capability object(system wide capabilities)	Interop	OK NO NA OT		
Container_Create_13	To create a container by copying an existing container	Interop	OK NO NA OT		
Container_Create_14	To move a container to new URI	Interop	OK NO NA OT		

Extensive test tools -
Detailed test results.

Upcoming Events - 2013

- **Terena Networking Conference** June 3-6, 2013 in Maastricht, Netherlands (**OGF 38** part A - Networking)
- **XSEDE 2013** July 22-25, 2013 in San Diego, California (OGF working group meetings track = **OGF 38** part B)
- **Cloud Plugfest 9** as DMTF Alliance Partners Technical Symposium (APTS) July 22-26, 2013 in Portland, Oregon.
- **Autonomic Management of Grid & Cloud Computing** (AMGCC'13) workshop - part of ACM Cloud & Autonomic Computing Conference August 5-9, 2013 in Miami, Florida.
- **Federative & Interoperable Cloud Infrastructures** (FedICI'13) workshop Aug. 26/27 2013, Aachen, Germany organized in conjunction with Euro-Par 2013.
- **OGF 39** co-located with **EGI Technical Forum** September 16-20, 2013 in Madrid, Spain including **Cloud Plugfest 10** & *Cloud Interoperability Week* (OGF/SNIA/ETSI/OCEAN/OW2)

Conclusions

- **OGF** actively engages **many partners** and participants throughout the international arena through an **open forum** with open processes to promote **best practices and standards in advanced distributed computing**.
- **OGF** occupies an **important role in standards** and software development with *significant uptake* in advanced distributed computing, including cloud, grid, networking and large-scale data processing, transfer and handling.
- **OGF standards** support a wide variety of flexible architectures for advanced scientific and business uses.
- OGF's **extensive experience** has enabled distributed computing built on these architectures to provide *more flexible, efficient and utility-like global infrastructures*.