OCCI® by OGF

Cloudscape III
Taking European Cloud Infrastructure Forward

siena
Standards and Interoperability for eInfrastructure implemeNtation initiAtive

OpenGridForum
OPEN FORUM | OPEN STANDARDS

OCCI: A STANDARD FROM OGF
MEETING USER COMMUNITY NEEDS

Alan Sill, Ph.D
Senior Scientist, High Performance Computing Center
Associate Professor of Physics, Texas Tech University
Vice President of Standards, Open Grid Forum

Cloudscape III – *Taking European Cloud Infrastructure Forward*
March 15-16, 2011 Brussels, Belgium

OGF and the Standards Development Process

OpenGridForum
OPEN FORUM | OPEN STANDARDS

OGF began, based on previous roots in GF and GGF, as an *open community* committed to driving the rapid adoption and evolution of large-scale applied distributed computing.

Its *current mission* is to provide a vehicle for development of open standards of practical utility in such infrastructures.

OGF contributors and members consist of representatives of *large-scale grid and cloud providers* and their user communities, with an emphasis on participants from high-transaction-rate, high throughput and high performance computing projects.

It is committed on a long-term basis to an *Open*, *Community-Based* and *Democratic* process for standards development and organizational operations.

OGF and Development of Open International Standards:

- OGF views its mission as *integrally tied* to the creation and implementation of practical standards of use across a wide variety of boundaries.
  - Interoperability and *utility* for implementation across multiple projects is essential
  - Interoperability and *usability* across international boundaries on a global basis is desired
- OGF's approach to standards creation and curation promotes development of standards that will be of use to the *large-scale* infrastructure projects.
- Standards are developed by *participants* in these projects.
- For the past 2 years, extending efforts to cloud computing.

OGF standards are widely adopted in large-scale projects:

OpenGridForum
OPEN FORUM | OPEN STANDARDS

The standards and implementations listed here, representing only a partial list of OGF implementations, form the backbone of current business and scientific DCI production distributed computing.

Implementations of OGF standards

This page contains a list of software implementations of various OGF specifications. The information has been provided by members of the Grid community, and has not been verified by the OGF. As such, the OGF makes no statement about the accuracy of the information provided.

If you have implemented an OGF specification (or several) as part of your project or product and would like to be listed, or would like to report inaccurate information in the table below, please send email to **standards@ogf.org**.

Software / Link	Specifications Implemented	Organization
SAGA-C++	**SAGA:** GFD.90, GFD.144 C++ and Python bindings	Louisiana State University (USA)
JavaSAGA	**SAGA:** GFD.90, GFD.144 Java and Python bindings	Vrije Universiteit Amsterdam (Netherlands)
JSAGA	**SAGA:** GFD.90 partial implementation Java and Python bindings	IN2P3 (France)
DESHL	**SAGA:** GFD.90 partial implementation Java binding	DEISA (EU), EPCC (UK)
BES++ for LSF/SGE/PBS	**BES/HPCBP/JSDL:** GFD.108, GFD.111, GFD.114, GFD.136	Platform Computing
Windows HPC Server 2008	**BES/HPCBP/JSDL:** GFD.108, GFD.111, GFD.114, GFD.136	Microsoft
Genesis II	**BES/HPCBP/JSDL:** GFD.108, GFD.111, GFD.114, GFD.115, GFD.135, GFD.136, GFD.149 **ByteIO:** GFD.72, GFD.87, GFD.88 **RNS:** GFD.101 **WS-Naming:** GFD.109 **Security Profiles:** GFD.131, GFD.132, GFD.138	University of Virginia (USA)

http://www.ogf.org/gf/page.php?page=Standards::Implementations

OCCI® by OGF

OpenGridForum

OPEN FORUM | OPEN STANDARDS

Occi

Open Cloud Computing Interface

OCCI Working Group

OpenGridForum

Occi
Open Cloud Computing Interface

Home About Community Blog

About

Search

The Open Cloud Computing Interface (OCCI) is a **RESTful** Protocol and API for all kinds of Management tasks. OCCI was originally initiated to create a remote management API for IaaS model based Services, allowing for the development of **interoperable** tools for common tasks including deployment, autonomic scaling and monitoring. It has since evolved into an flexible API with a strong focus on interoperability while still offering a high degree of **extensibility**. The current release of the Open Cloud Computing Interface is suitable to serve many other models in addition to **IaaS**, including e.g. **PaaS** and **SaaS**.

In order to be modular and extensible the current OCCI specification is released as a suite of complimentary documents which together form the complete specification. The documents are divided into three categories consisting of the OCCI Core, the OCCI Renderings and the OCCI Extensions.

- The OCCI **Core** specification consist of a single document defining the OCCI Core Model. The OCCI Core Model can be interacted with renderings (including associated behaviours) and expanded through extensions.
- The OCCI **Rendering specifications** consist of multiple documents each describing a particular rendering of the OCCI Core Model. Multiple

OCCI
occiwg

New blog post: #OCCI Document Series in Public Comment – http://occi-wg.org/2011/...
15 days ago · reply

#OpenStack #OCCI integration making slowly progress – #HTML rendering in browser looks nice :-) http://twitpic.com/3rg3iu
27 days ago · reply

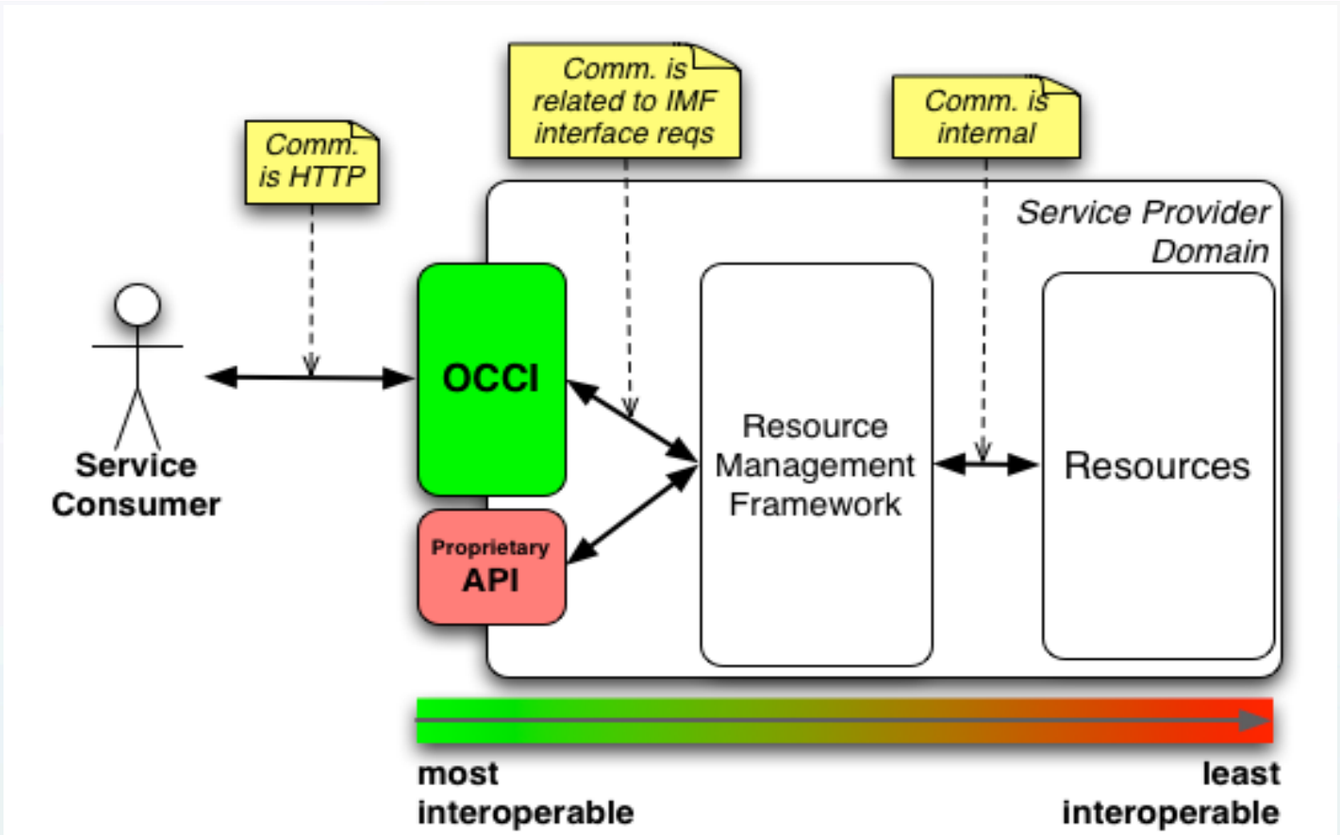
New blog post: #OCCI compliance Testing Tool – http://occi-wg.org/2011/...
27 days ago · reply

Join the conversation

Pages

- Home
- About
  - Specification
  - Legal

The Basics: Overview



- OCCI is an API and Protocol
- Sits on the boundary of a Service Provider and Service Consumer
- No assumptions about the boundary

OCCI® by OGF

OCCI in a nutshell:

OpenGridForum
OPEN FORUM | OPEN STANDARDS

OCCI provides features to

Categorize, Identify, Link and Operate on RESTful Resources

via HTTP

OCCI Specification Set As Of March, 2011:

OpenGridForum
OPEN FORUM | OPEN STANDARDS

Final Review by OGF Standards Council:

- OCCI Core
- OCCI Infrastructure

Public Comment in progress:

- OCCI HTTP Rendering

Under Development:

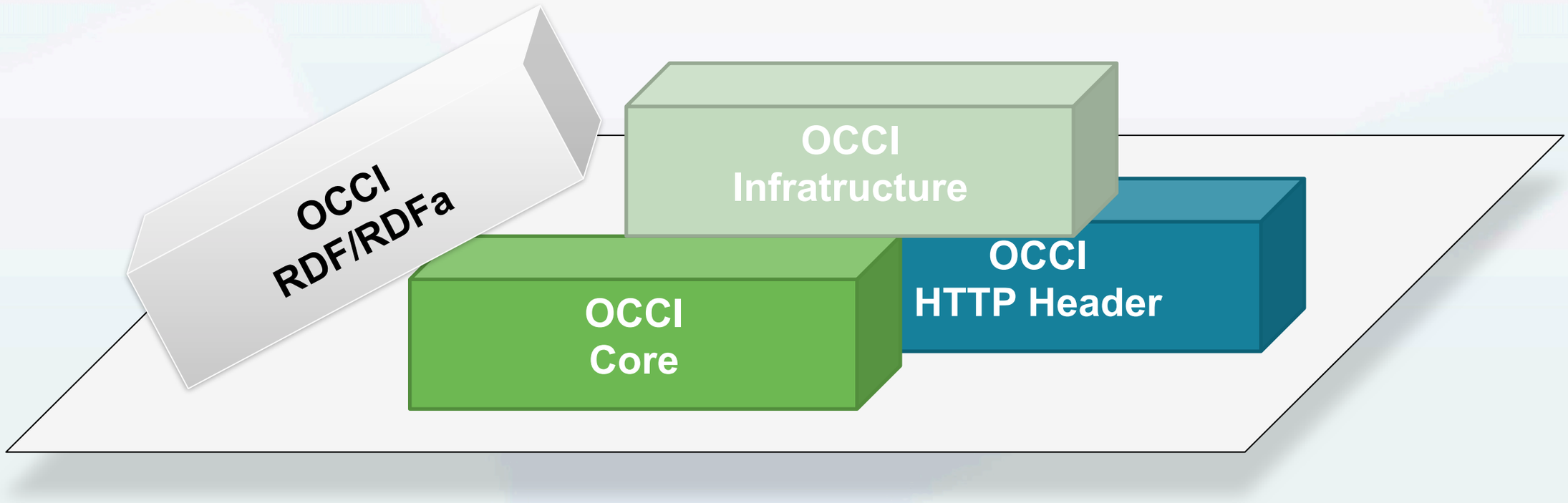
- OCCI Extensions

The Basics: Technical

- OCCI is designed to be flexible & extensible!
  - Yet simple!
  - Just like a set of building blocks.
- A single entry point is defined by a URL
  - All resources must be addressable by URIs.
- OCCI protocols are RESTful:
  - CRUD: *roughly speaking*, “Create, Retrieve, Update and Delete” (CRUD) operations map to the POST, GET, PUT and DELETE HTTP verbs -- other verbs are possible.
- We can use all HTTP features (authentication, security, load balancing, http caching, etc.)

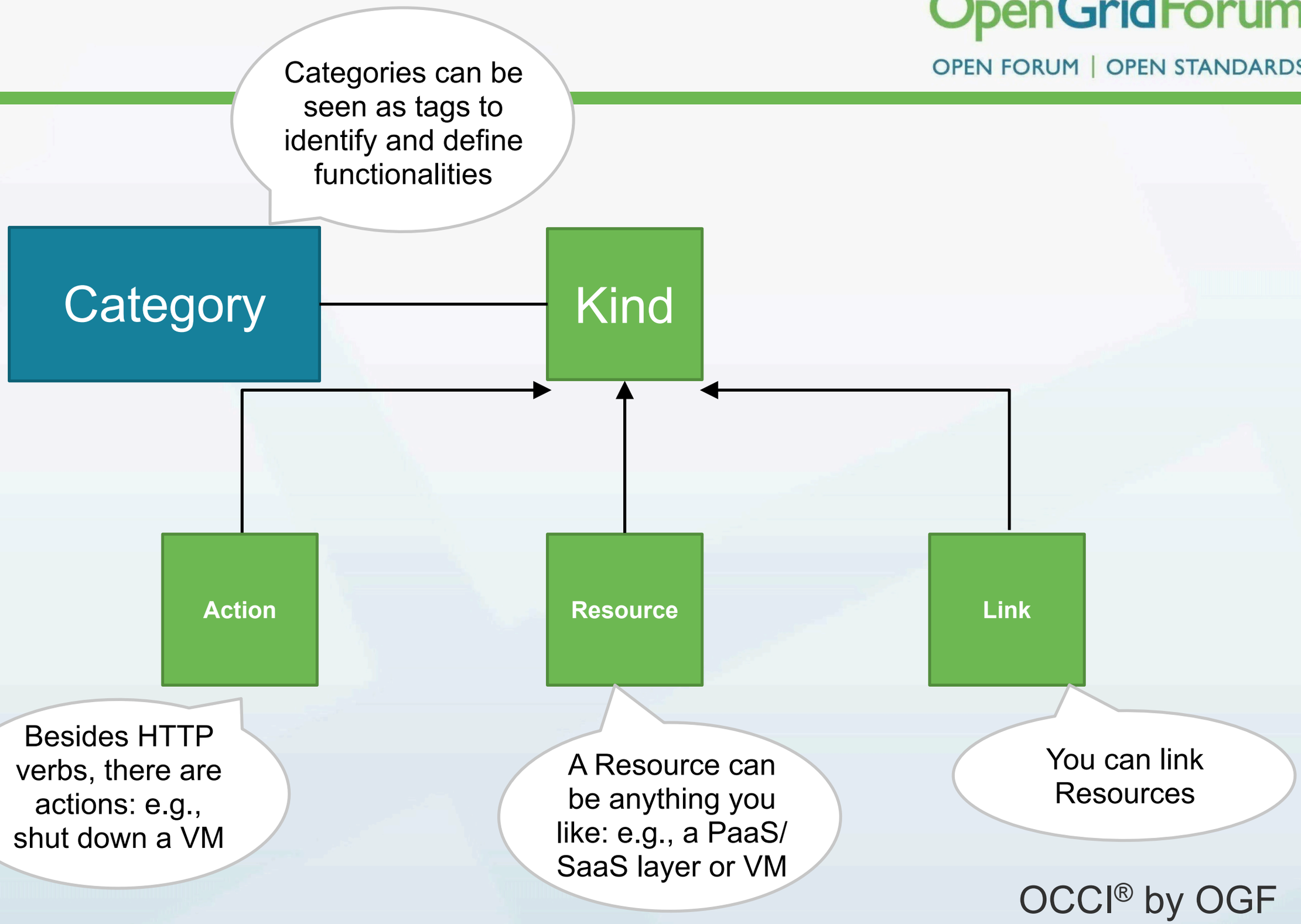
OCCI Building Blocks

OpenGridForum
OPEN FORUM | OPEN STANDARDS



OCCI® by OGF

The Core:



OCCI® by OGF

HTTP Rendering

- Describes how the OCCI Core Model can be rendered using the HTTP protocol.
- HTTP is easy to use
  - It is well known
  - Has proven to work at high rates
  - Load balancers, ALG, Firewalls can handle it
  - Lightweight
  - Easy to adopt and program

Resource descriptions

- Extends the Core model for specific applications, e.g.:
  - VM management capabilities
  - NoSQL Databases
  - Job Submission
  - Monitoring and Reporting
  - Interfaces to Data Models
  - Interfaces to Other Standards
- Endless possibilities

How to add a “block”

- This can be done very fast & easily
  - Thanks to *extensibility* and modular approach
  - Simply refer to OCCI Core and a Rendering
  - OCCI Infrastructure is also simple → 15 Pages including references etc.
- To Do’s:
  - Describe the available Resource Framework and the matching Actions & Attributes
- OCCI is simple and powerful: if you use REST you should know OCCI!

Implementations

- A standard specification is best proven through real-world implementations
- To name some:
  - OpenNebula
  - OpenStack (as of “Bexar” release)
  - SLA@SOI
  - Claudia Project
  - RESERVOIR
  - Italian Institute of National Physics
  - Aurenav
  - (many more in progress)

All in less than 18 months

Roadmap (March 2011)

- OCCI working group is working on
  - Extensions to the Specification
    - Billing
    - Advanced Reservation
    - Monitoring
  - Community building
    - New website, logo etc. - in operation now!
  - Adoption
    - Drive implementations
    - Provide test-bed for Interoperability testing
  - Pushing implementations
    - Extend roadmap to implementations for OCCI in OpenStack

A Few Words About OGF's Copyright Notice:

OGF's Copyright Promotes Adoption!

Contact us for more details:

OpenGridForum
OPEN FORUM | OPEN STANDARDS

OCCI is meant for Adoption!

http://www.occi-wg.org

occi-wg@ogf.org

IRC: #OCCI at freenode

OCCI® by OGF

http://ogf.org