促进云计算创新发展 培育信息产业新业态

The 7th China Cloud Computing Conference

第七届中国云计算大会

OW2 and Cloud Computing Standardization

Cedric Thomas, OW2 CEO

Agenda

- Open Cloud

- Cloud Challenges

- Open Standards

- OCCI

- OCCIware

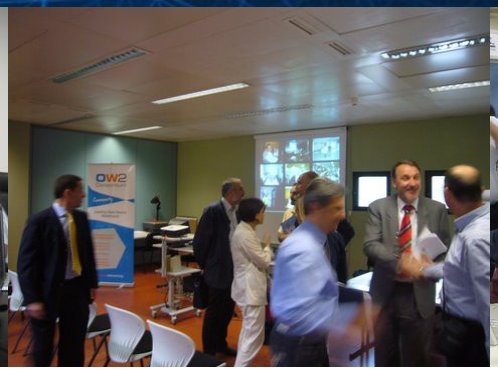
促进云计算创新发展 培育信息产业新业态

第七届中国云计算大会

The 7th China Cloud Computing Conference

OW2





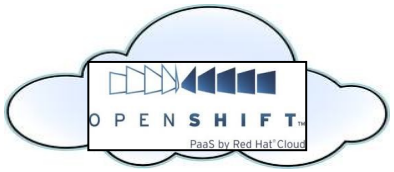

0> The freedom to **run** the software for any purpose

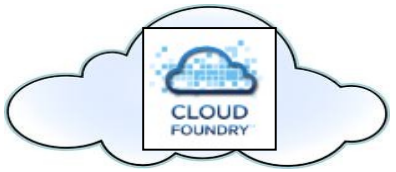
1> The freedom to **study** how the software works and to adapt it to your needs

2> The freedom to **redistribute** copies of the software

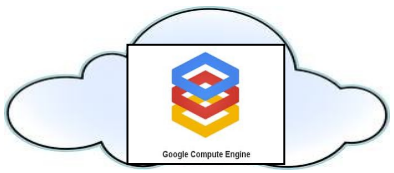
3> The freedom to **improve** the software and distribute your improvements to the public


multiplier effect
a cloud, as a
space for fill-in
and to Locate the
No barriers to entry
No barriers to exit
No discrimination
Interoperability
Free/Open source licenses
Technological neutrality
Transparency

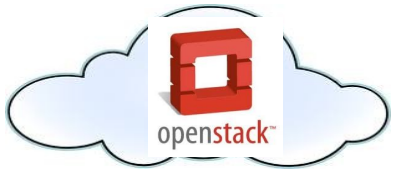




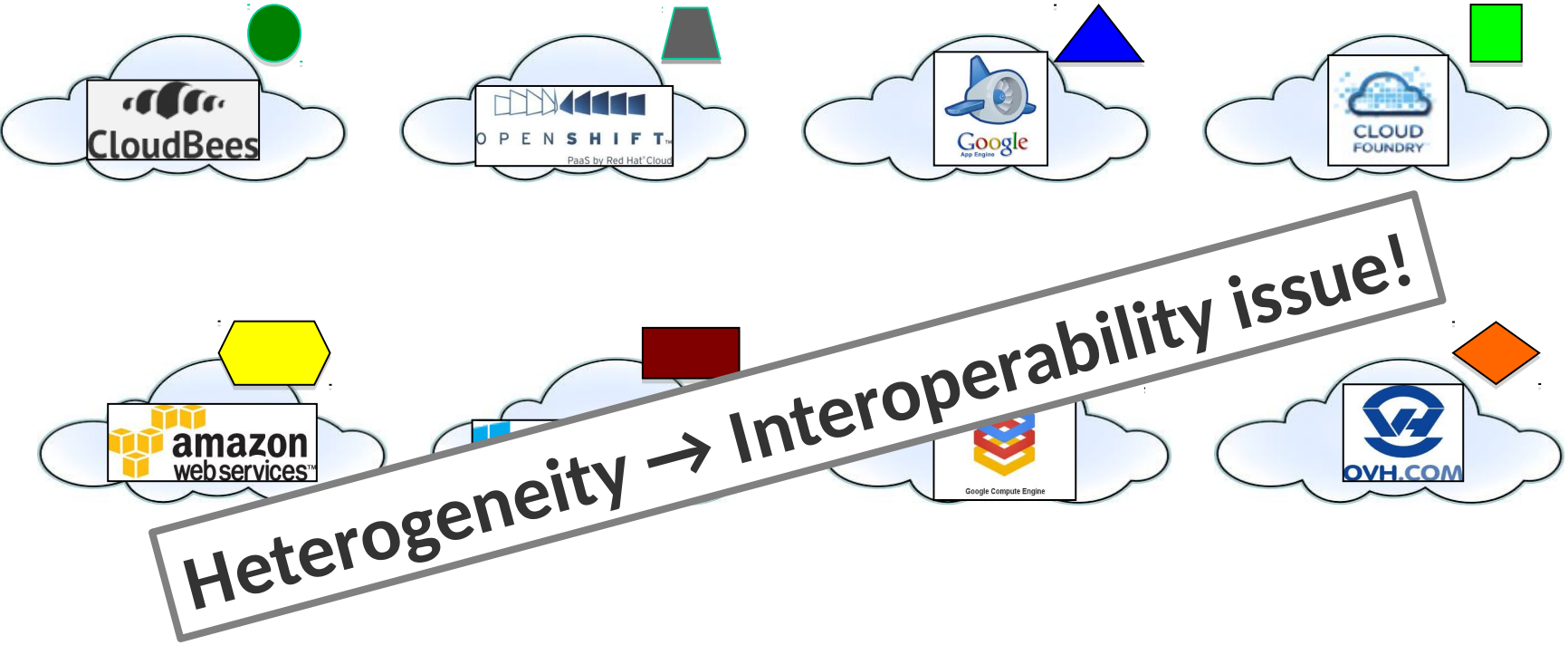
PaaS



IaaS

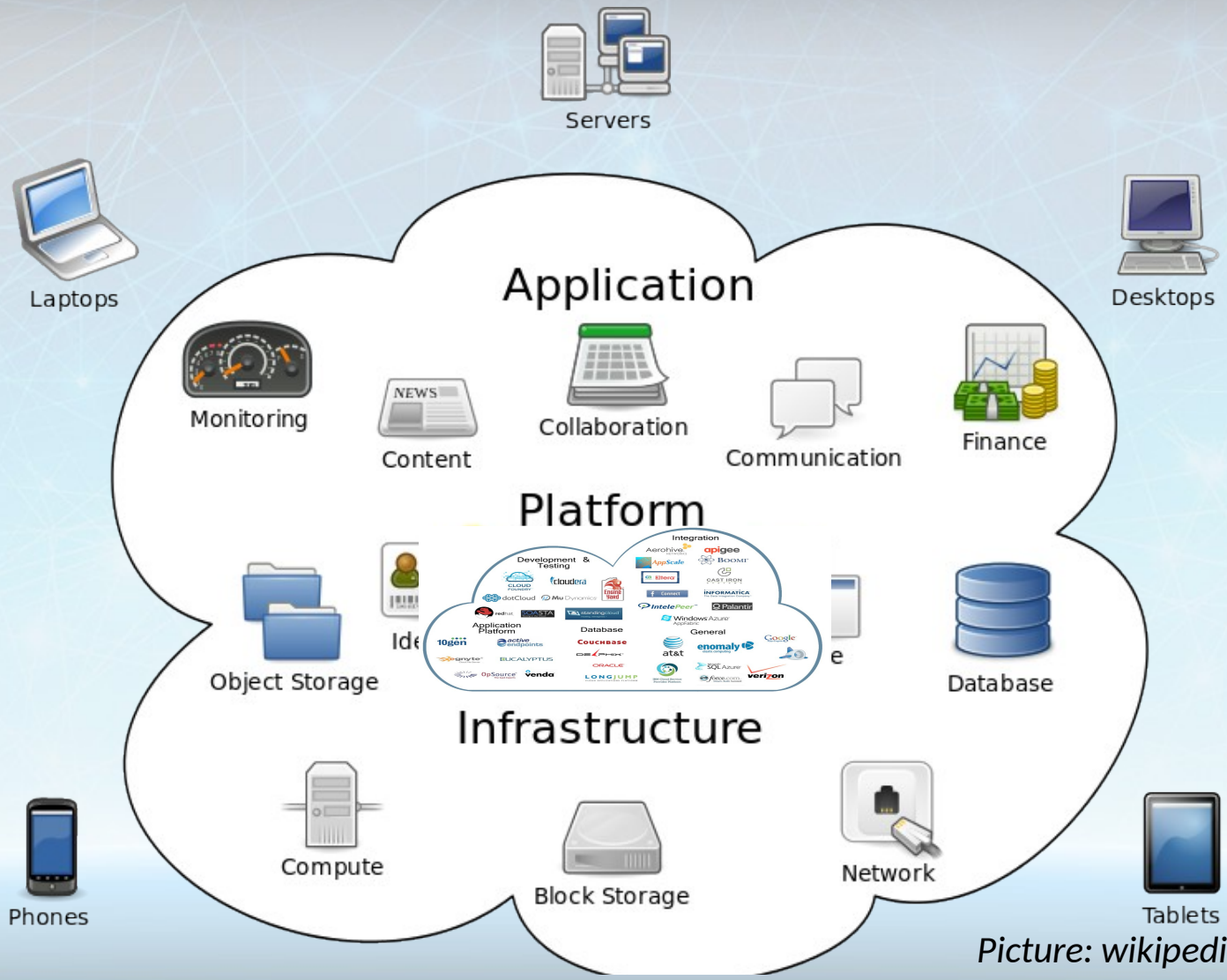


Cloud SW


CloudBees
OPENSHIFT
PaaS by Red Hat Cloud
Google
App Engine
CLOUD FOUNDRY
PaaS
amazon web services
Google Compute Engine
OVH.COM
IaaS
Heterogeneity → Interoperability issue!
EUCALYPTUS
OpenNebula.org
Flexible Enterprise Cloud Made Simple
cloudstack
open source cloud computing
openstack
Cloud SW

Ccloud Challenge: **Interoperability**

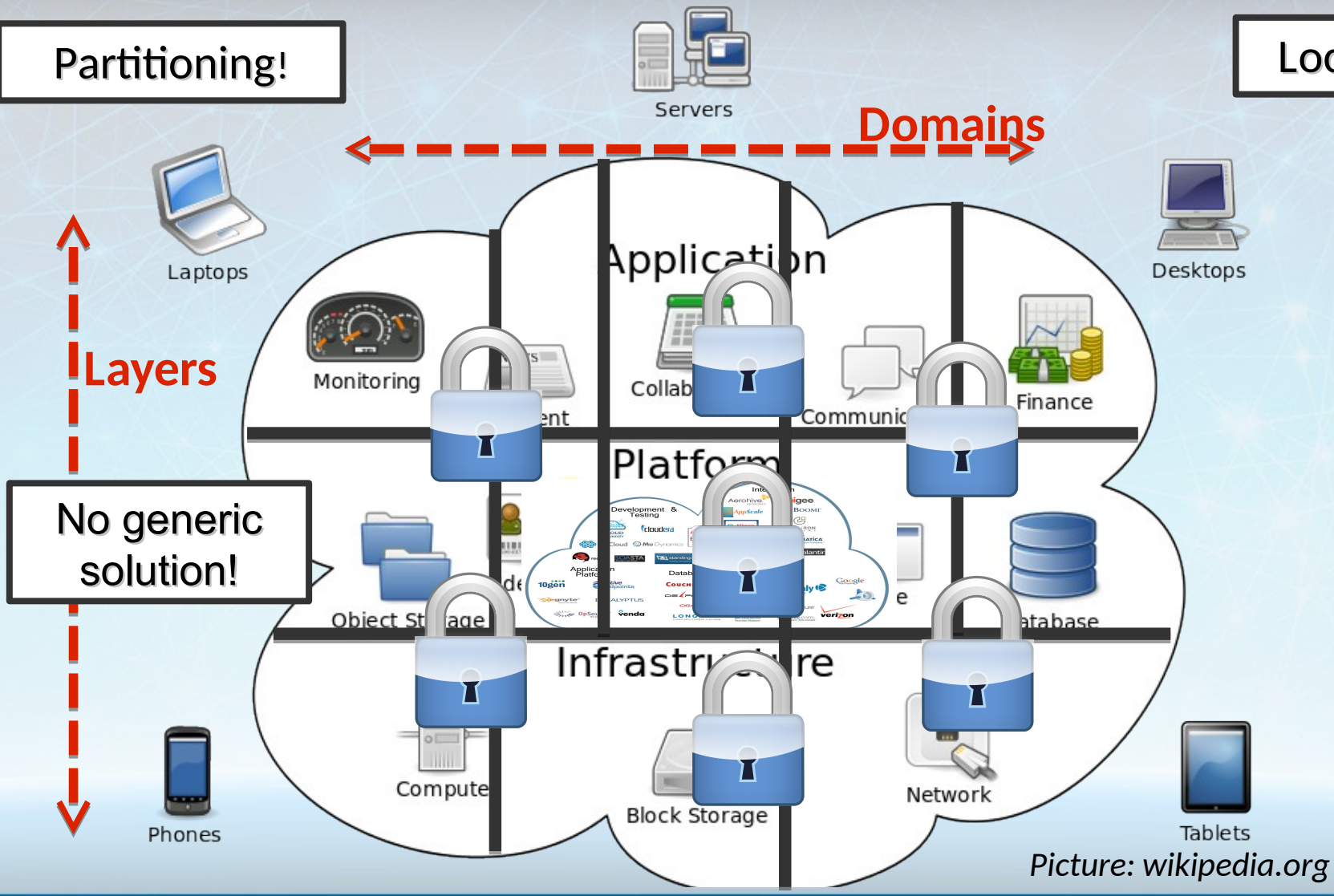
- Today's cloud computing model is not compliant with the original ***utility*** model
  - Electricity, Telephone, etc.
- Interoperability is ***silos***
  - Intra-organization or within close ecosystems
- Today's private and public cloud services are not interoperable



Picture: wikipedia.org

Partitioning!

Lock in!

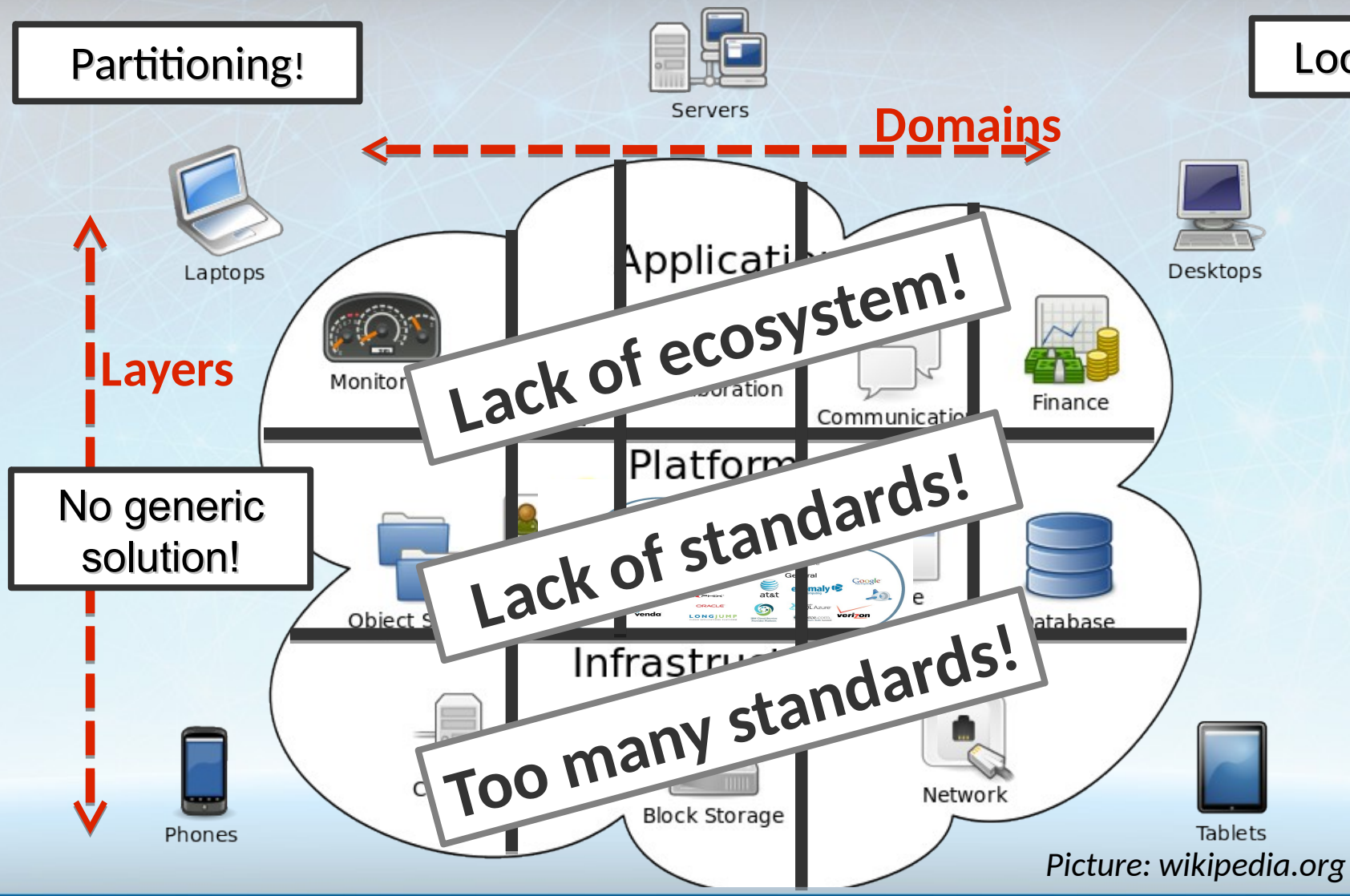


No generic solution!

Picture: wikipedia.org

Cloud Challenge: **Inefficiencies**

- **Customer lock-in**
  - Lack of interoperability
- **High application maintenance cost**
  - Provider and technology dependencies
- **Information and systems planning uncertainty**
  - Fast technology transition and obsolescence



Picture: wikipedia.org

Cloud Challenge:
Standards

- Cloud innovation ahead of standards
- Cloud technologies are driven technology and service providers
- Standards are defined by vendor

Open Standards can help and are preferable to Proprietary Standards

Open standards

< Interoperability >

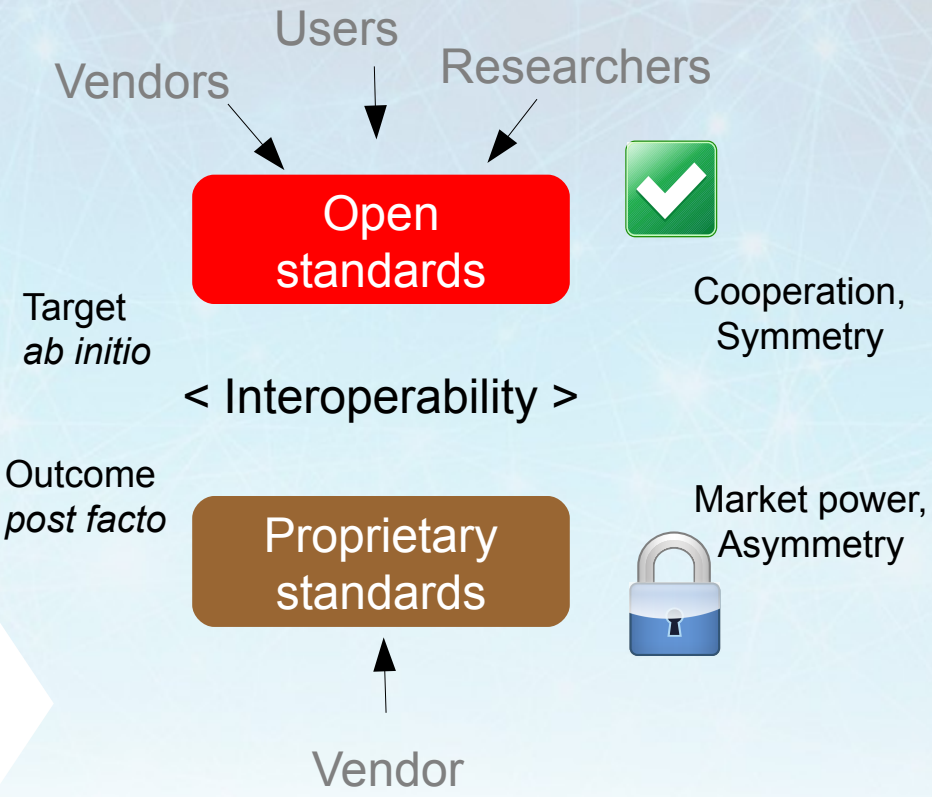
Proprietary standards

Open Standards are defined by consensus among multiple stakeholders. Transparent, but slow work-group-based decision process.

Cooperatively defined open standards are designed to foster interoperability *ab initio*. All stakeholders share equal information.

Proprietary standards are designed to grow initiator market power. Asymmetric information between initiator and followers.

Proprietary standards can be modified **without notice**, thus keeping owner ahead of competition and followers.



Organizations Work on Open Standards for Cloud Computing

- Distributed Management Task Force - DM
- Open Cloud Consortium – OCC
- Open Grid Forum – OGF
- Storage Networking Industry Association - SNIA
- Cloud Security Alliance – CSA

OCCI: Open Cloud Computing Interface

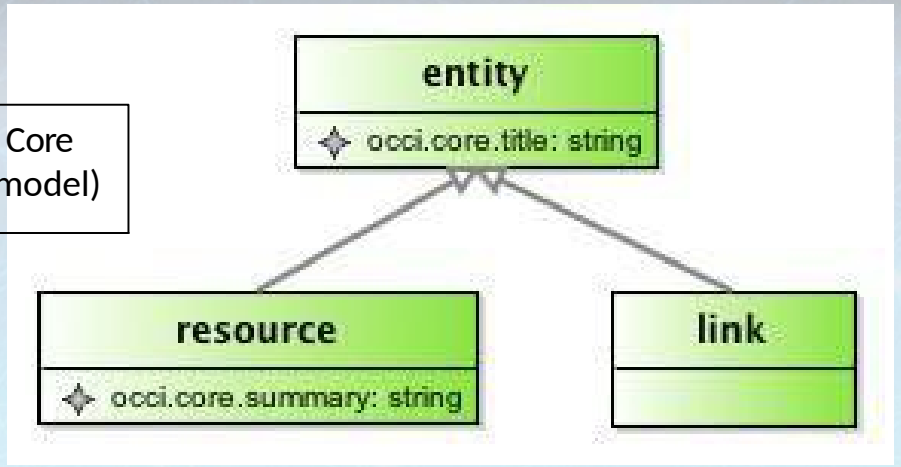
- Delivered through the Open Grid Forum
- Open community-led specification
- Vendor-independent, platform-neutral
- General-purpose set of specifications: IaaS, PaaS, SaaS
- Object: cloud-based interactions with resources

OCCI is...

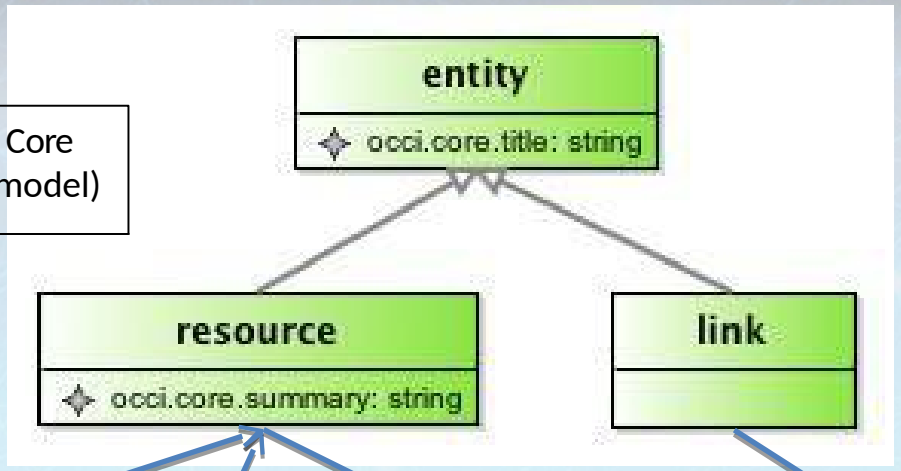
- Typed
  - Resources are well identified
- Extensible
  - Resources added with “mixins”
- Relational
  - One single way to describe links
- Self-described
  - Server tells how to works with it
- Meta-model based
  - Techno agnostic impementation

OCCI 101

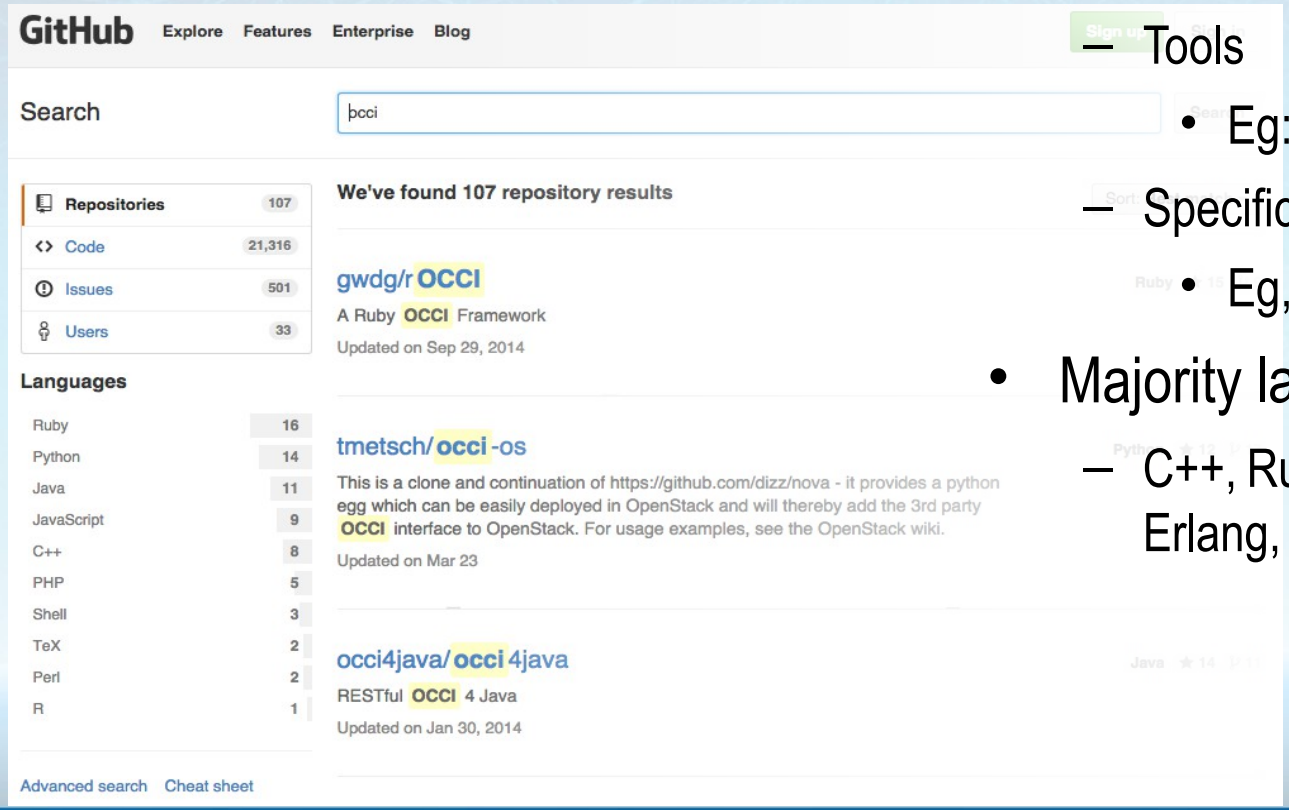
OCCI Core
(metamodel)



OCCI 101

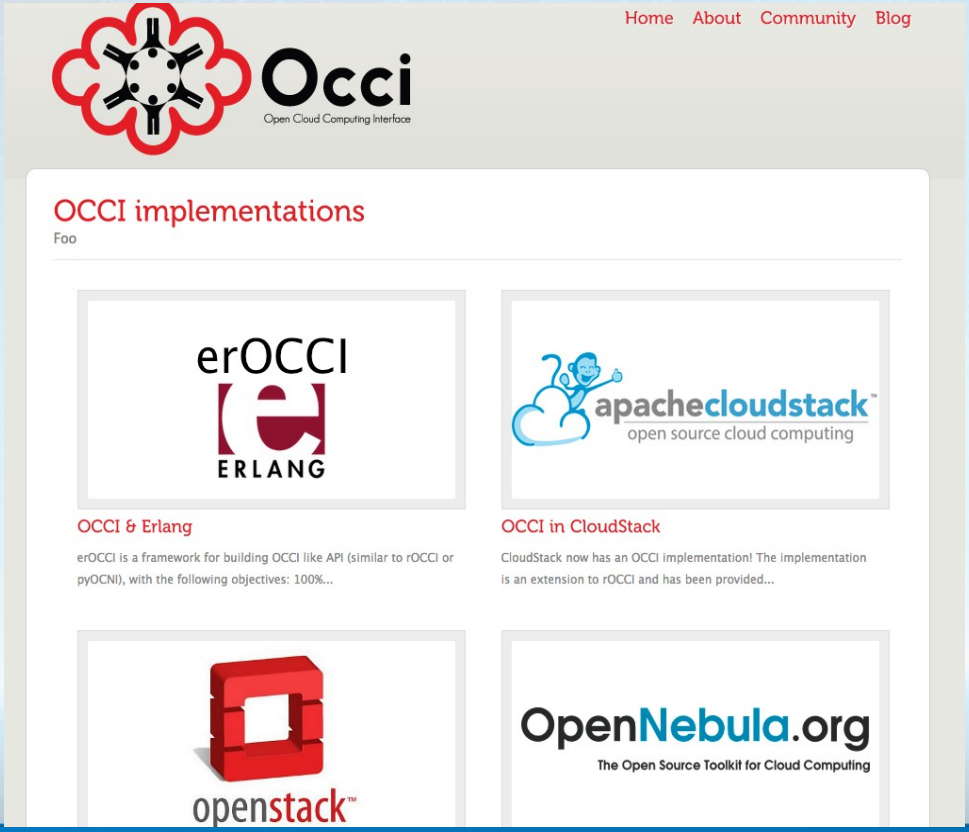

OCCI Core
(metamodel)
entity
occi.core.title: string
resource
occi.core.summary: string
link
OCCI Extensions
(models)
Infrastructure level
Network
Compute
- memory
- started
- start()
Storage
NetworkLink
Platform level
Container
Database
Router
DatabaseLink
Application level
Environment
Application
Deployable
EnvironmentLink

Growing the OCCI Ecosystem



- Over 100 projects on GitHub
  - Frameworks
    - Eg: Erocci
  - Tools
    - Eg: Intel
  - Specific implementations
    - Eg, Cloud, IoT, etc.
- Majority languages supported
  - C++, Ruby, Perl, Python, Java, Erlang, Javascript, etc.

http://occi-wg.org/community/implementations/



- Already broadly implemented in popular cloud infrastructure
- Should evolve beyond infrastructure

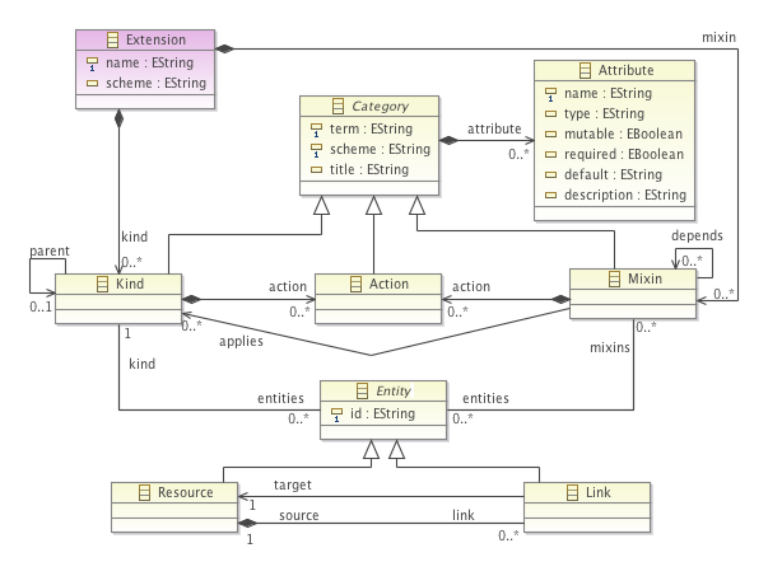
- Bring to OCCI the power of formal languages and model driven engineering (MDE)
- The OCCI IDRE: a formal, model-driven platform to manage any cloud resource

- Collaborative project
  - Open source project
  - 3 Years, 860 Pms, €5.6m
  - 10 partners


open wide
ARCHITECTE OPEN SOURCE
OW2
Inria
TELECOM SudParis
Pôle Numerique
OCCI WARE
LINAGORA
Activeeon
SCALE BEYOND LIMITS
beo
Model Driven Company
GRENOBLE 1
UNIVERSITE JOSEPH FOURIER
SCIENCES. TECHNOLOGIE. SANTÉ
bpifrance
Scalair
Systèmes d'information agiles


INVESTISSEMENTS D'AVENIR

A formal model



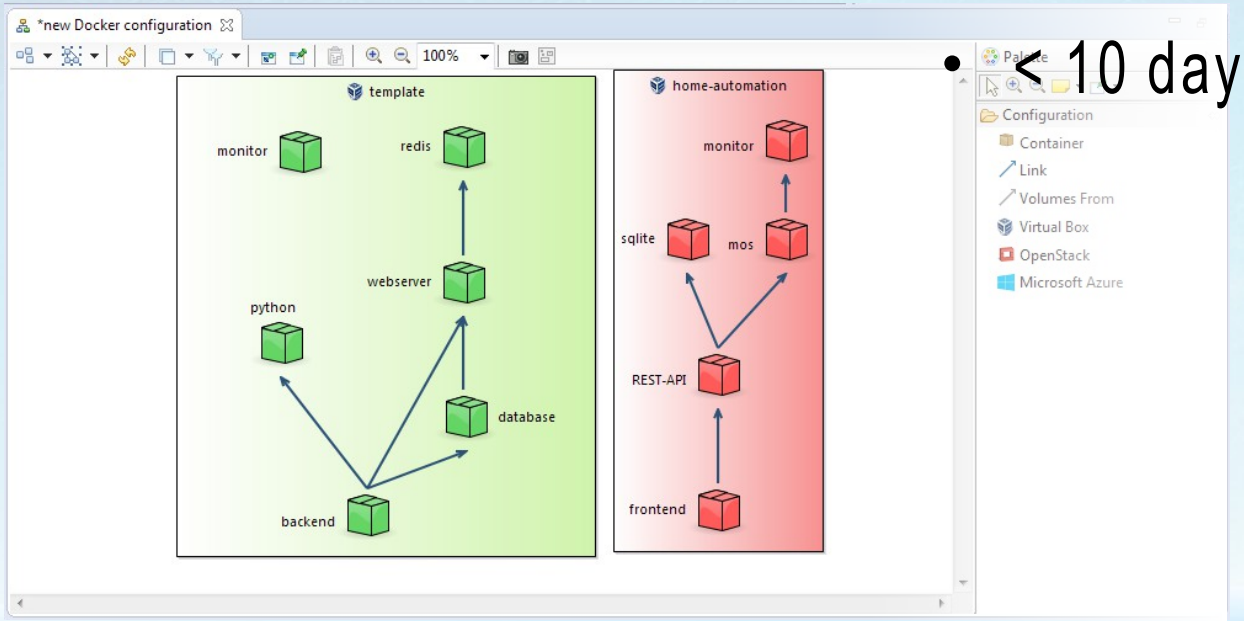
- OCCI Based Formal Meta-Model
- ECore (Eclipse Modeling Framework)
- Extensible datatype system
- Introduces Extension and Configuration concepts
  - Ability to generate tools: editors, simulators, etc

"A Precise Metamodel for Open Cloud Computing Interface", IEEE CLOUD 2015, NYC, USA

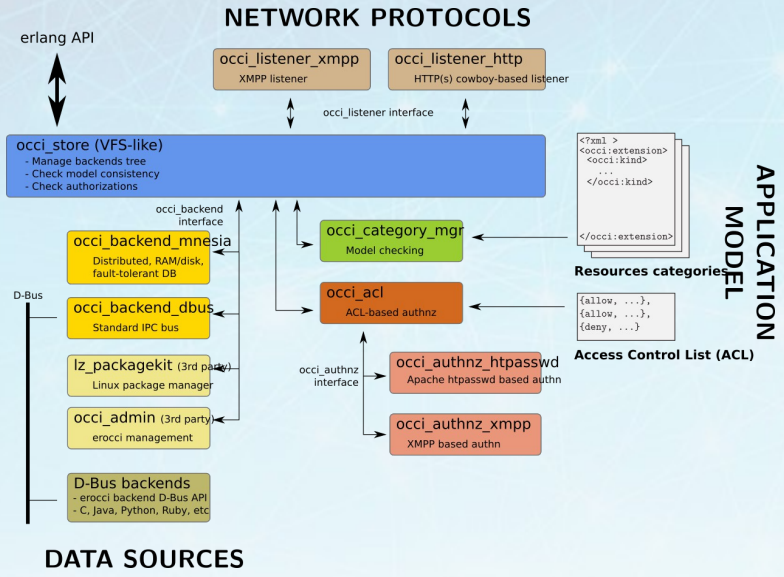
OCCI WARE

Cloud Designer

- Docker dedicated designer
- Define, start, stop containers
- Graphical UI
- < 10 days dev effort



Erocci Runtime



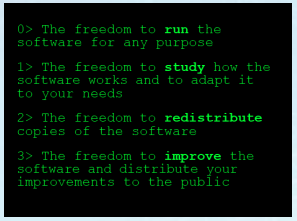
- Model-driven generic OCCI runtime
- Listeners: HTTP + XMPP listeners
- Backends: Mnesia (DB), D-Bus
- Pluggable authentication
- Erlang/OTP based
- Website: http://erocci.ow2.org

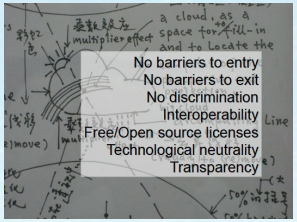
OCCIware In Action

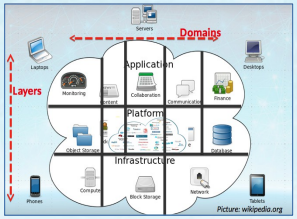
- Developers
  - Automatic deployment
- Managers
  - Cost simulation, analysis, optimisation
- Datacenter as a Service
  - IaaS, including bare-metal, + monitoring + elasticity management
- Deploy@OCCIware
  - Deployment + (re)configuration interoperability
- BigData/HPC
  - Middleware deployment
  - JOB Scheduling
- LinkedData as a Service
  - Open Data platform

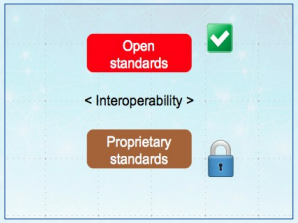
You Are Welcome To Join OCCIware

Summary


0> The freedom to **run** the software for any purpose
1> The freedom to **study** how the software works and to adapt it to your needs
2> The freedom to **redistribute** copies of the software
3> The freedom to **improve** the software and distribute your improvements to the public


No barriers to entry
No barriers to exit
No discrimination
Interoperability
Free/Open source licenses
Technological neutrality
Transparency


Domains
Layers
Application
Platform
Infrastructure
Picture: wikipedia.org


Open standards
< Interoperability >
Proprietary standards


Occi
Open Cloud Computing Interface


OCCI
WARE


The 7th China
Cloud Computing
Conference