Investing in your future
Operation Part Financed By The European Union
European Regional Development Fund

CLASS
Conference 2014
CloudAssisted Services

Collaborative Open Source Cloud Innovation And Business Challenges

Cedric Thomas
CEO
OW2

Agenda

- **The changing nature of open source software**
- Mapping open cloud collaborative projects in Europe
- Addressing the Delivery Challenge

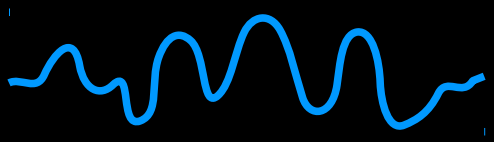
0> The freedom to **run** the software for any purpose

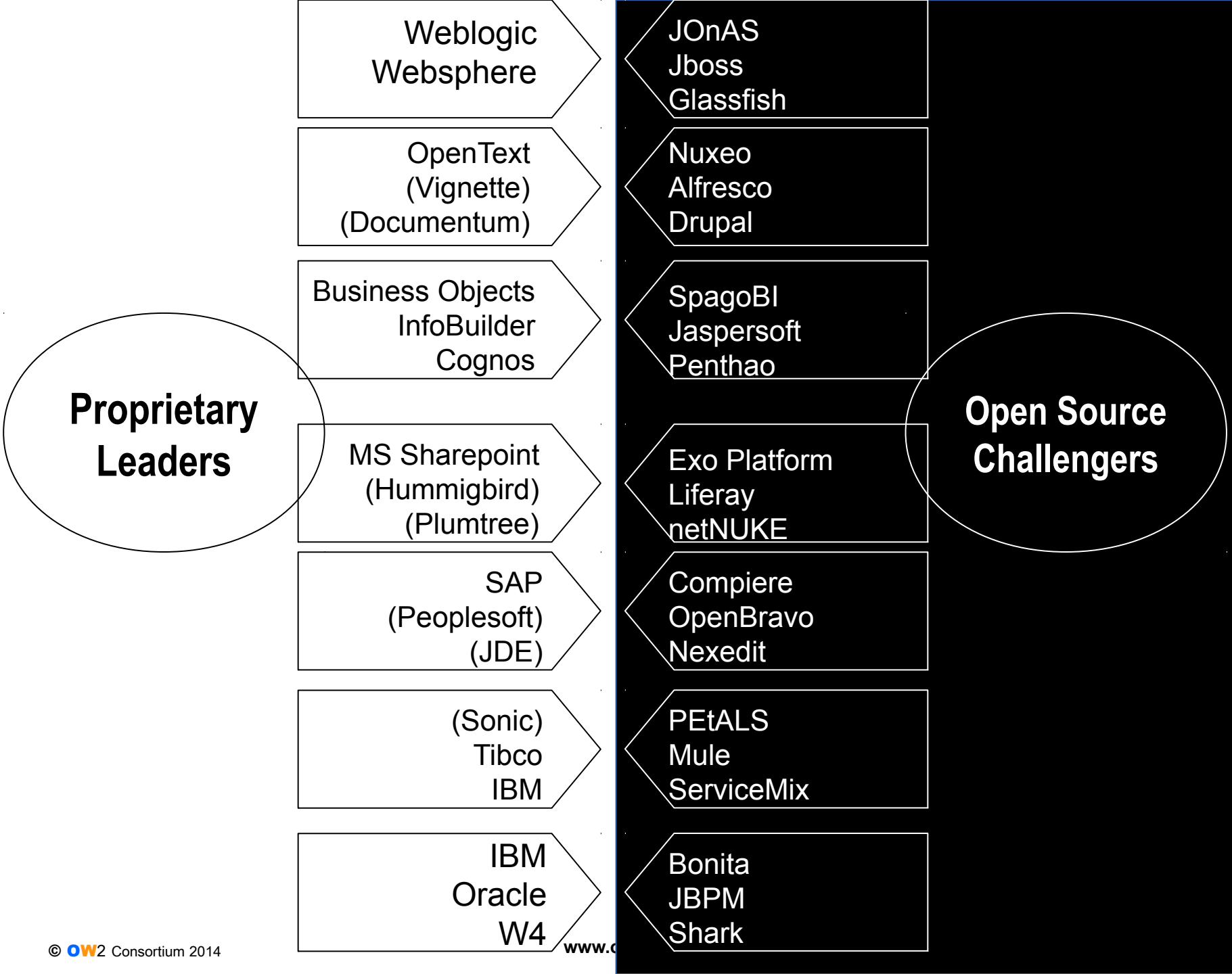
1> The freedom to **study** how the software works and to adapt it to your needs

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

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


maps

Free Software  Commercial Open Source




XWIKI
JASPERSOFT
the intelligence inside
bonitasoft
open your processes
SkySQL
Activeeon
SCALE BEYOND LIMITS
SUGARCRM
THE CLOUD IS OPEN
OpenERP
Open Source Management Software
nebula
spagobi
talend*
*open integration solutions
FUNAMBOL
Mobile 2.0 messaging, powered by open source.
eNovance
Cloud & Managed Services Provider
redhat
PostgreSQL
CANONICAL
nuxeo
OXID
esales
GLUSTER
LIFERAY
inktank
EUCALYPTUS
eXo
CloudBees
The Java PaaS Company
openSUSE
ACTUATE
The BIRT Company
FOSS
FOSS-Group
Alfresco
heroku
GitHub
pentaho
open source business intelligence
cloudera
mongoDB
Kaltura
creating together
WSO2
puppet
labs
INFOBRIGHT
Engine Yard
Acquia
Joyent
INGRESS
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CloudAssisted Services


Tencent 腾讯
intel
CISCO
IBM
CITRIX
Google
HUAWEI
hp
Baidu 百度
DELL
ORACLE
OW2
Ocean
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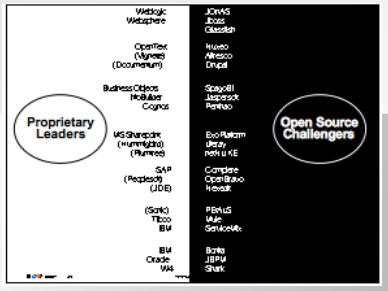
CloudAssisted Services


OW2
Consortium
Leading Open Source
Middleware


multiplier effect
a cloud, as a
space for fill-in
and to Locate the
co-point of the
perspetive and
projection.
amazon
rackspace
HOSTING
facebook
ebay
salesforce
Google
YAHOO!
Cloudwatt
OVH.COM
skype
Dropbox
NUMERGY
PRODUCTEUR D'ÉNERGIE NUMÉRIQUE
hp



OSS mostly *following*

2010

Cloud Computing

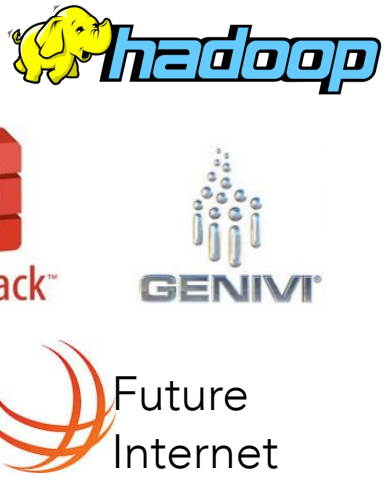
OSS mostly ***racing***

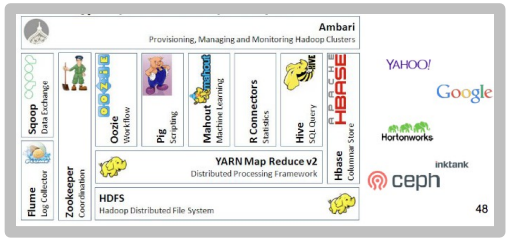
Business powered by open source

Ecosystem-based innovation

Private, Integrated platform

Open Source Commons



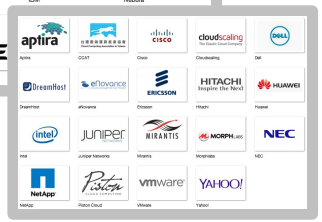

Ambari
Provisioning, Managing and Monitoring Hadoop Clusters
Sqoop
Data Exchange
Oozie
Workflow
Pig
Scripting
Mahout
Machine Learning
R Connectors
Statistics
Hive
SQL Query
HBase
Columnar Store
YARN Map Reduce v2
Distributed Processing Framework
Flume
Log Collector
Zookeeper
Coordination
HDFS
Hadoop Distributed File System
YAHOO!
Google
Hortonworks
inktank
ceph
48


VOLVO
GM
HONDA
HYUNDAI
NISSAN
RENAULT
VOLVO


ALPS
DENSO
HARMAN
MOBIS
LEAR
LG
MAGNETI MARELLI
peiker
Pioneer
BOSCH
PATEO
Valeo


PLATINUM MEMBERS
BROCADE
CISCO
CITRIX
ERICSSON
IBM
JUNIPER
Microsoft
redhat
GOLD MEMBERS
NEC
vmware


at&t
ubuntu
hp
IBM
nebula
rackspace
redhat
SUSE


aptira
cisco
cloudscaling
DELL
DreamHost
ERICSSON
HITACHI
HUAWEI
intel
juniper
MIRANTIS
NEC
NetApp
vmware
YAHOO!


Activeeon
ARMINES
BULL
eNovance
exo
Inria
IRIT
LINAGORA
orange
OW2
peergreen
telecom
THALES
Université Joseph Fourier
UShareSoft


Activeeon
BULL
eNovance
Inria
Mandriva
nexedi
nuxeo
OW2
Prologue
XWIKI

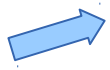

THALES
Inria
OW2
MLS
Making Life Simple
CEFRIEL
FORGING INNOVATION
LINAGORA
CONSEL
WIND
virtualtrip
CCSL
FLOSS Competence Center
CITY UNIVERSITY LONDON


hadoop


GENIVI


THE
LINUX
FOUNDATION


OPEN
DAYLIGHT




PolarSys


eclipse


openstack


openstack™


open
Cloudware


CompatibleOne


OW2


CHOREOS
Large Scale Choreographies
for the Future Internet

Agenda

- The changing nature of open source
- **Mapping open cloud collaborative projects in Europe**
- Addressing the Delivery Challenge

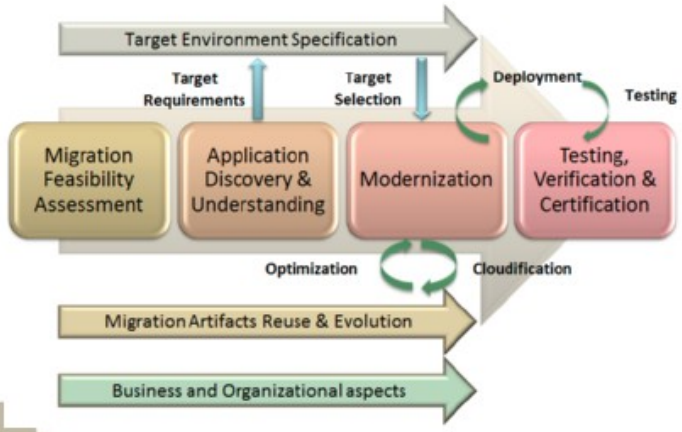

PAASAGE
CloudScale
artist
LEADS
cloud4SOA
InGeoCloudS
cloudspaces
CompatibleOne
OPENi
CHOREOS
Large Scale Choreographies
for the Future Internet
Broker@Cloud
contrail
xlcloud
Powering Computation in the Cloud
Optimis
open
Cloudware
PRISMA
seaclouds
AGILITY AFTER DEPLOYMENT
Modelling
Planning
Controlling

ARTIST

The ARTIST project

Advanced software-based service provisioning and migration of legacy Software

- ARTIST offers a set of **methods** and **tools**
- which provide an **end-to-end** and **assisted migration** service
- to **transform** non-cloud software applications
- taking full advantage of **cloud features**
- from an **holistic** perspective (technical, business, organizational)



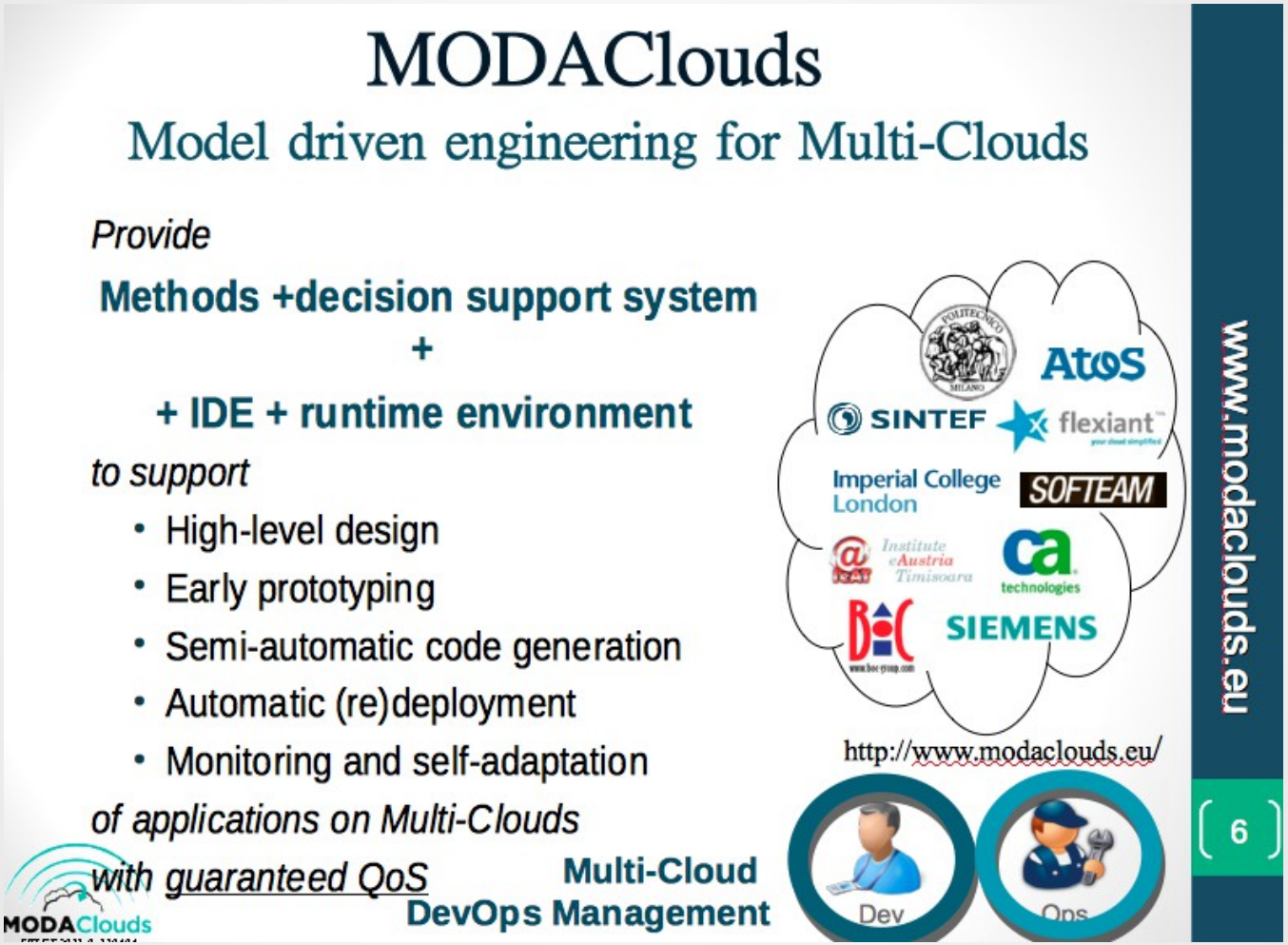
www.artist-project.eu

@ARTISTeu

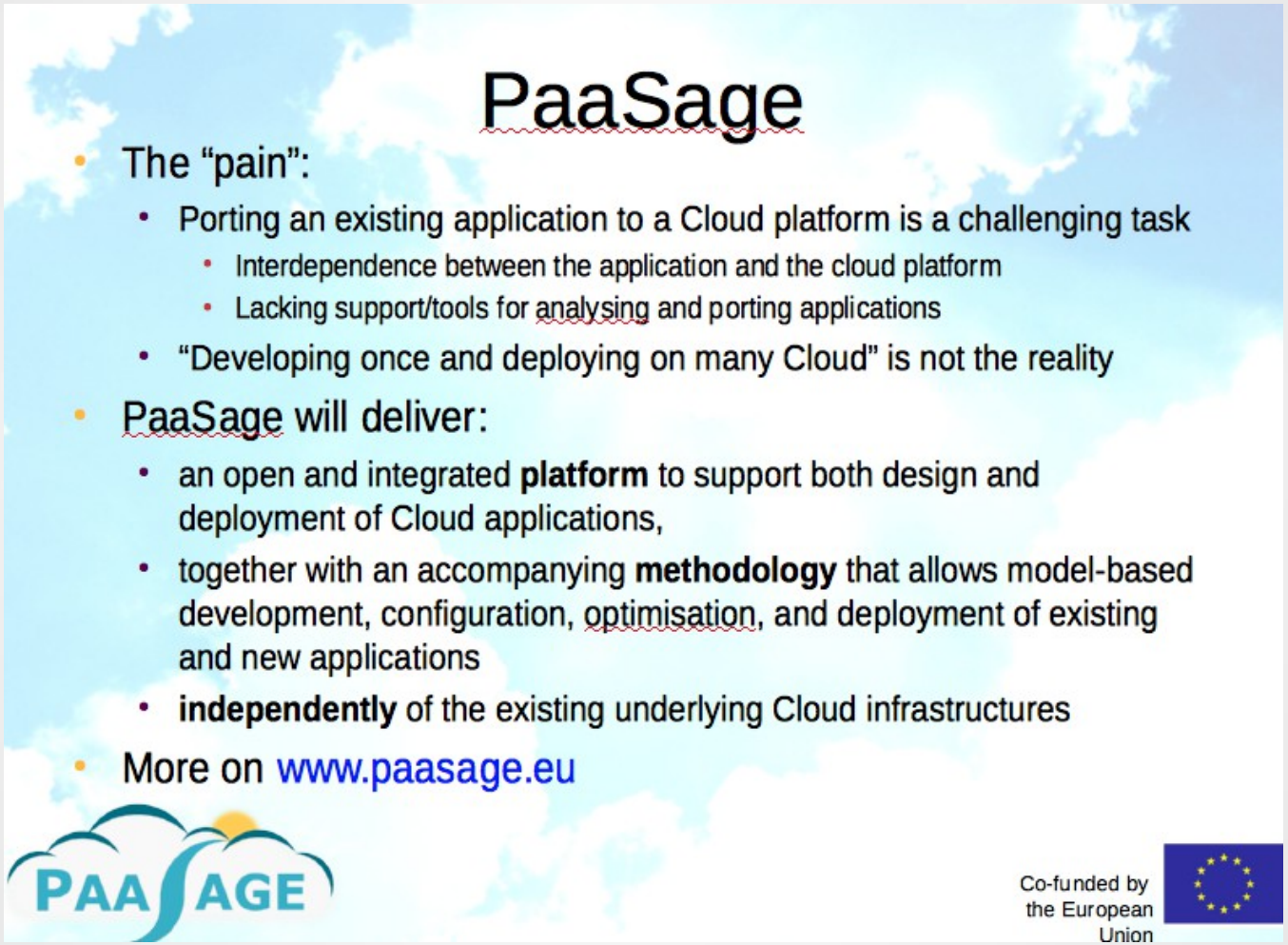
http://www.youtube.com/channel/UCHpiFKFs8Jbw4cv4EHqrglQ

http://www.linkedin.com/groups/ARTIST-PROJECT-4836922

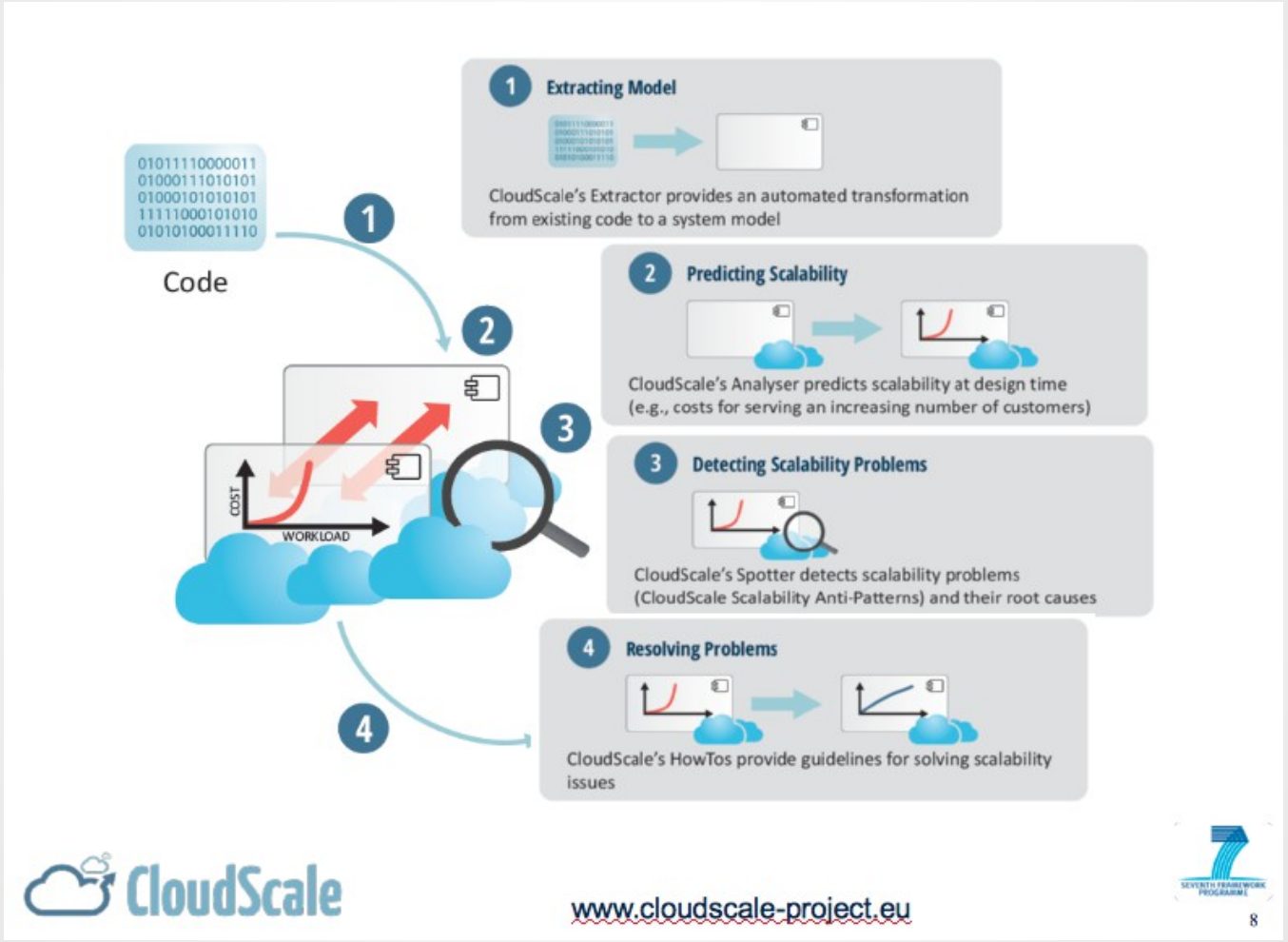
MODAClouds


MODAClouds
Model driven engineering for Multi-Clouds
Provide
Methods +decision support system
+
+ IDE + runtime environment
to support
• High-level design
• Early prototyping
• Semi-automatic code generation
• Automatic (re)deployment
• Monitoring and self-adaptation
of applications on Multi-Clouds
with guaranteed QoS
Multi-Cloud
DevOps Management
MODAClouds
Atos
SINTEF
flexiant
Imperial College London
SOFTEAM
Institute eAustria Timisoara
ca technologies
SIEMENS
http://www.modaclouds.eu/
Dev
Ops
www.modaclouds.eu
6

PaaSage


PaaSage
The "pain":
Porting an existing application to a Cloud platform is a challenging task
Interdependence between the application and the cloud platform
Lacking support/tools for analysing and porting applications
"Developing once and deploying on many Cloud" is not the reality
PaaSage will deliver:
an open and integrated platform to support both design and deployment of Cloud applications,
together with an accompanying methodology that allows model-based development, configuration, optimisation, and deployment of existing and new applications
independently of the existing underlying Cloud infrastructures
More on www.paasage.eu
PAASAGE
Co-funded by the European Union

CloudScale


1 Extracting Model
CloudScale's Extractor provides an automated transformation from existing code to a system model
01011110000011
01000111010101
01000101010101
11111000101010
01010100011110
Code
1
2
3
4
2 Predicting Scalability
CloudScale's Analyser predicts scalability at design time (e.g., costs for serving an increasing number of customers)
COST
WORKLOAD
3 Detecting Scalability Problems
CloudScale's Spotter detects scalability problems (CloudScale Scalability Anti-Patterns) and their root causes
4 Resolving Problems
CloudScale's HowTos provide guidelines for solving scalability issues
CloudScale
www.cloudscale-project.eu
8

Broker@Cloud

Broker@Cloud: Enabling Continuous Quality Assurance and Optimization in Future Enterprise Cloud Service Brokers
November 1, 2012 – October 31, 2015

www.broker-cloud.eu

Achievements to Date:

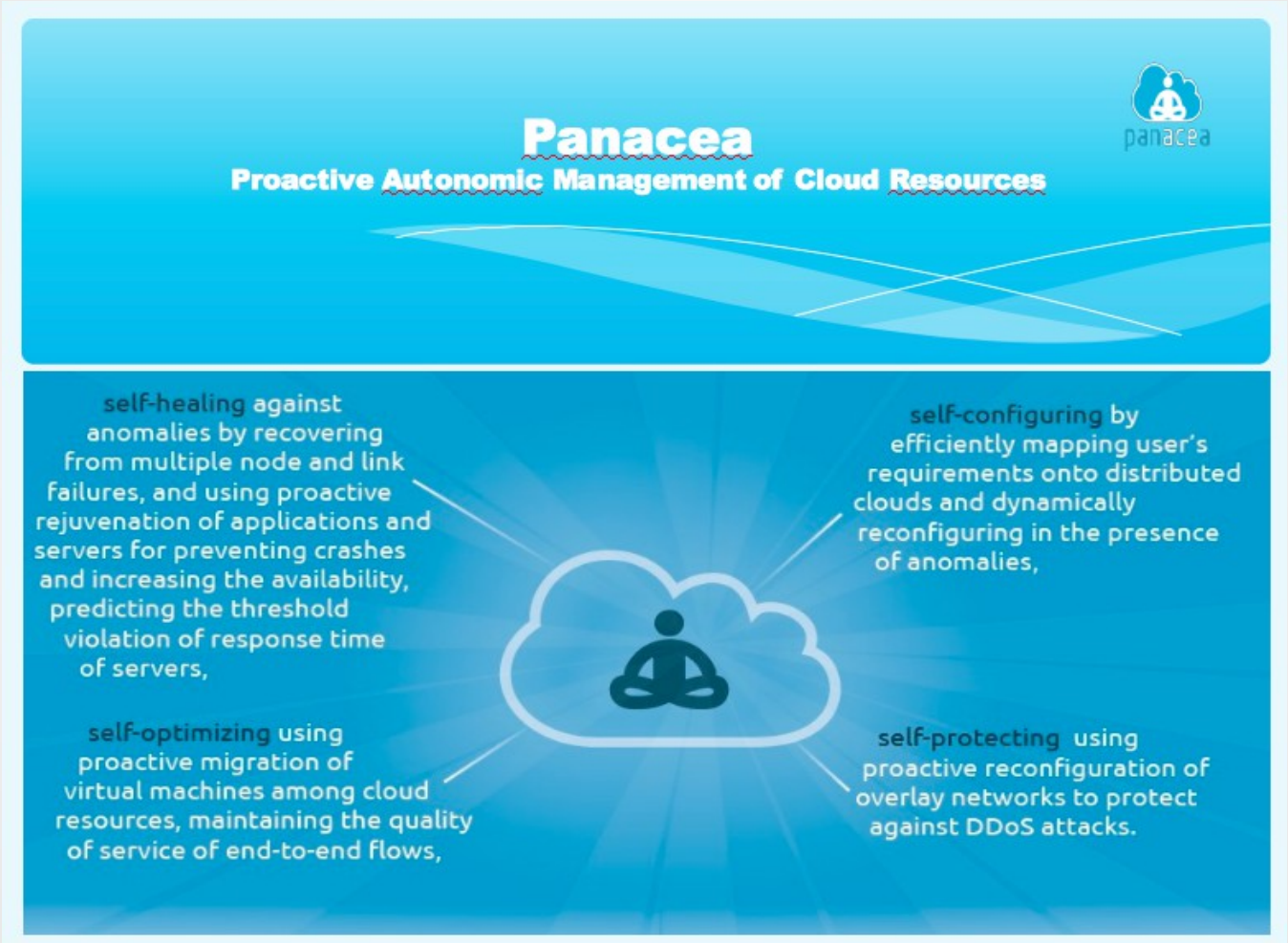
- Service Lifecycle Process
- Requirements and derived Capabilities
- Minimal Cloud Service Broker (CSB) Model
- CSB platform technical reference architecture
- 2-layer framework architecture for capabilities and mechanisms
- Framework API specifications
- Platform-neutral data exchange based on Linked USDL http://www.linked-usdl.org/

Next steps

- Implementation of Quality Assurance and Optimization Mechanisms
- 2 industrial showcases

Contact: andreas.friesen@sap.com

Panacea


Panacea
Proactive Autonomic Management of Cloud Resources
panacea
self-healing against anomalies by recovering from multiple node and link failures, and using proactive rejuvenation of applications and servers for preventing crashes and increasing the availability, predicting the threshold violation of response time of servers,
self-configuring by efficiently mapping user's requirements onto distributed clouds and dynamically reconfiguring in the presence of anomalies,
self-optimizing using proactive migration of virtual machines among cloud resources, maintaining the quality of service of end-to-end flows,
self-protecting using proactive reconfiguration of overlay networks to protect against DDoS attacks.

ASCENS

ASCENS Project (10/10 – 09/14)

ASCENS develops systematic methods, tools, and theories for modelling and analysing autonomic self-aware systems…

- …re-using traditional SE approaches
- …based on formal methods
- …with the flexibility promised by autonomic, adaptive, and self-aware systems

Case studies

- Robotics
- Cloud Computing
- Energy-Saving E-Mobility

The cloud case study

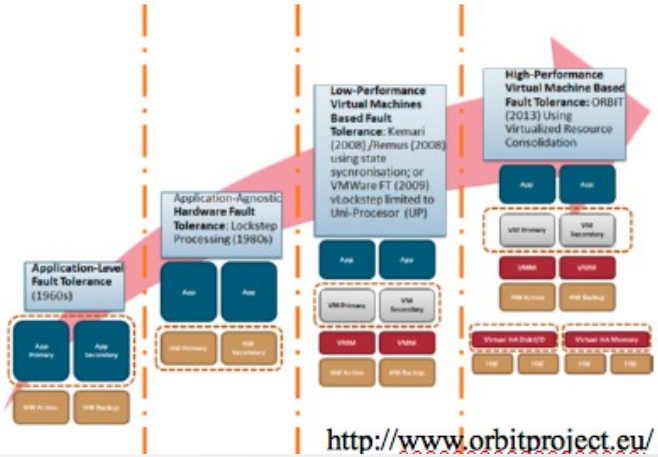
- …builds a decentralized and resilient autonomic cloud
- …integrates cloud computing with voluntary computing and peer-to-peer computing
- …supports self-adaption of cloud nodes for performance and energy-saving

http://www.ascens-ist.eu/

ORBIT

ORBIT
Business Continuity as a Service

- Real world applications depend on the **availability of Internet-based services**
- Minimizing downtime can be achieved by **application-specific** improvements or by **expensive hardware-level** approaches
- ORBIT will provide a **cost-effective approach** for **application-agnostic high availability**
- New paradigm for the **consolidation of virtualized memory and I/O resources** from multiple physical hosts
- Enhanced with approaches for **single-host fault-tolerance** and **entire-site MAN-based disaster recovery**



The BigFoot Project

The BigFoot Project

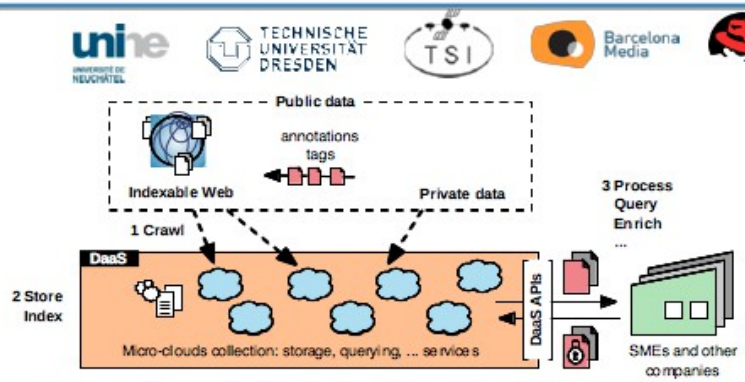
Help **data scientists** be **productive**

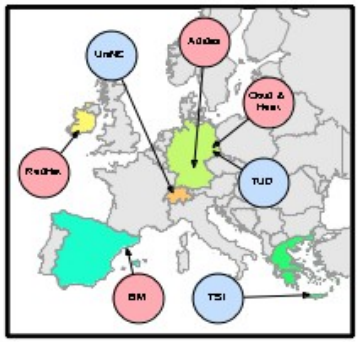
- Use case-driven: big data analytics for **ICT security** and **smart grids**
- **Automatic**, **optimized** and **self-tuned** deployments in **private clouds**
- Uses and contributes to widely used open source software: **Hadoop**, **OpenStack**
- Several pieces of **free software** released
- **Transparent optimizations**: you don't have to "learn BigFoot" to benefit from it
- Some BigFoot enhancements already included in **OpenStack**

http://bigfootproject.eu/

LEADS

LEADS - http://www.leads-project.eu/





- Building a *shared* and *open* platform for collecting, storing and processing large amounts of *public* and *private* data
  - For SMEs and non-IT companies
  - Combine public and private data, preserve privacy
  - Query over real-time and historical data
- Unique support infrastructure: collection of micro-clouds
  - Small clusters, deployed in houses and buildings, used for heating
  - Local, energy-efficient data collection and processing
- 36 months, 400 person-months, STREP project
  - Universities: University of Neuchâtel (coordinator), Technische Universität Dresden, Technical University of Crete
  - IT companies: BM/Yahoo! and Red Hat
  - SME: Cloud&Heat
  - Large non-IT company: adidas

LEADS project – EU-Japan collaboration workshop

LEADS
LARGE-SCALE ELASTIC ARCHITECTURE FOR DATA AS A SERVICE

SyncFree

Objectives

- Shared mutable database at extreme scale
- e.g. Games, Social Networks on mobile phones
- Coordination-free, consistent, easy for programmers
- Final demo: millions of users!

Baseline and results so far

- CRDTs (conflict-free replicated data types): disconnected updates + merge, correct by construction
- Proof-of-concept platform: hundreds of replicas + transactions + consistency + fault tolerance
- Industrial application scenarios: leaderboard, wallet, healthcare collaboration, social collaboration
- Maintaining application invariants with minimal coordination

Future cloud topics

- Database Distribution Network: **mutable** shared content near users (DSLAM, base station, phone)
- Extreme-scale collaborative applications
- Programming extreme-scale applications, leveraging specific consistency properties
- Security without coordination

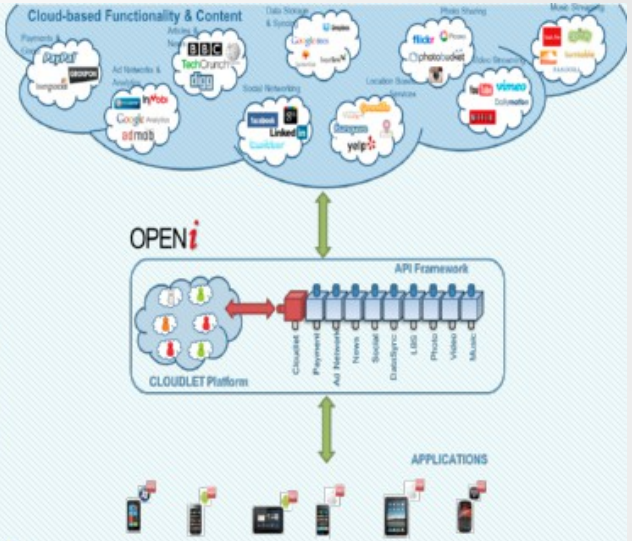
https://syncfree.lip6.fr

OPENi

Improve Interoperability of cloud-based services and trust in personal cloud storage

Building a **common framework of Open Source web APIs** to support integration of existing cloud-based services into applications in a **platform-independent** way

Delivering a set of **service enablers or value adding services**, that allow developers to easily access and use the content and data stored in the Cloudlets across several applications and devices



Enabling consumers to access cloud-based services through their applications and **store and manage their personal data and content**.

Harness you digital footprint !!

A **single secure location** to **store and control** personal data where **consumers remain in control** of their data via their own cloudlet.

http://www.openi-ict.eu/

TSSG Fraunhofer FOKUS CGI AmbieSense. Betapond velti OPENi

CloudSME

CloudSME – Cloud-based Simulation platform for Manufacturing and Engineering

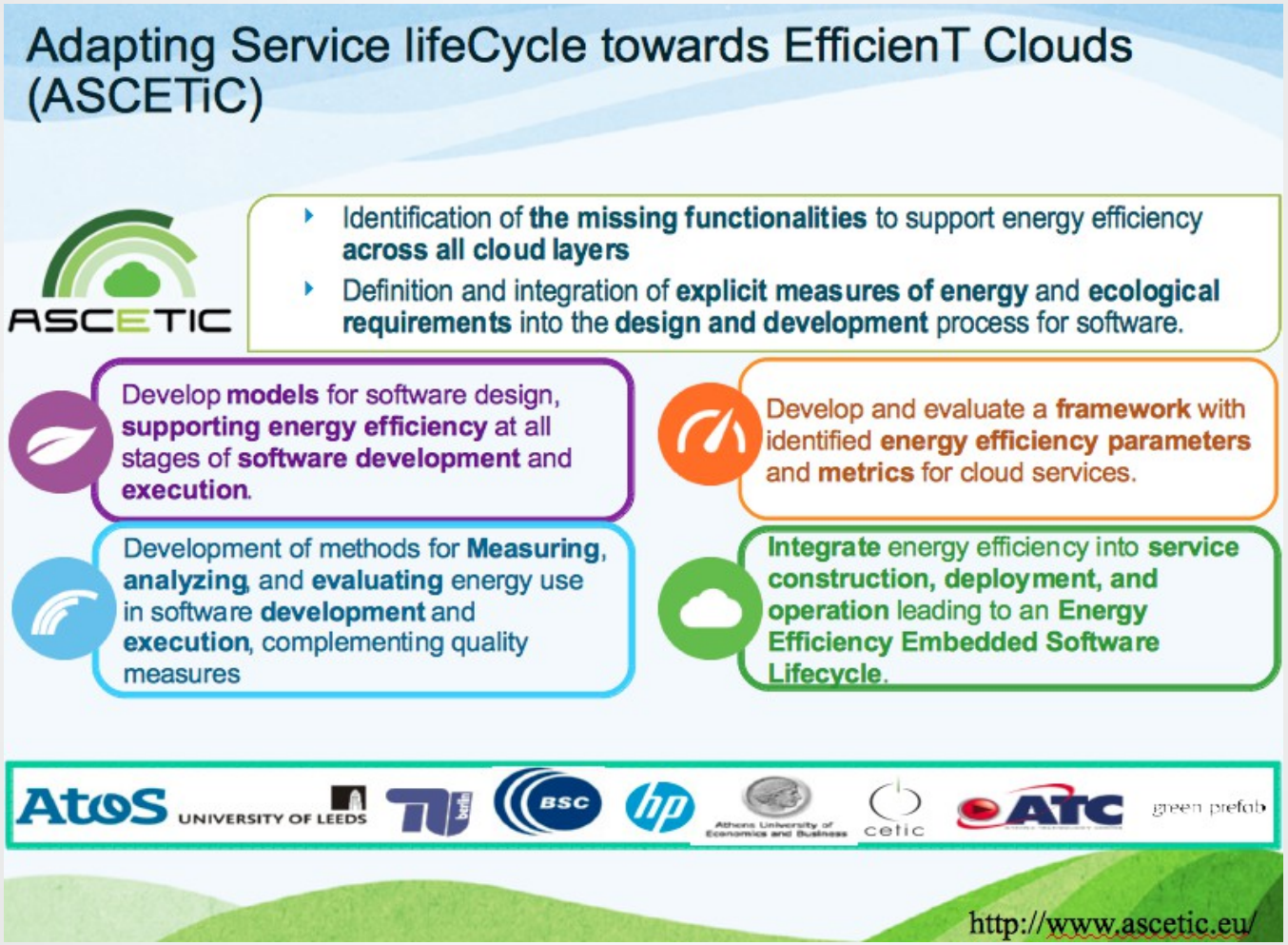
cloudSME Solutions for manufacturing & engineering

* Build a simulation platform that allows seamless access to multiple heterogeneous cloud resources and provides a high level of abstraction to users when accessing these resources for simulations in a one-stop-shop solution.

* Provide a Platform as a Service (PaaS) solution to build customised cloud applications
* Enable simulation software providers to offer Software as a Service (SaaS) simulation solutions
* Enable SMEs in the manufacturing and engineering domain to access simulation services
* Provide seamless access to HPC resources in order to speed up the simulations on-demand
* Define generic and concrete business models for SMEs in the manufacturing/engineering sector to facilitate the take-up of cloud-based simulation solutions

http://cloudsme.eu/

ASCETiC


Adapting Service lifeCycle towards EfficienT Clouds (ASCETiC)
ASCETIC
Identification of the missing functionalities to support energy efficiency across all cloud layers
Definition and integration of explicit measures of energy and ecological requirements into the design and development process for software.
Develop models for software design, supporting energy efficiency at all stages of software development and execution.
Develop and evaluate a framework with identified energy efficiency parameters and metrics for cloud services.
Development of methods for Measuring, analyzing, and evaluating energy use in software development and execution, complementing quality measures
Integrate energy efficiency into service construction, deployment, and operation leading to an Energy Efficiency Embedded Software Lifecycle.
Atos
UNIVERSITY OF LEEDS
BSC
hp
Athens University of Economics and Business
cetic
ATC
green prefab
http://www.ascetic.eu/

Ocean

Fraunhofer FOKUS

OW2

ENGINEERING

IPA

Open Cloud Directory

http://www.ocdirectory.org/

@OceanOpenCloud

ocean-project

Mapping the EU Open Cloud Collab Project Landscape

Identify → Position → Productize → Promote

Open Cloud Directory

Interoperability Framework

ETICS

Open Cloud Events

Open Cloud Directory

Reviewed by Ocean

Quality Validated by Ocean

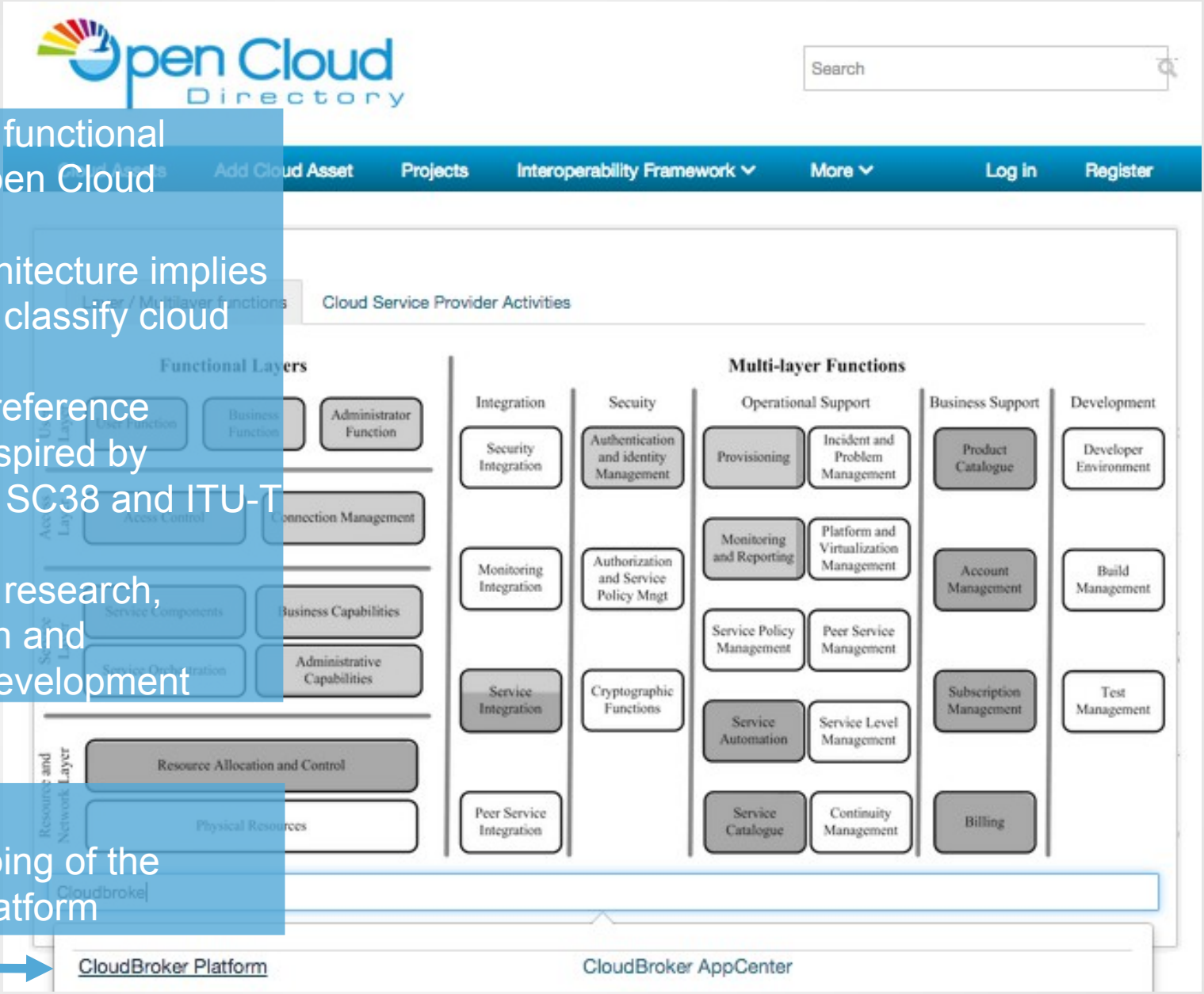
OPEN CLOUD FORUM LONDON 2014 By OW2

OW2 WEBINAR

http://www.ocdirectory.org/

- OCD provides functional mapping of Open Cloud Projects
- Reference architecture implies a taxonomy to classify cloud assets
- Based on the reference architecture inspired by ISO/IEC JTC1 SC38 and ITU-T SG13
- A roadmap for research, standardization and components development

Example:
functional mapping of the CloudBroker Platform

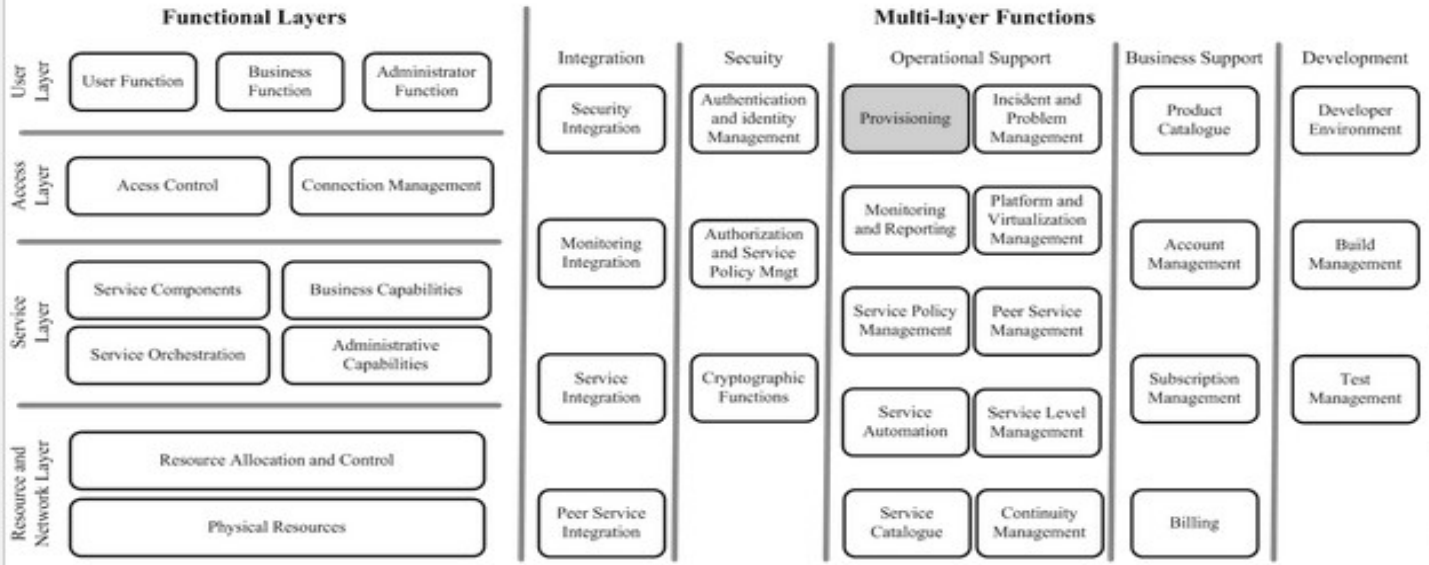


Open Cloud Directory

Search

Cloud Assets | Add Cloud Asset | Projects | Interoperability Framework | More | Log in | Register

Layer / Multilayer functions | Cloud Service Provider Activities



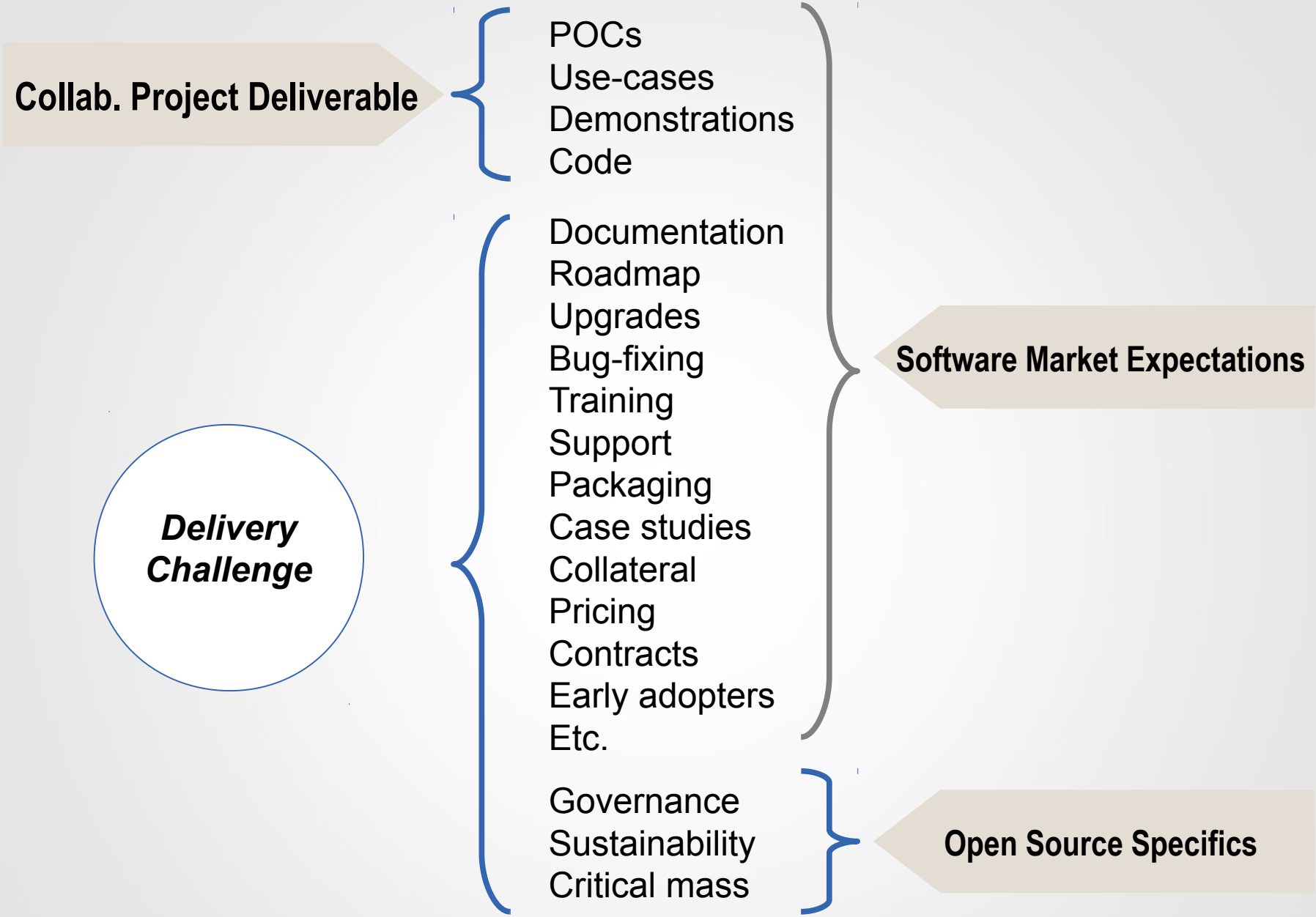
Search for asset

Provisioning

CloudBroker Platform	Cloud-TM Final Prototype	ConPaaS
CompatibleOne Advanced Capabilities for CORDS (ACCORDS)	Energizer4Cloud - MODAClouds Execution Platform	Cloud-TM Autonomic Manager
Post-copy live migration	jCloudScale	

Agenda

- The changing nature of open source
- Mapping open cloud collaborative projects in Europe
- **Addressing the Delivery Challenge**


Collab. Project Deliverable
POCs
Use-cases
Demonstrations
Code
Delivery Challenge
Documentation
Roadmap
Upgrades
Bug-fixing
Training
Support
Packaging
Case studies
Collateral
Pricing
Contracts
Early adopters
Etc.
Software Market Expectations
Governance
Sustainability
Critical mass
Open Source Specifics

Code is only a fraction of the software value-chain that delivers market-ready offerings.

Users expect market-ready offerings, i.e. code complemented by: packaging, services, training, maintenance, support, etc.

Users want a full business proposal, not just bare code.

Open source collaborative projects do not deliver market-ready offerings

Collaborative R&D projects are expected to deliver POCs demonstrations and components.

Open source developers natural bias is to concentrate on core code functionalities.

Flawless open source governance is a must have.

Successful open source projects implement open source governance best practices.

Code complementors more likely to contribute to trustworthy OSS projects.

Two key public policy action items *(without interfering with market forces)*

Supply-side strategy: foster EU-driven OSS organizations to help build market trustworthiness in EU-funded OSS software.

Demand-side strategy: leverage govt-IT buying power to enhance OSS market attractiveness and create OSS market opportunities

Large and complex open source collaborative R&D projects

deliver technology *commons*,
not market-ready offerings

=> Address the ***Delivery Challenge***
of open source collaborative projects

Thank You

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