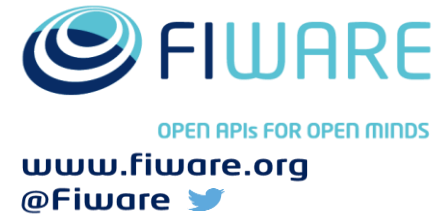


Mobile and Wireless IoT services with FIWARE Lab

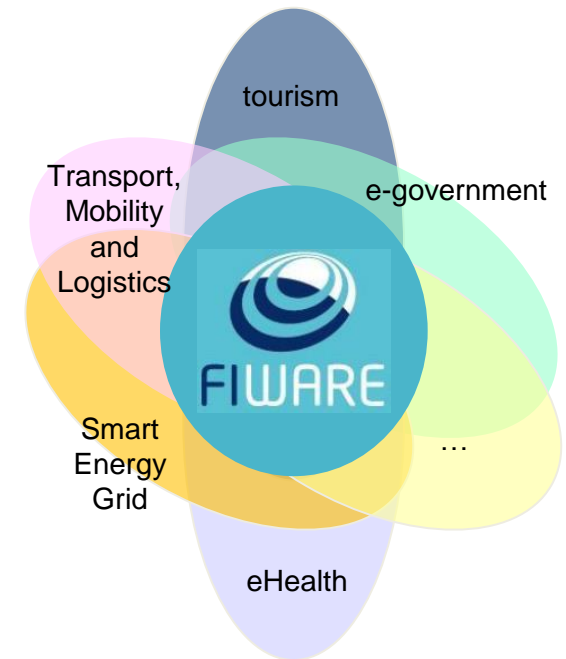
4 au 7 juillet 2016
SophiaConf
Le cycle azuréen de conférences Open Source

by  TelecomValley
Animateur Azuréen du Numérique



The FIWARE Program (formerly known as Future Internet PPP)

- **Goal:** capture opportunities derived from the new wave of digitalization of life and businesses
- **Strategy:** Build a ecosystem that will work as catalyst for capturing the opportunities. Lead standards for Smart Cities and APIs for IoT (Internet of Things)
- **Pillars:**
 -  **FIWARE:** a generic, open standard platform which serve the needs of developers in multiple domains
 -  **FIWARE Lab :** a meeting point where innovation takes place, an opportunities can be incubated
 -  **FIWARE Accelerate :** a program that funds developers and entrepreneurs, and ignites roll-out of the ecosystem
 -  **FIWARE Ops:** the suite of tools easing deployment and operation of FI-WARE instance nodes
- **Global footprint:** open to regions sharing the ambition



Fiware is a brand and an ecosystem

- FIWARE = enhanced OpenStack-based cloud hosting capabilities supporting a non-commercial Sandbox : The **Fireware Lab**

+

a rich library of added-value functions offered “as a Service”: The **Generic Enablers**



FIWARE Lab: the “meeting point” where innovation takes place

App Customers and Data providers

- Connect to entrepreneurs
- Put their data at work
- Bring new innovative services to end users
- Be more efficient
- Social Reputation

Entrepreneurs, Developers

- Develop once for a large market
- Easily meet potential customers
- Marketing, promotion
- Ability to test with real data and end users, to run large scale trials with real users
- Simple yet powerful APIs that accelerate product development
- Exploit opendata published by cities and others organizations



FIWARE Technology Providers

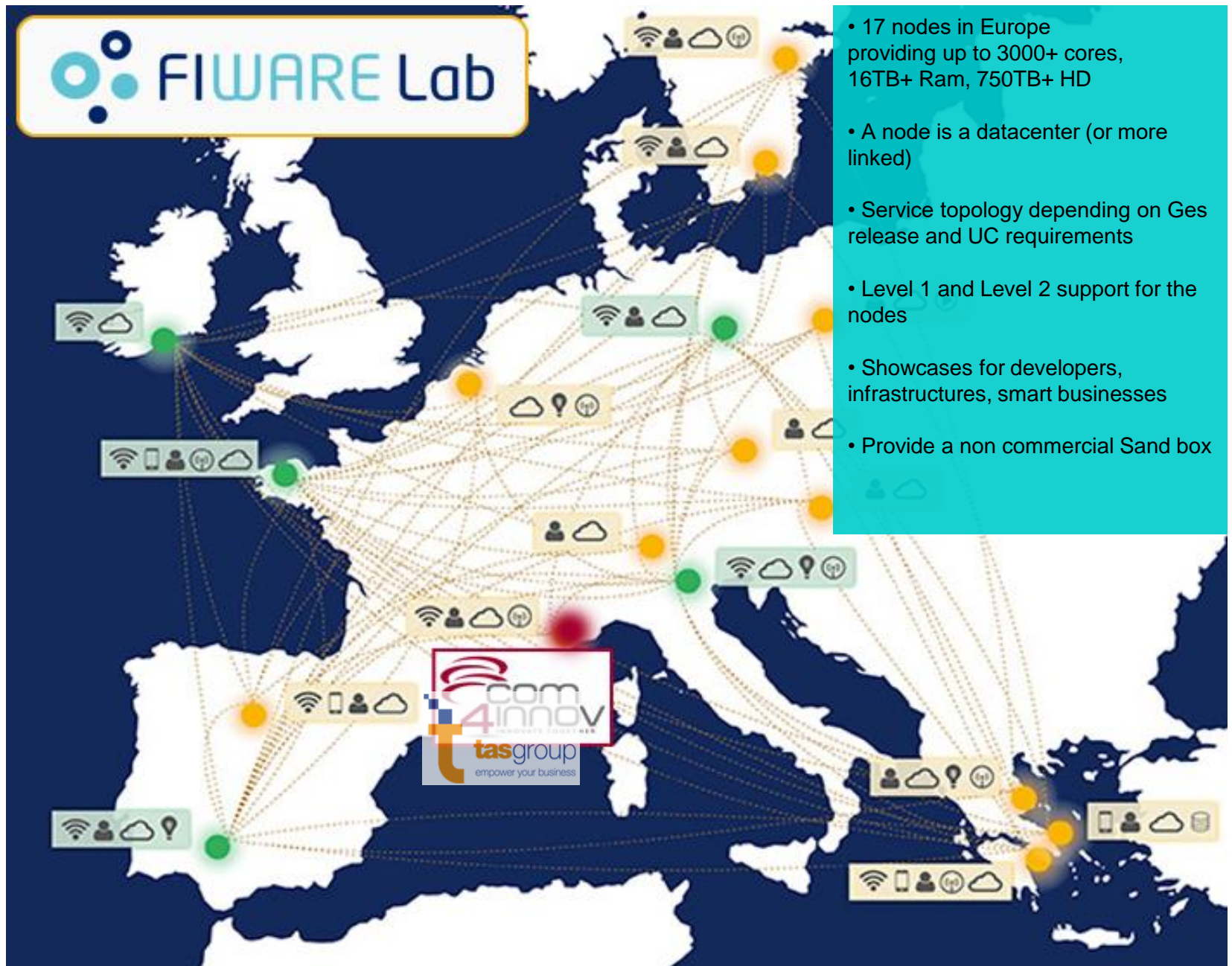
- “Competitive” approach
- Connect to entrepreneurs: jointly exploit the opportunities

- 4,2 M€ promotion campaign
 - Campus Party events
 - Startup Weekend events
 - Chambers of Commerce
 - 870 K€ in prizes
- 100 M€ of funding devoted to entrepreneurs in phase 3 of the FIWARE program






- 17 nodes in Europe providing up to 3000+ cores, 16TB+ Ram, 750TB+ HD
- A node is a datacenter (or more linked)
- Service topology depending on Ges release and UC requirements
- Level 1 and Level 2 support for the nodes
- Showcases for developers, infrastructures, smart businesses
- Provide a non commercial Sand box



FIWARE Lab - FIWARE Dashboard Cloud Portal



VM provisioning



Project Admin

Project Name

demo_project

Blueprint

Blueprint Instances

Blueprint Templates

Region

RegionOne

Compute

Instances

Images

Flavors

Security

Snapshots

Storage

Containers

Volumes

Network

Images

Name	Status	Visibility
Centos-6.2-sdc	active	public
Centos-6.3-sdc	active	public
PuppetAware-6	active	public
Ubuntu-12.0-sdc	active	public
Ubuntu12.0	active	public
puppet-aware	active	public
puppetaware7	active	public
sdc04RegularUpdates	active	private
sdc07Regul		
sdc09Regul		
snapshot-a		
testJC		
testJC		

Instances

Instance Name	IP Address	Size	Keypair	Status	Task
blueprint14-tamcat5-1	10.100.20.5	2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		ACTIVE	None
blueprint14-tamcat5-1		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None

Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Instance Name *

myinstance

Flavor

m1.tiny

Description

Specify the details for launching an instance. The chart below shows the resources used by this project in relation to the project's quotas.

Flavor Details

Name	m1.tiny
VCPUs	1
Root Disk	0 GB
Ephemeral Disk	0 GB
Total Disk	0 GB
RAM	512 MB

Project Quotas

Instance Count (8)	4 Available
VCPUs (4)	14 Available
Disk (20 GB)	No GB Available
Memory (2288 MB)	38912 MB Available

* Mandatory fields.

Cancel Next

Launch Instances

1. Details 2. Access & Security 3. Networking 4. Post-Creation 5. Summary

Selected Networks

nic:1 demonetork

Available Networks

storage_network

Description

Control access to your instance via keypairs, security groups, and other mechanisms.

* Mandatory fields.

Back Next

Launch New Instance

Actions

Edit Instance

Connect to Instance

View Log

Create Snapshot

Pause Instance

Unpause Instance

Suspend Instance

Resume Instance

Change Password

Reboot Instance

Terminate Instance

Management of Blueprints

fi-ware Dashboard Blueprint Templates/ Example 1

User_demo

Software dependencies + Add

Project Admin

Project Name: FI-WARE-demo

Compute

- Applications
- Blueprint Instances
- Blueprint Templates
- Instances
- Images
- Security
- Flavors
- Snapshots

Storage

- Containers
- Volumes

Blueprint Template Details:

Name: test
Flavor: XXXXXXXXXX
Image: XXXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Software in Tier

- Node.js
- Apache
- Data-Base
- Rails
- Zsh

Software in Catalogue

- git 1.7
- contextbroker 1.0.0
- git 1.7
- haproxy 1.0

Form Fields:

Name *: test
Region: RegionOne
Flavor *: m1.small (1VCPU / 20GB Disk / 2048GB R)
Image *: CentOS-6.3-std
Icon: View
Keypair: jessupg-keypair

* Mandatory fields. Cancel Create Tier

Add Tier

Blueprint Template Details:

Name *: test
Region: RegionOne
Flavor *: m1.small (1VCPU / 20GB Disk / 2048GB R)
Image *: CentOS-6.3-std
Icon: View
Keypair: jessupg-keypair

Connected to Networks

- demonetwork (subnet 10.200.40.0/25)
- Internet

Available Networks

- storage_network (subnet 10.100.84.0/25)
- demonetwork (subnet 10.200.40.0/25)
- Internet

* Mandatory fields. Cancel Create Tier

Blueprint Instances/ Example 1

Back to instances

Blueprint Instance Details:

Name: test
Flavor: XXXXXXXXXX
Image: XXXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Software in Tier

- Node.js
- Apache
- Data-Base
- Rails
- Zsh

Software in Catalogue

- git 1.7
- contextbroker 1.0.0
- git 1.7
- haproxy 1.0

ERROR Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor sit amet, consectetur adipiscing elit.

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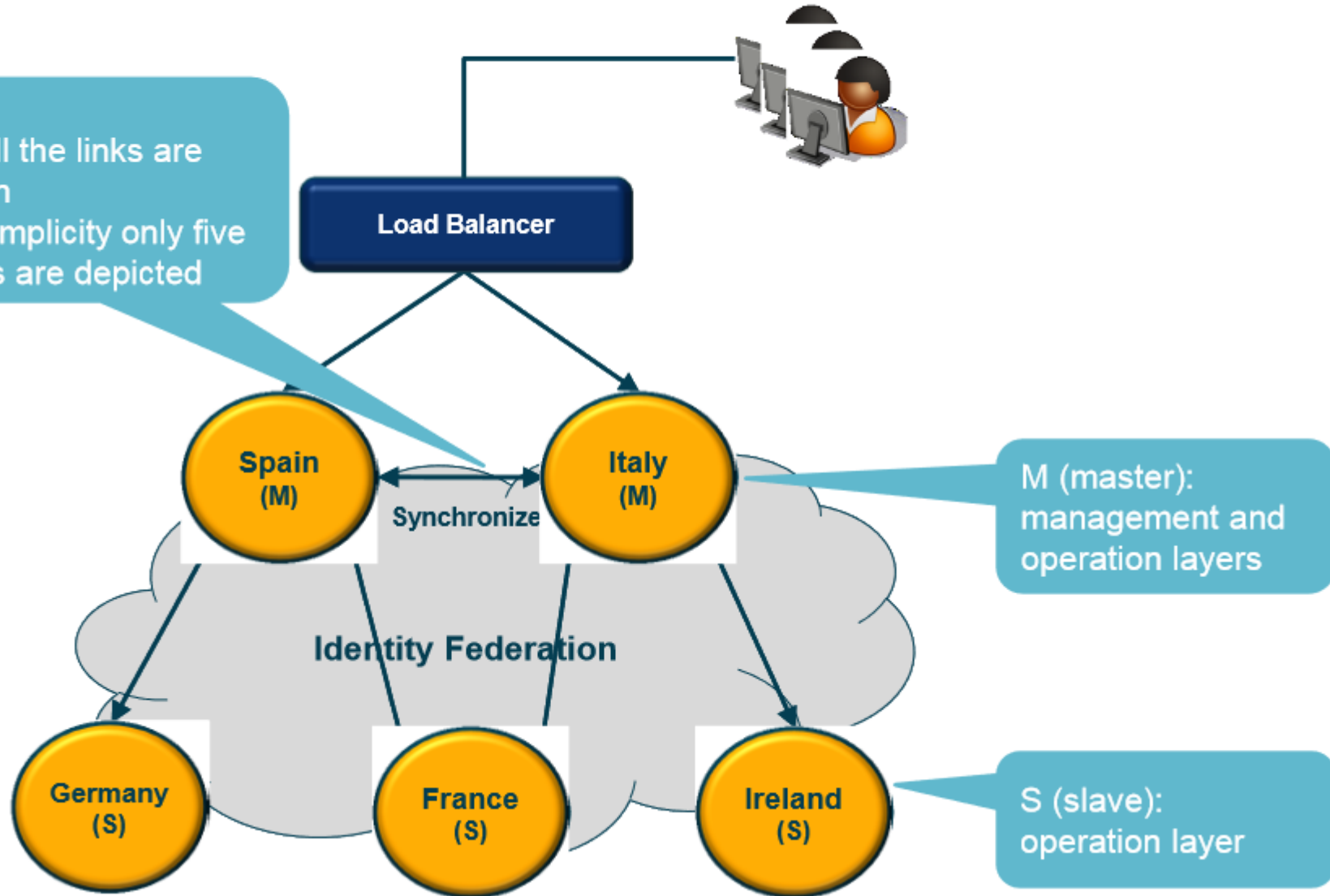
OpenStack Infrastructure and Topology



The Federation “topology”

Note:

- Not all the links are shown
- For simplicity only five nodes are depicted

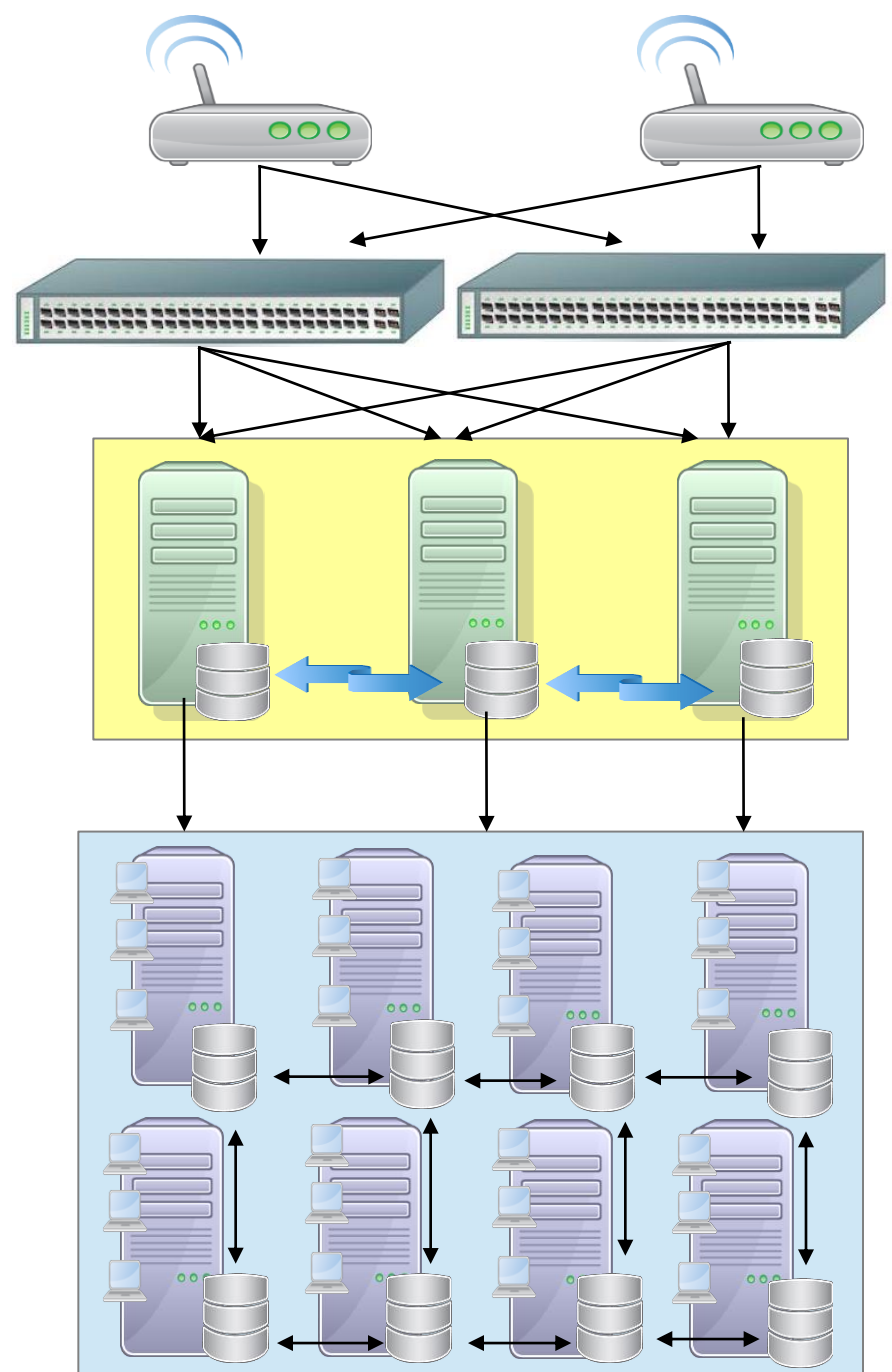


Controller, Telemetry - MongoDB

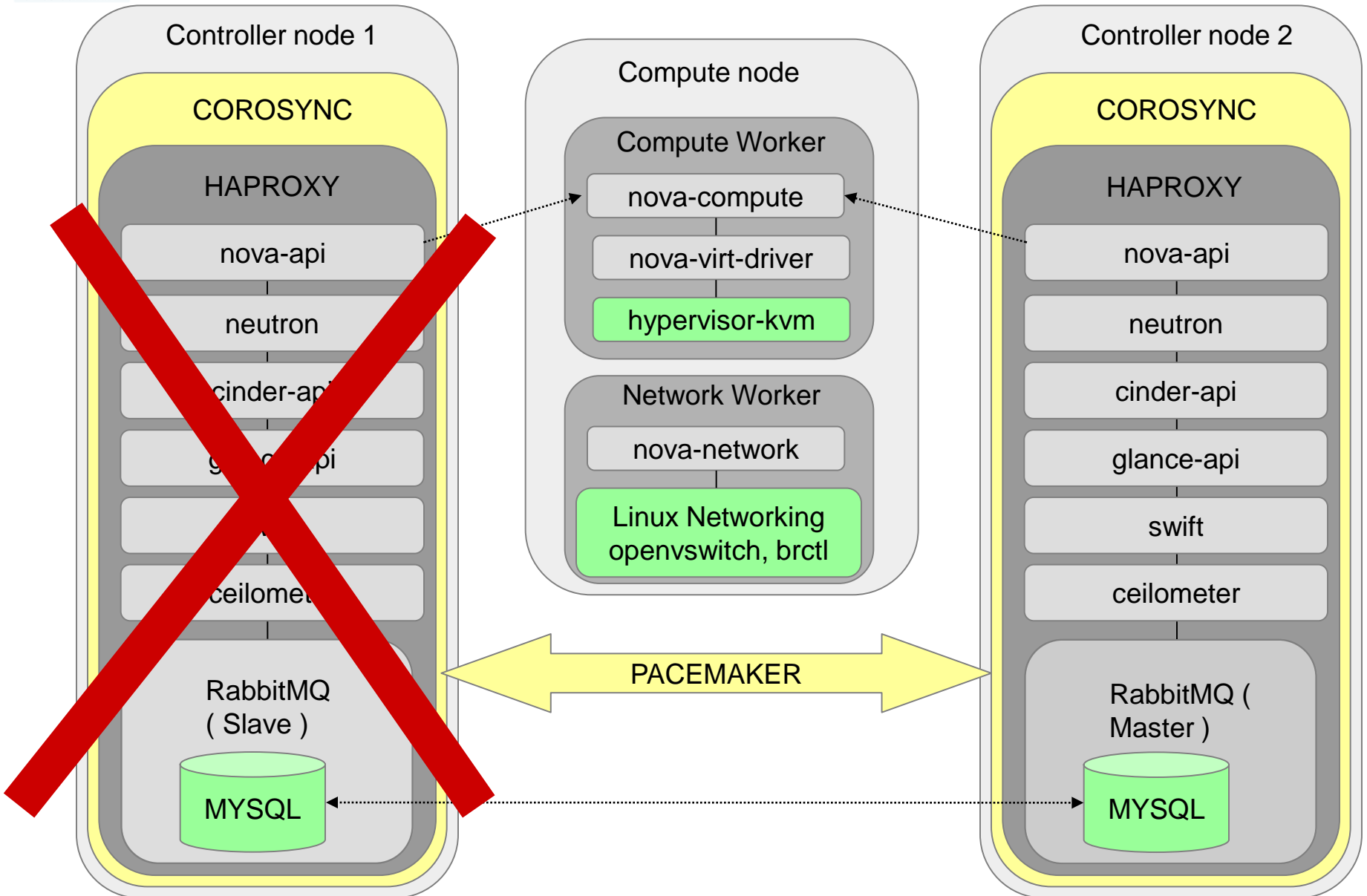
- nova-api
- cinder-api
- ceilometer-api
- glance-api
- neutron-api
- swift-proxy
- corosync
- mongodb
- rabbitmq-server

Compute, Storage - Cinder

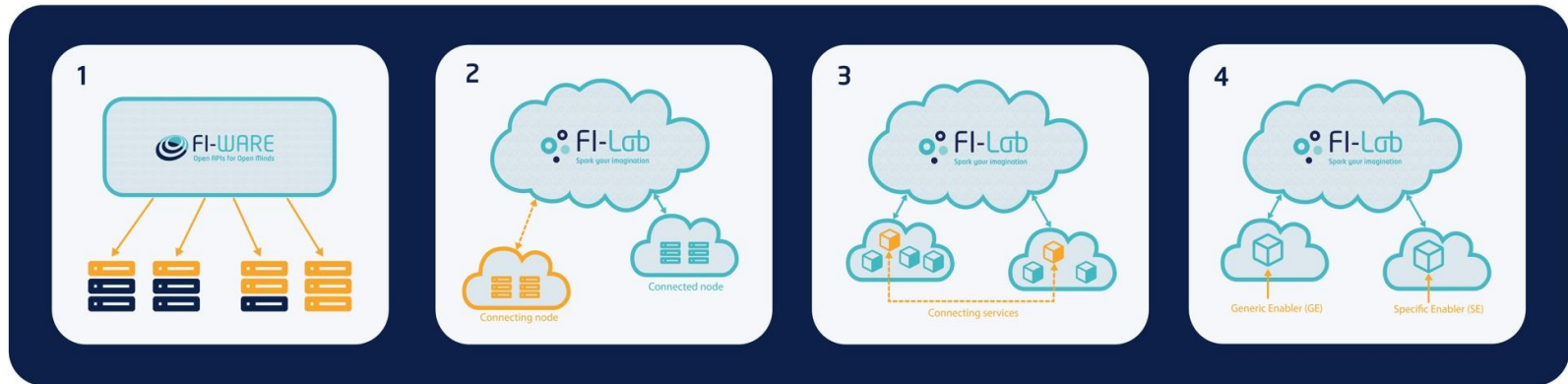
- nova-compute
- cinder-volume
- ceilometer-agent-compute
- openvswitch-switch
- open-iscsi
- libvirt
- libvirt-guests
- ebtables
- tgt



OpenStack High availability services



Paving the way for FIWARE providers



Deployment

Deployment of basic Cloud Hosting GEs and Monitoring Adapters in a FIWARE node

Federation Management

Federate a new FIWARE node within a given FIWARE instance (e.g., the FIWARE Lab)

Connectivity Management

Manage connectivity of services across FIWARE nodes of a FIWARE instance

Service Offert Management

Registration and deployment of additional Generic Enablers, Specific Enablers and complementary Future Internet Facilities



Generic Enablers (GE)



Driven by
implementation



Sustainability
ensured



Yes WE'RE
OPEN

FIWARE Generic Enablers (GEs)

- A FIWARE Generic Enabler (GE):
 - Set of general-purpose **platform functions** available through **APIs**.
 - Building with other GEs a **FIWARE Reference Architecture**.
- **FIWARE GE Specifications** are open (public and royalty-free).
- **FIWARE GE implementation (FIWARE GEi):**
 - Platform product that implements a given GE Open Spec.
 - There might be multiple compliant GEis of each GE Open Spec.
- **At least one open source reference implementation of FIWARE GEs (FIWARE GERis):**
 - Well-known open source license.
 - Publicly available **Technical Roadmap** updated in every release.
- Available FIWARE GEis, GERis and incubated enablers published on the **FIWARE Catalogue**.



FIWARE major differential features : 7 chapters / 36 GEs

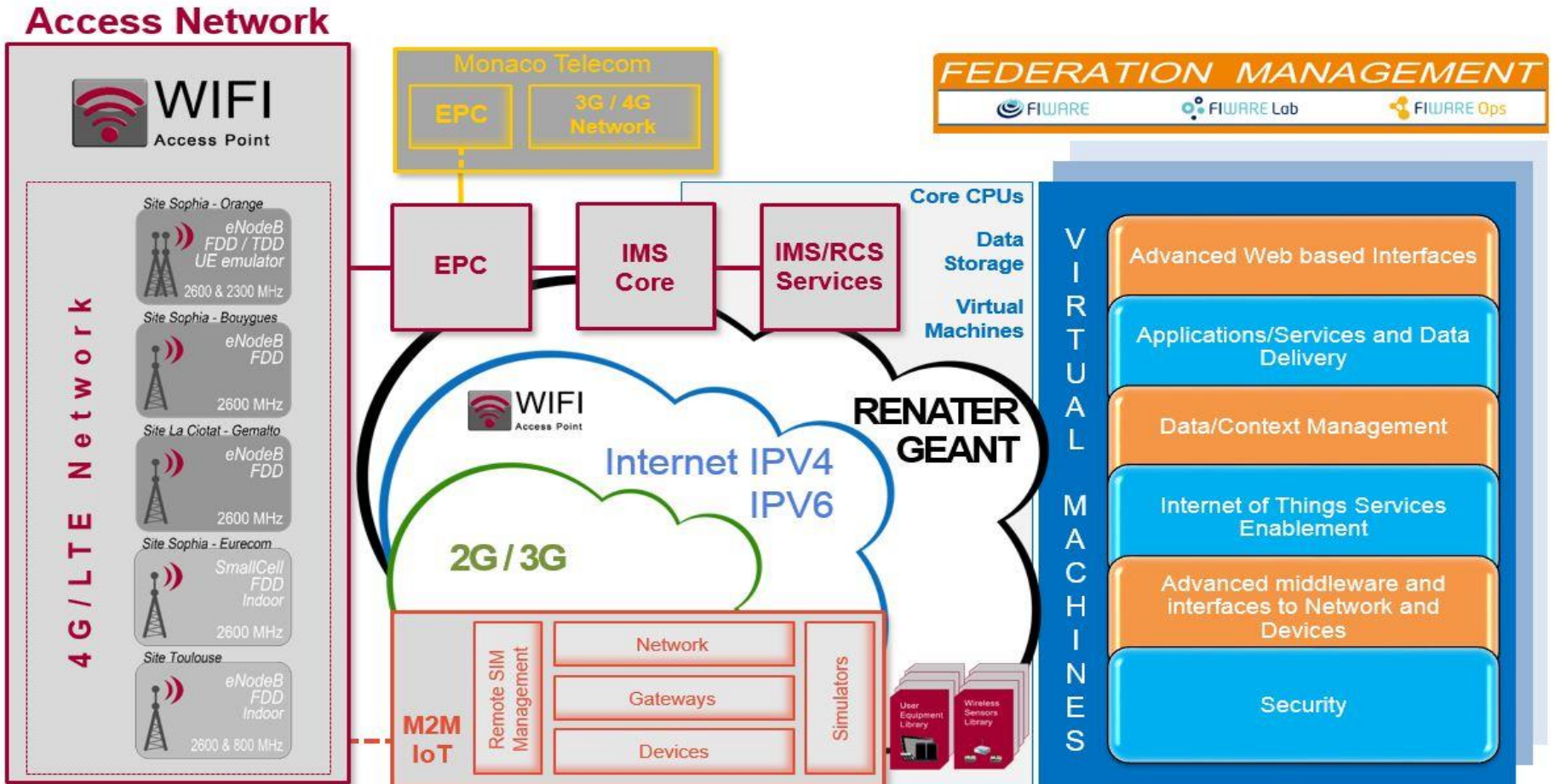
Cloud		<ul style="list-style-type: none">• Federation of infrastructures (private/public regions)• Automated GE deployment
Data		<ul style="list-style-type: none">• Complete Context Management Platform• Integration of Data and Media Content
IoT		<ul style="list-style-type: none">• Easy <u>plug&play</u> of devices using multiple protocols• Automated Measurements/Action \leftrightarrow Context updates
Apps		<ul style="list-style-type: none">• Visualization of data (operation dashboards)• Publication of data sets/services
Web UI		<ul style="list-style-type: none">• Easy support of UIs with advanced web-based 3D and AR capabilities• Visual representation of context information.
I2ND		<ul style="list-style-type: none">• Advanced networking capabilities (SDN) and Middleware• Interface to robots
Security		<ul style="list-style-type: none">• Security Monitoring• Built-in Identity/Access/Privacy Management



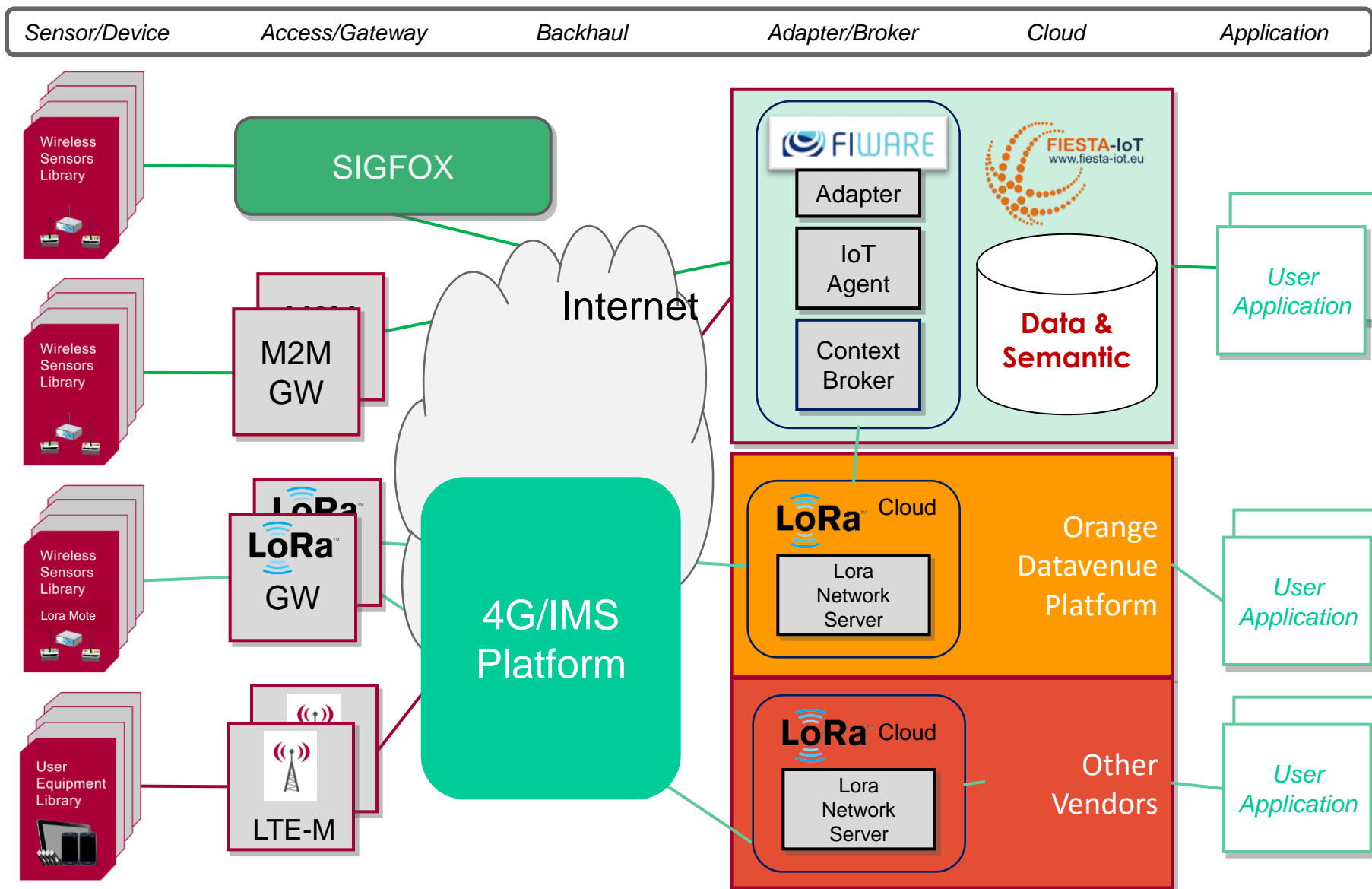
Com4Innov platform (-Lab, -Catalog, -Cloud ...)

- FIWARE = Advanced Openstack-based Cloud + rich library of Generic Enablers (GE)
- Com4Innov federated FiWare testbed – provides resources and support to experimenters
- FIWARE GE : Set of general-purpose platform functions available through APIs
- 100 % of API and technical specifications are free





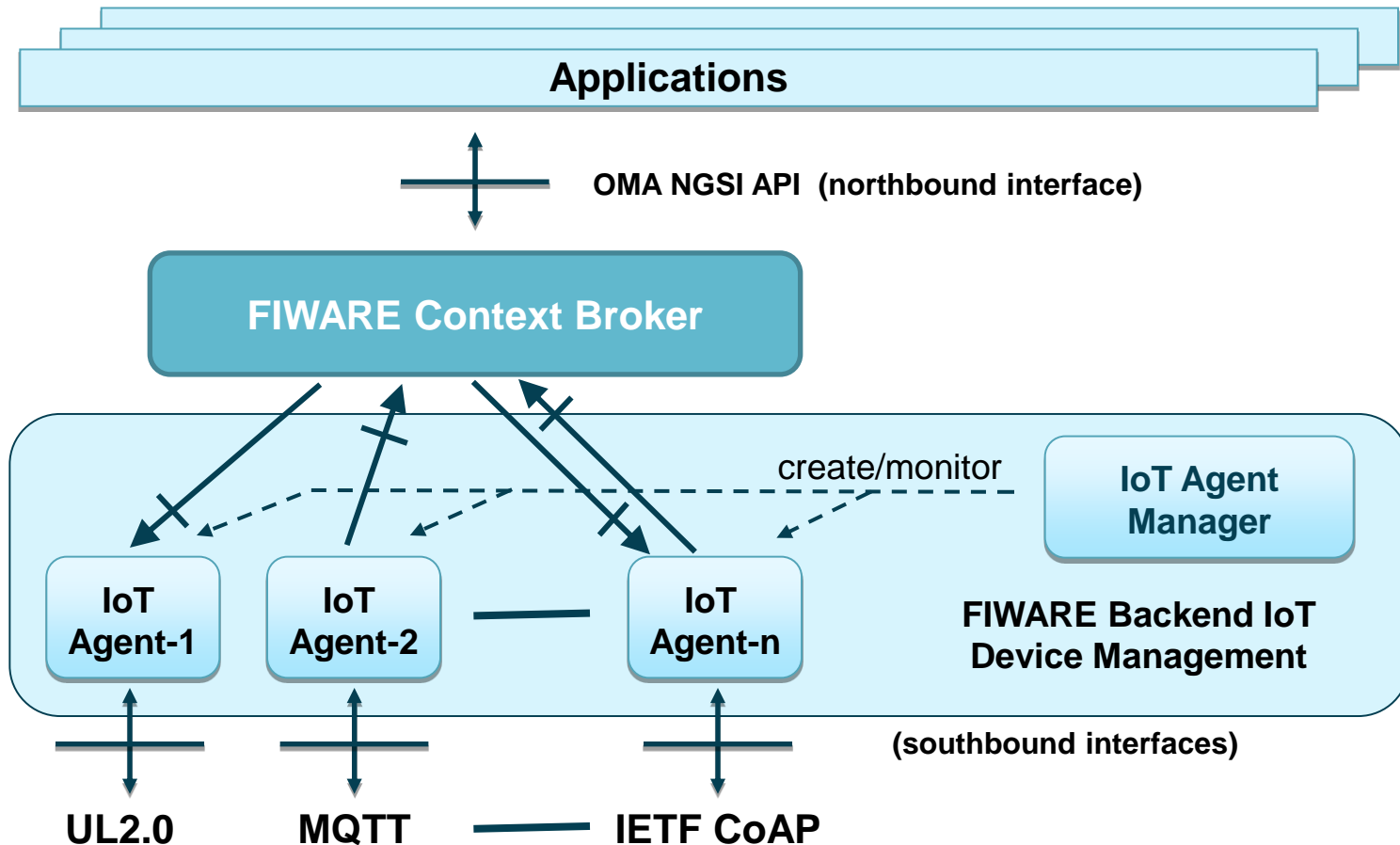
Com4Innov – IoT Architecture Overview



IoT agent GE - Integration with sensor networks

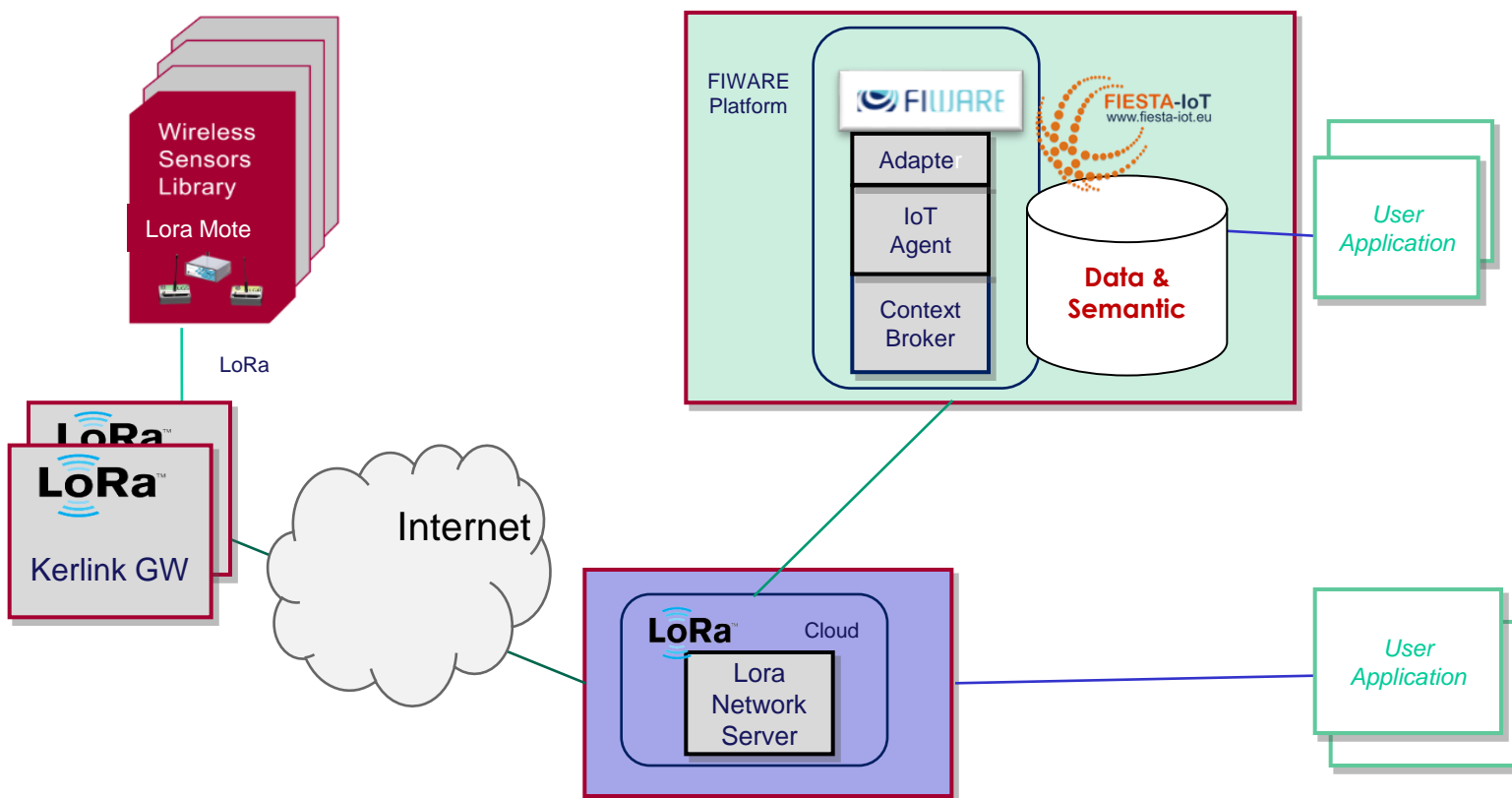
The backend IoT Device Management GE enables creation and configuration of NGSI IoT Agents that connect to sensor networks

Each NGSI IoT Agent can behave as Context Consumers or Context Providers, or both



Com4Innov – IoT Tesbed

Example of connectivity Orion CB GE<->LoRa GW



Thanks !

4 au 7 juillet 2016
SophiaConf
Le cycle azuréen de conférences Open Source

by  TelecomValley
Animateur Azuréen du Numérique

