FIWARE Based Application Development

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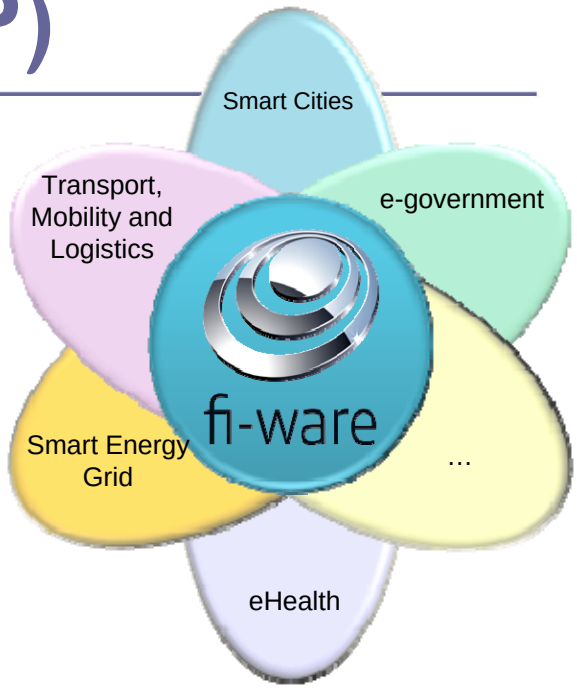
www.fiware.org
@Fiware

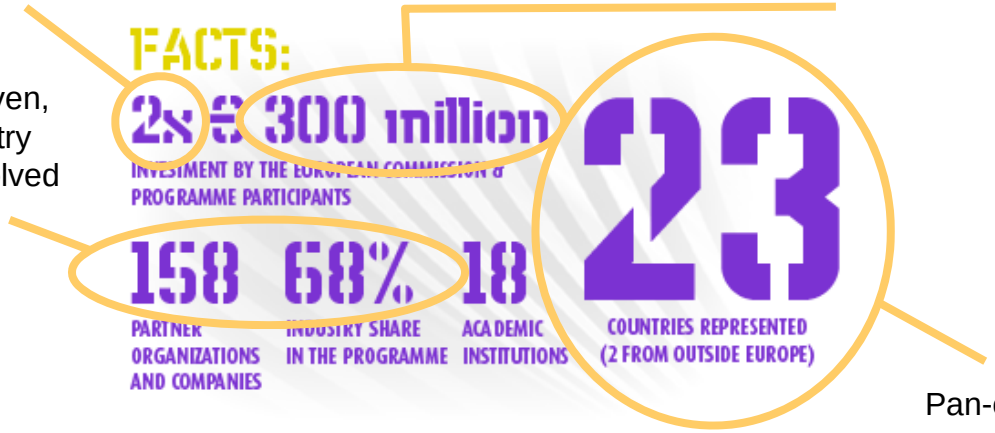
The Future Internet Public-Private Partnership (FI-PPP)

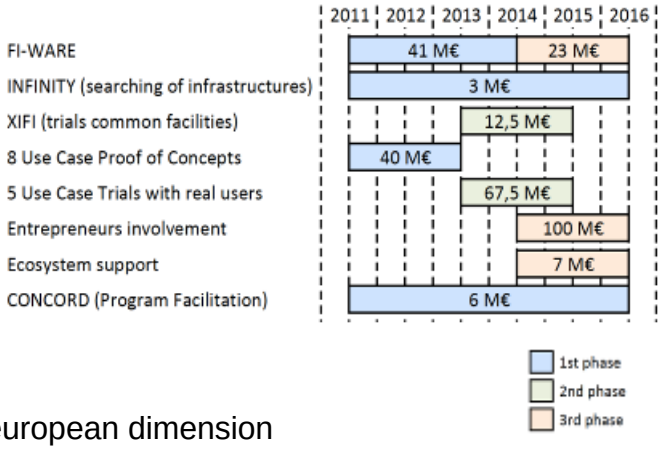
- Goal: capture new opportunities derived from Future Internet technology trends
  - Broadband connectivity, IoT, Cloud, Big Data, etc
- Approach: boost innovation by fostering industry-driven ecosystem
  - Generic Platform (FIWARE)
  - Industry-specific platforms and trials ('Use-Cases')
  - Broader community of developers and entrepreneurs



EC provides half of the funding:

Industry driven, major industry players involved





Pan-european dimension

FIWARE: Targeting developers needs

What		How
Connect apps to the physical world		IoT-M2M Enablers
Manage open data at large scale and transform it into knowledge		Data/Context Enablers
Benefit from open innovation (crowd-sourcing, apps composition)		Integration and Composition Enablers
Reach target users, monetize		Business & Delivery Framework (revenue-share, cross-selling, …)
Ensuring Privacy, Security and Trust		Security Enablers
Take the most of infrastructures while keeping costs lower and under control		Advanced Cloud Enablers
access from everywhere, adapt to devices		Enablers easing interface to Network and Devices

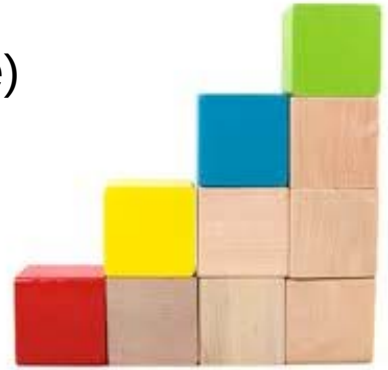
Built-in APIs & tools

FIWARE: Major Technical Chapters

How		Technical Chapters
Built-in APIs & tools	IoT-M2M Enablers	IoT Services Enablement
	Data/Context Enablers	Data/Context Management
	Integration and Composition Enablers	Apps/Services Ecosystem & Delivery
	Business & Delivery Framework (revenue-share, cross-selling, …)	
	Security Enablers	Security
	Advanced Cloud Enablers	Cloud
	Enablers easing interface to Network and Devices	I2ND

FIWARE Generic Enablers (GEs)

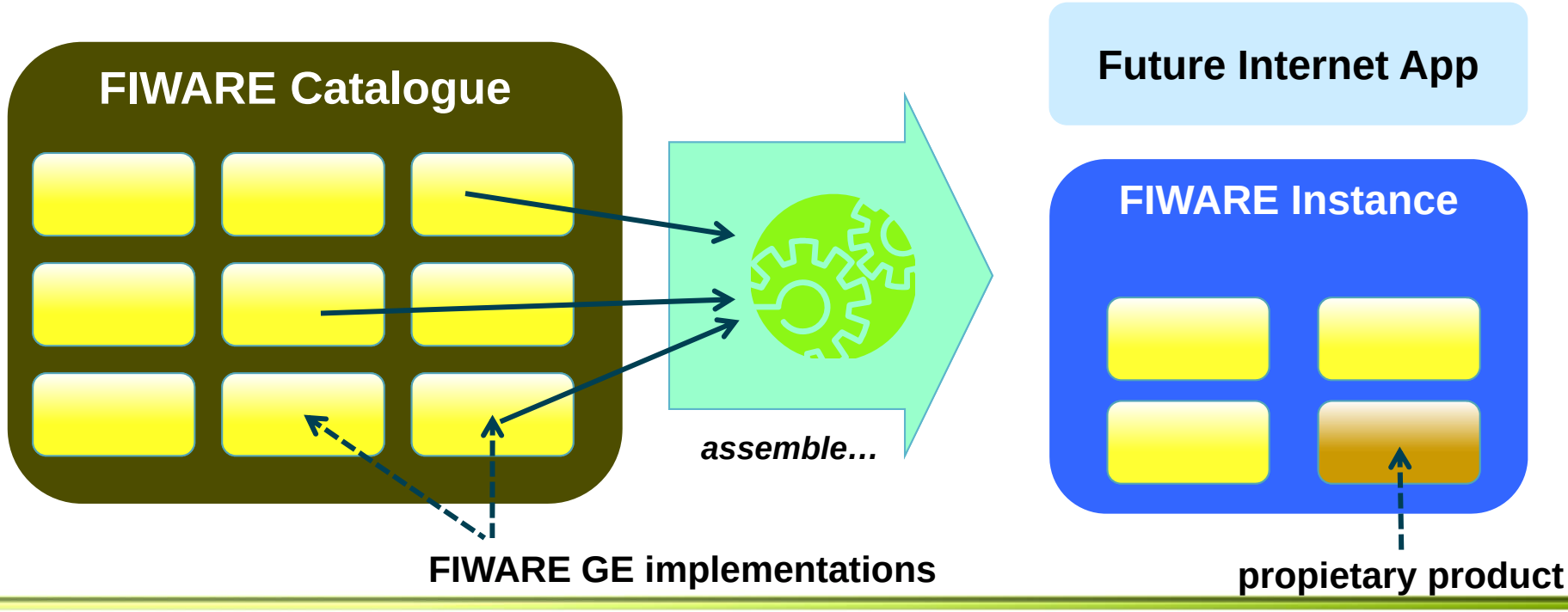
- A FIWARE Generic Enabler (GE):
  - set of general-purpose **platform functions** available through **APIs**
  - Building with other GEs a **FIWARE Reference Architecture**
- **FIWARE GE Specifications** **are open** (public and royalty-free)
- **FIWARE GE implementation (FIWARE GEi):**
  - Platform product that implements a given GE Open Spec
  - There might be multiple compliant GEis of each GE Open Spec
  - Available FIWARE GEis published on the **FIWARE Catalogue**



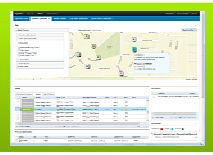
- **The FIWARE project will deliver at least one reference implementation** of FIWARE GEs:
  - Based upon results of previous R&D projects
  - Publicly available **Technical Roadmap** updated in every release
  - Licensed with no costs within the FI-PPP program
  - Commercialized under FRAND conditions or license as open source

FIWARE Instances

- Future Internet Applications run on top of “FIWARE Instances” that are built by “FIWARE Instance Providers” upon:
  - selection of FIWARE GEis (products) from the FIWARE Catalogue
  - assembly of selected FIWARE GEis with proprietary added-value products



FIWARE major differential features

Cloud		• Federation of infrastructures (private/public regions) • Automated GE deployment
Data		• Complete Context Management Platform • Integration of Data and Media Content
IoT		• Easy plug&play of devices using multiple protocols • Automated Measurements/Action ←→Context updates
Apps		• Visualization of data (operation dashboards) • Publication of data sets/services
MiWi		• 3D and AR visualization of context • Advanced middleware
Security		• Security Monitoring • Built-in Identity/Access/Privacy Management
I2ND		• QoS across datacenters (OpenFlow)

FIWARE Partners

- Some project partners

FIWARE Objectives (to UFU and USP)

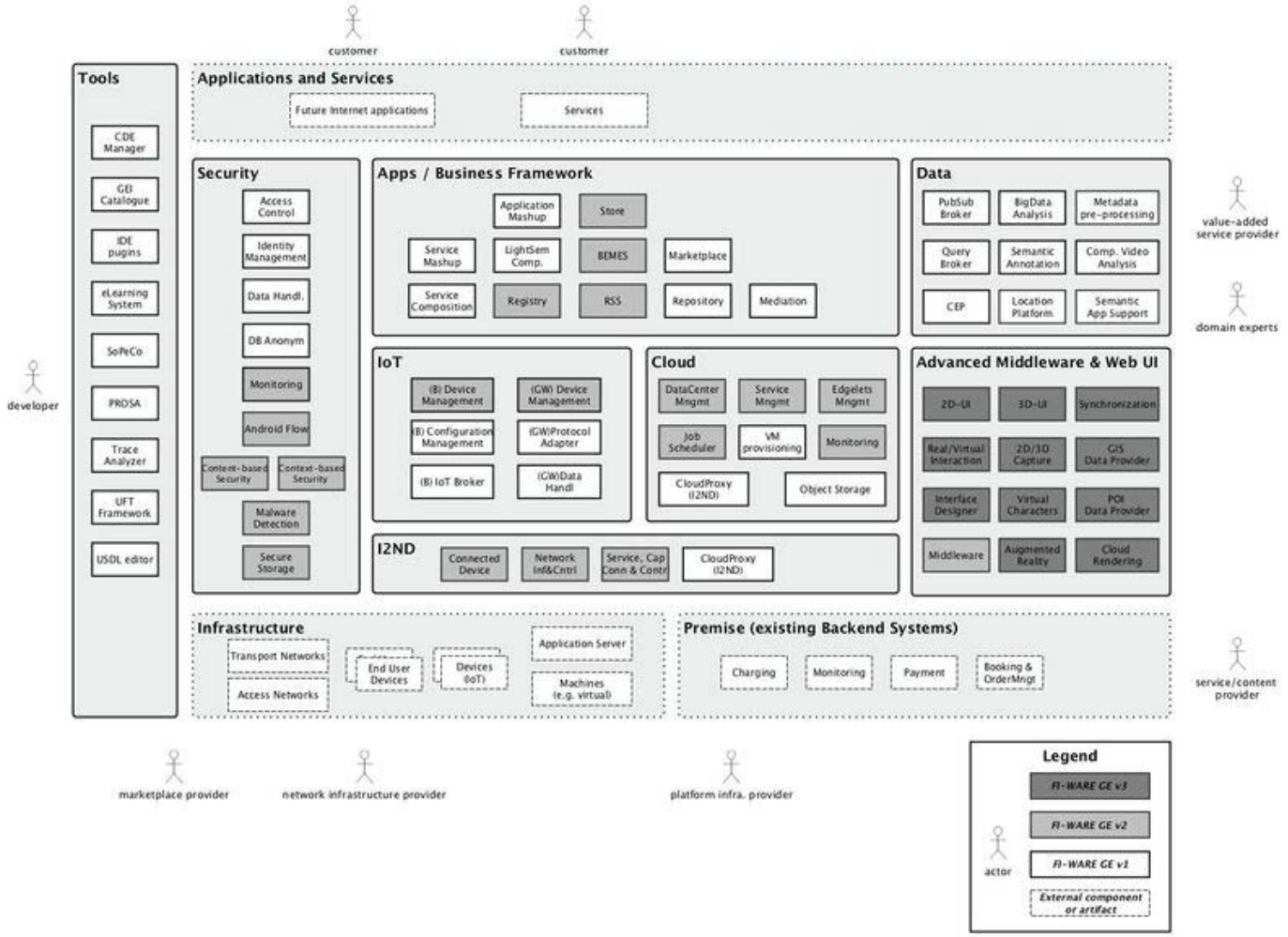
- Create the conditions, at each region where the FIILAB is deployed, to support the development of innovative services and applications by local entrepreneurs
- Explore FIWARE Generic Enablers (GE), and Specific Enablers (SE) in order to reduce the time to market of these new services and applications
- Deploy FI-Lab Nodes in Brazil, creating the conditions for entrepreneurs to reach the market
- Collaborate with Future Internet initiatives fostering the use of technology that may help to provide a better living

Dissemination Model

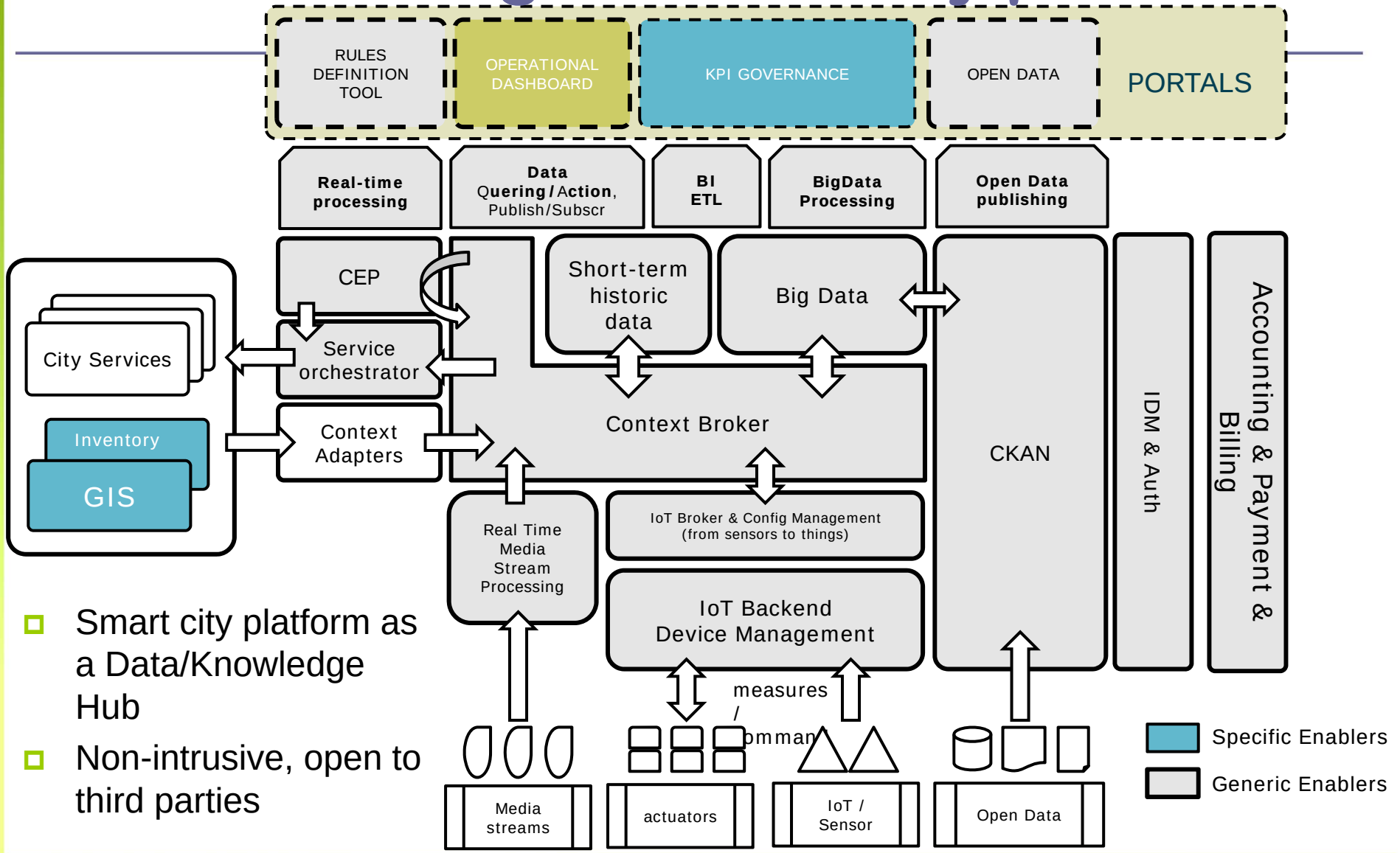
- Focus on the region´s potential business models, according the local context and ecosystem
- Each FIILAB will have the participation of four stakeholders of the innovation process:
  - Higher Education Institutes (HEI)
  - Start-ups and Small and Medium Enterprises (SMEs);
  - Incubators and Accelerators
  - Funding agencies and financing entities.
- Explore opportunities regarding Smart Cities, Internet of things, Mobile devices and Applications

FIWARE Architecture

- http://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/FIWARE_Architecture

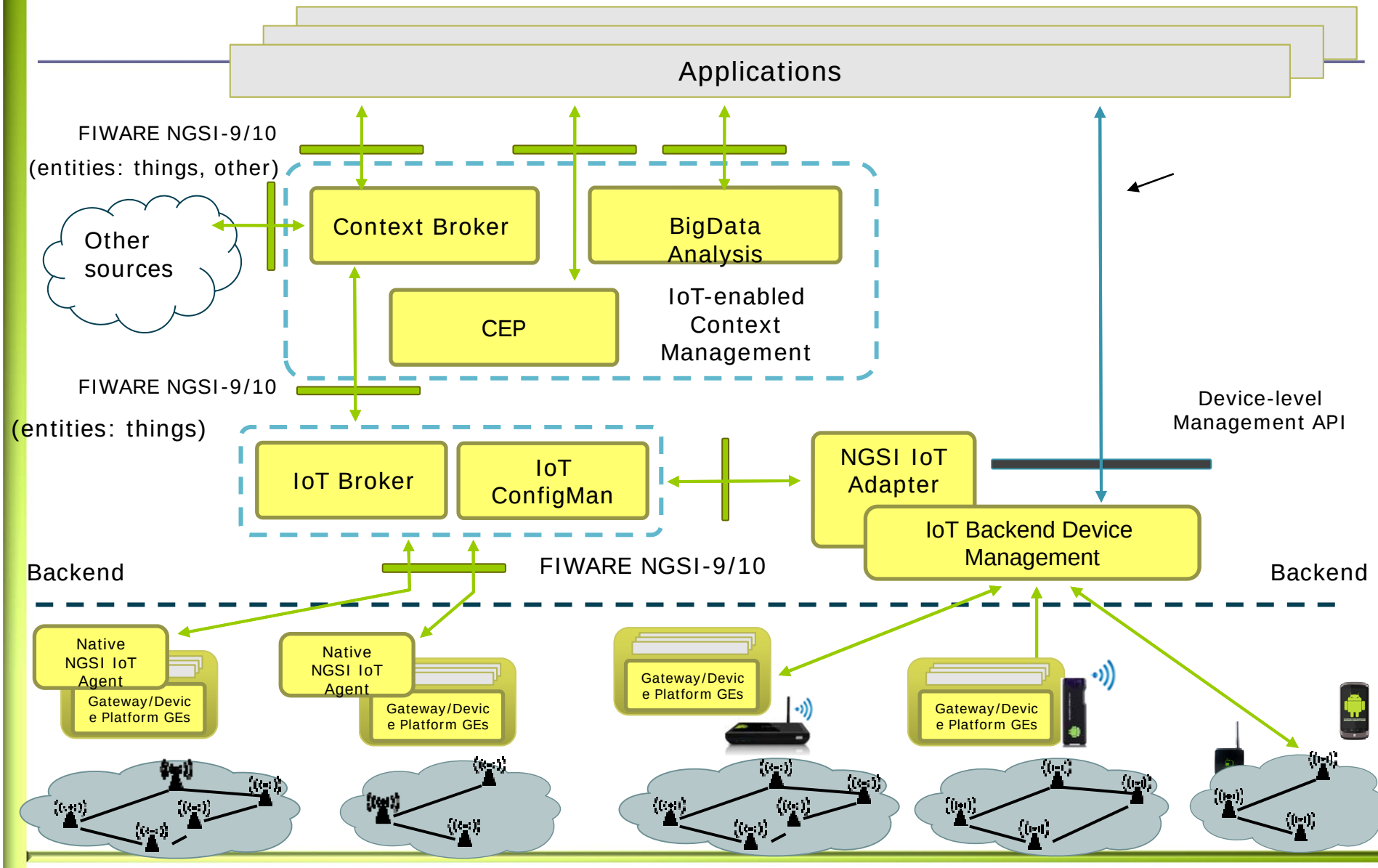


Envisioned target Smart City platform



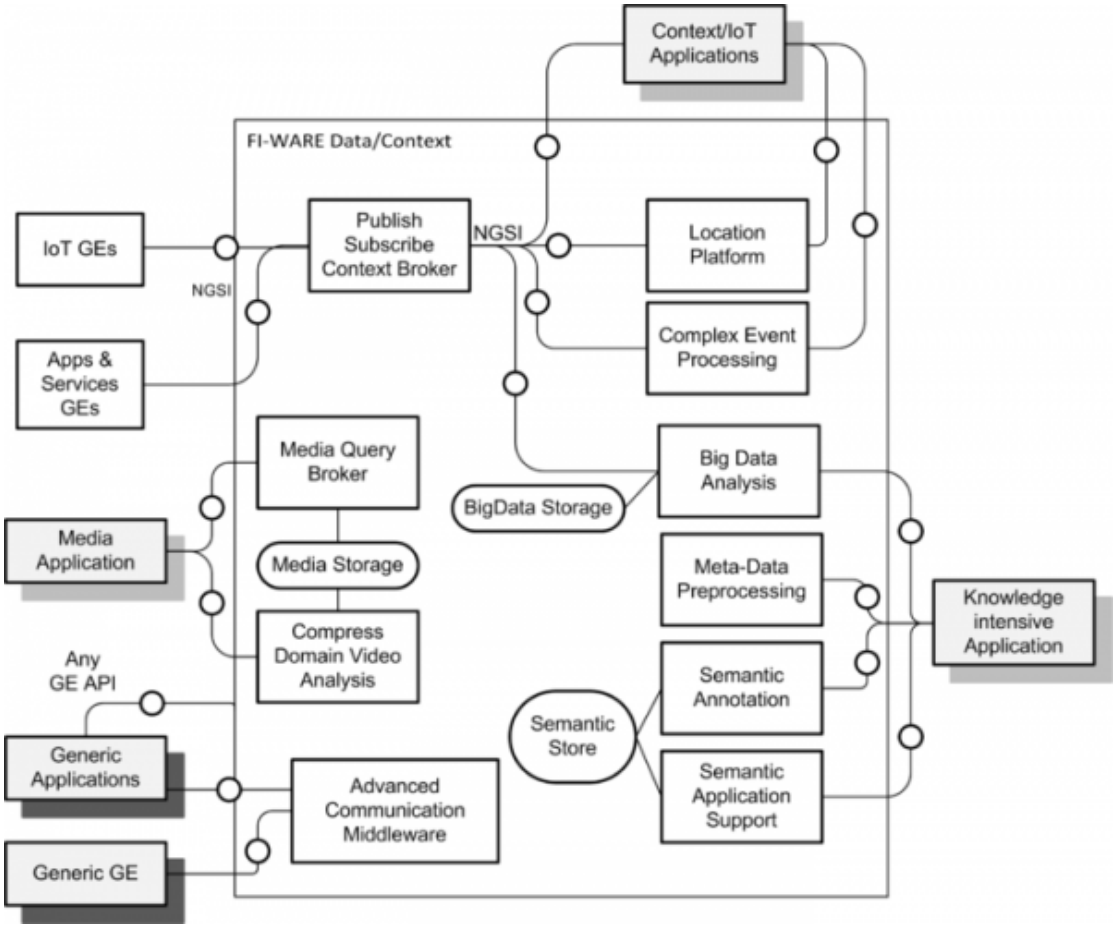
- Smart city platform as a Data/Knowledge Hub
- Non-intrusive, open to third parties

FIWARE IoT-M2M & Context/Management altogether



FIWARE Applications

- Reasoning



http://www.programmableweb.com/news/fiware-opens-iot-future-to-everyone/2014/03/20

FIWARE Based Applications

- Based on challenges to developers, FIWARE fosters the creation of new services and applications that uses FIWARE architecture

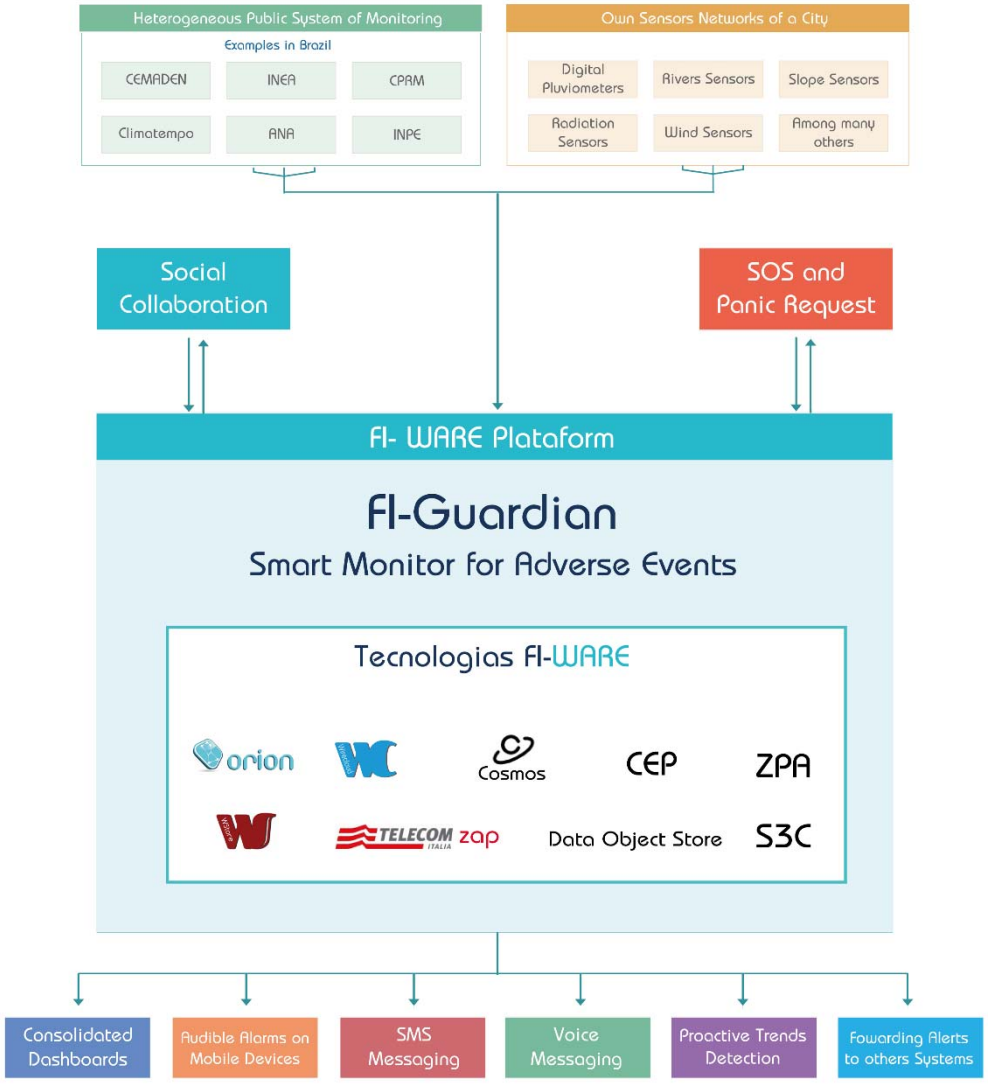
- Some example of applications that are based on FIWARE enablers
  - http://www.fiware.org/challenges/
  - http://www.fiware.org/category/events/challenges-events/
  - http://www.fiware.org/tag/challenges/

Sample Application FI-GUARDIAN

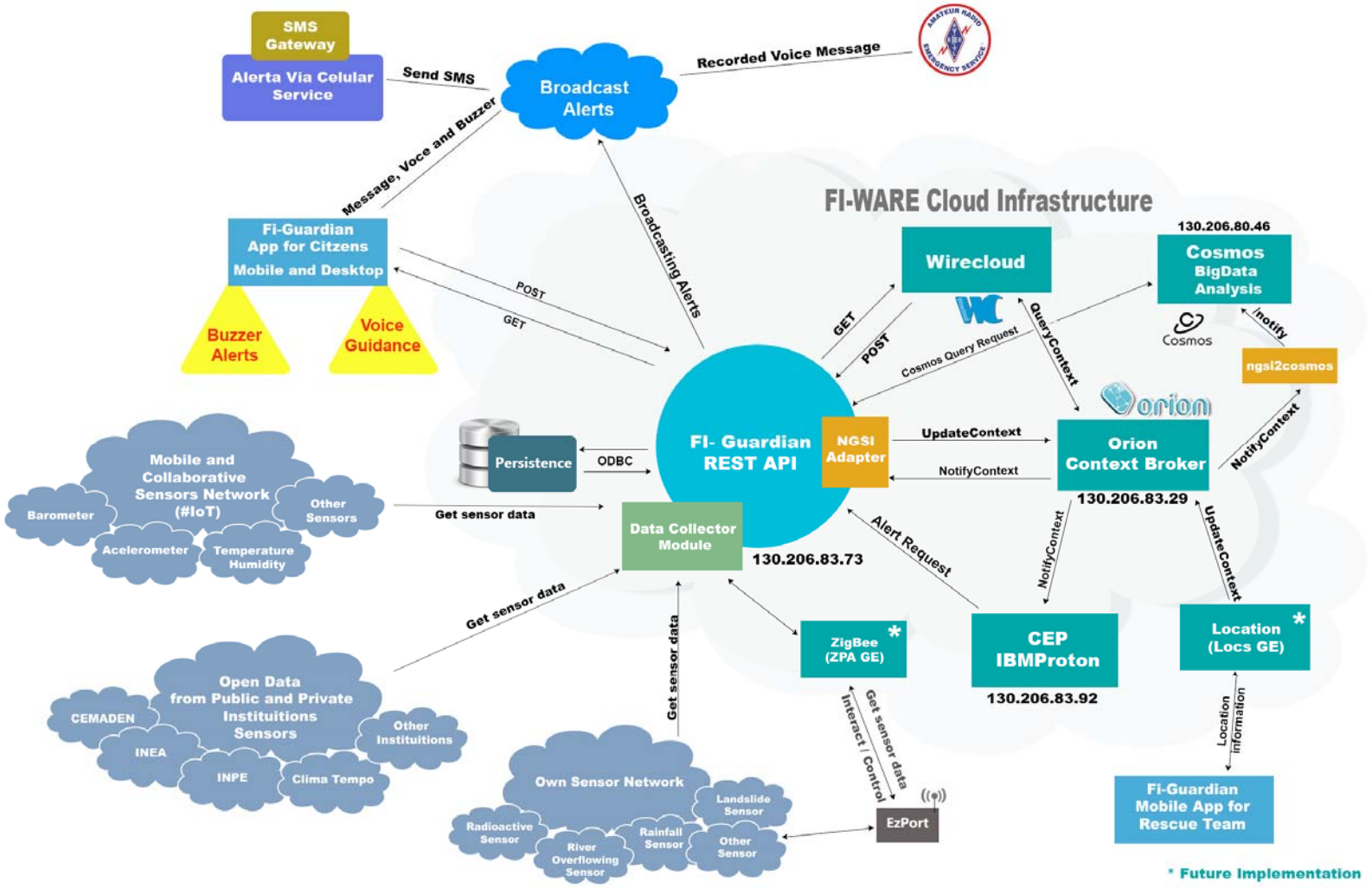
- Monitor for adverse events
- Created by VM9, an SME from Nova Friburgo, Brazil
- Short Presentation
  - https://www.youtube.com/watch?v=UKfHfZRbZZA
- Winner at the FIWARE contest held at Campus Party 2014 in the Smart Cities category. Prize 75K €
  - http://ec.europa.eu/digital-agenda/en/news/finals-fiware-challenges-campus-party-2014-brazil

FI-GUARDIAN Building Blocks

- Based on several generic enablers



FI-GUARDIAN Architecture Overview



FIWARE Resources

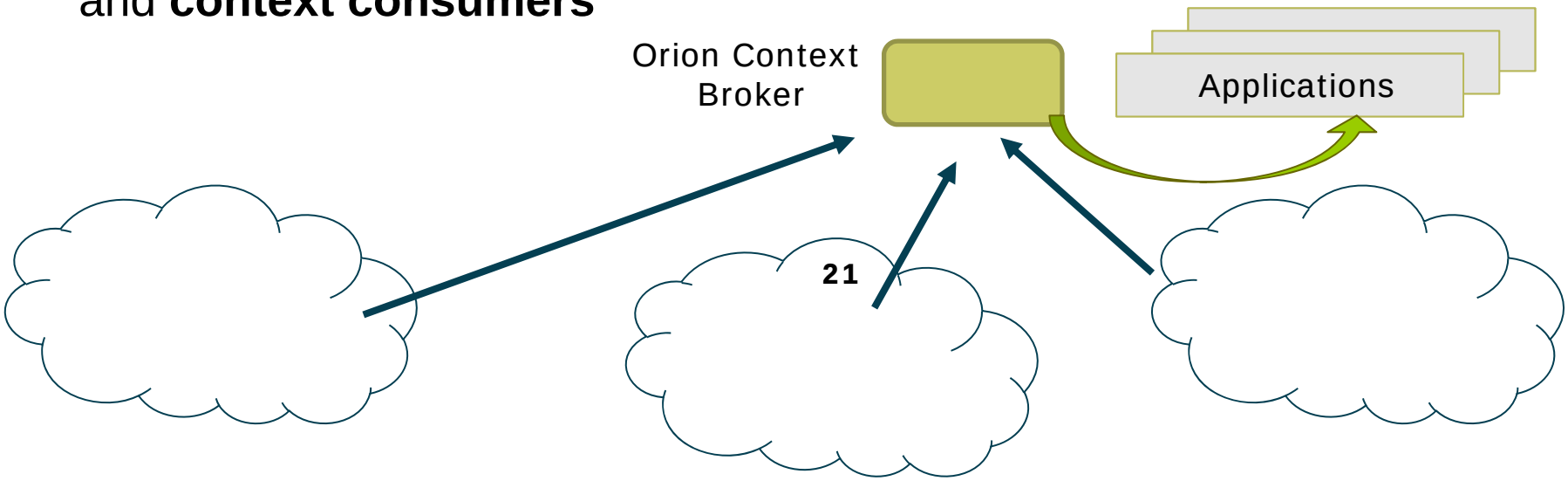
- Base Site
  - http://www.fiware.org
- FIWARE Enablers Catalog
  - http://catalogue.fiware.org/enablers
- FIWARE E-Learning Platform
  - http://edu.fiware.org/
- FIWARE LAB
  - http://lab.fiware.org

Publish/Subscribe Context Broker - Orion Context Broker

- Catalog
  - http://catalogue.fiware.org/enablers/publishsubscribe-context-broker-orion-context-broker
- Documentation
  - http://catalogue.fiware.org/enablers/documentation-25
- E-Learning Platform
  - http://edu.fiware.org/course/view.php?id=44
- Long video tutorial
  - https://www.youtube.com/watch?v=tzjCA1Uhhe8
- Programmers Guide
  - https://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/Publish/Subscribe_Broker_-_Orion_Context_Broker_-_User_and_Programmers_Guide
- Quick Start
  - https://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/Publish/Subscribe_Broker_-_Orion_Context_Broker_-_Quick_Start_for_Programmers

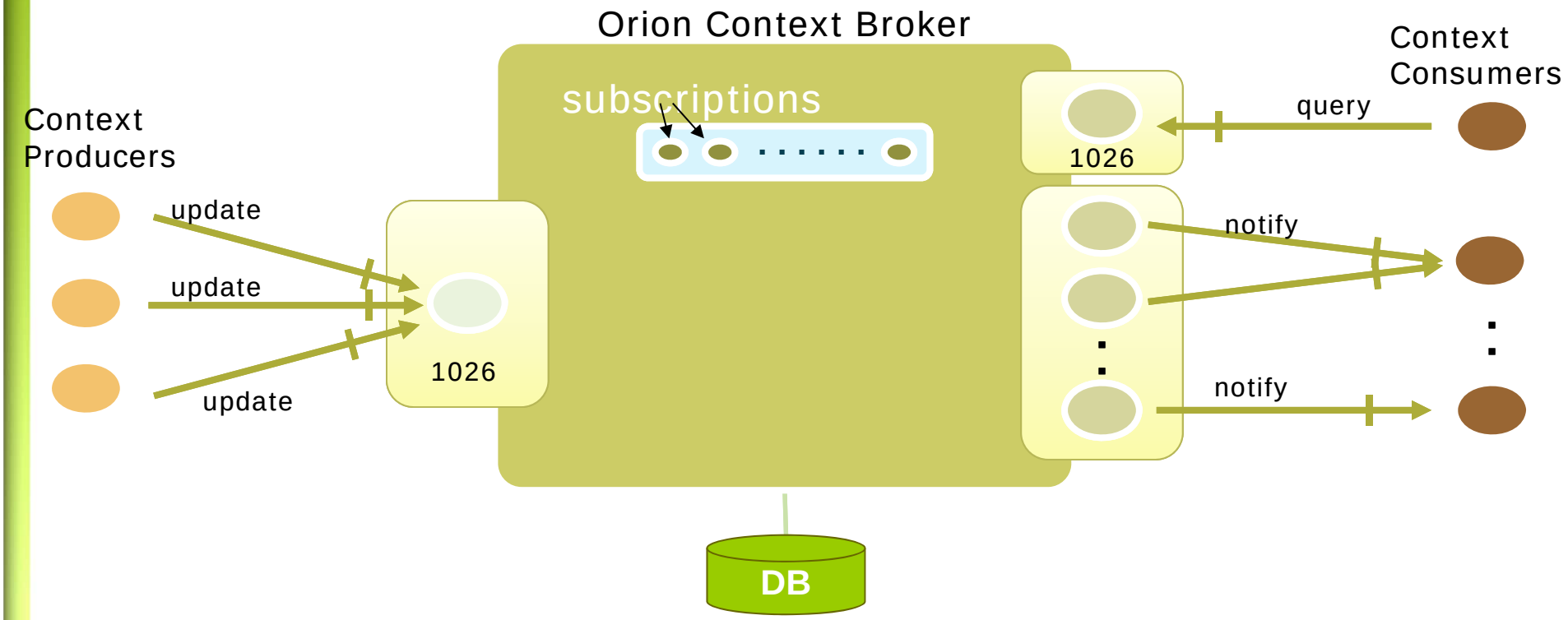
Context management

- Context Management in FIWARE is about management of Context data (aka Context Information)
- Context Information is always relevant to “entities”, although entities can be anything (applications, users, things, …)
- Orion Context Broker intermediates between **context producers** and **context consumers**



Slides prepared by Fermín Galán Márquez (fermin@tid.es) Telefónica I+D

Orion Context Broker in a nutshell



NGSI API

- Based on Next Generation Services Interface (NGSI), published by Open Mobile Alliance (OMA)
  - http://technical.openmobilealliance.org/Technical/technical-information/release-program/current-releases/ngsi-archive
- REST API (XML & JSON rendering)
- Additional "convenience" operations to ease some operations

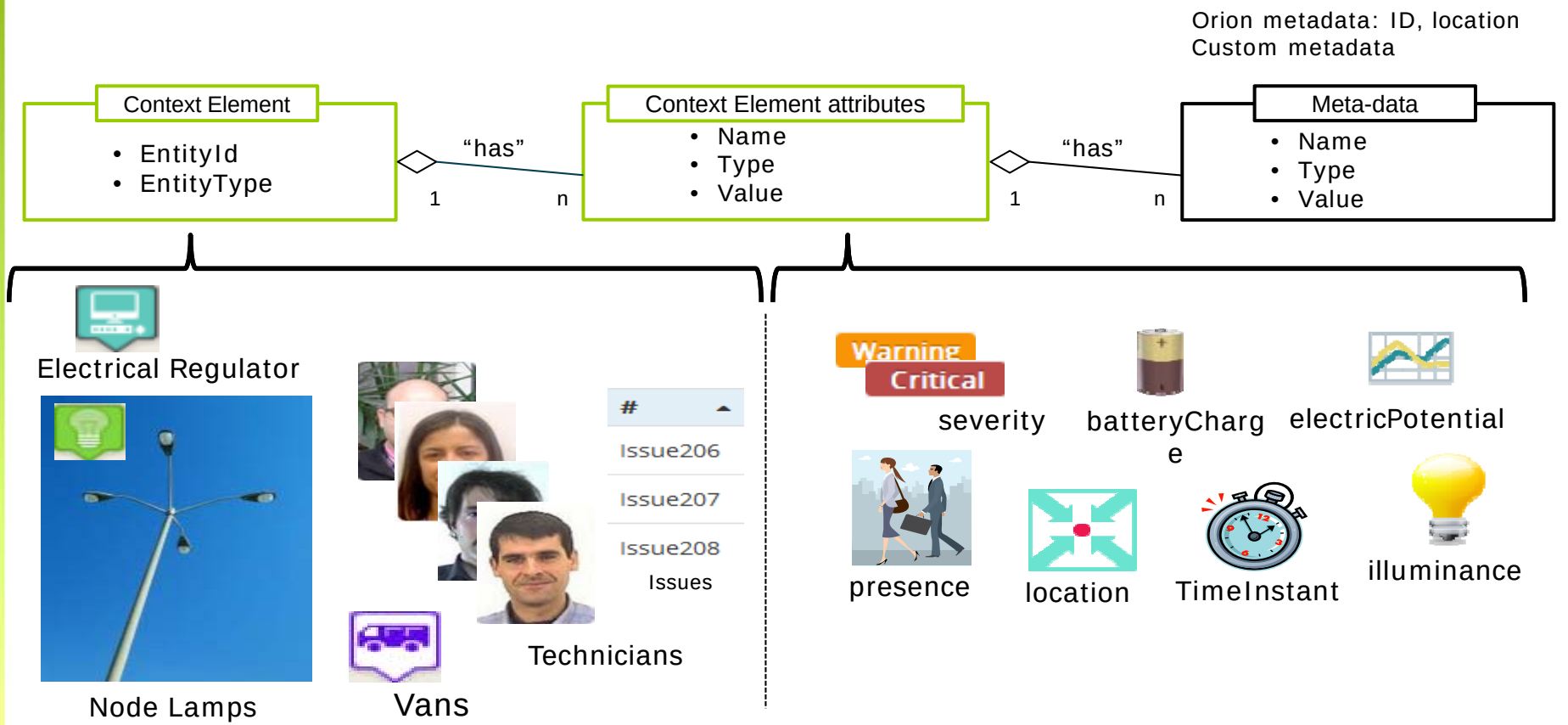
Context Availability Management (NGSI9)

- Register context sources (registerContext)
- Search for context sources (discoverContextAvailability)
- Subscribe to context sources availability notifications (subscribeContextAvailability, updateContextAvailabilitySubcription & unsubscribeContextAvailability)

Context Management (NGSI10)

- Update context information (updateContext)
- Query context information (queryContext)
- Subscribe to context information notifications (subscribeContext, updateContextSubcription & unsubscribeContext)

The NGSI information model



Entity Creation (Request)

- Using an updateContext

XML

```
(curl localhost:1026/NGSI10/updateContext -s -S --
header 'Content-Type: application/xml' -d @- |
xmllint --format - ) <<EOF
<?xml version="1.0" encoding="UTF-8"?>
<updateContextRequest>
  <contextElementList>
    <contextElement>
      <entityId type="Room" isPattern="false">
        <id>Room1</id>
      </entityId>
      <contextAttributeList>
        <contextAttribute>
          <name>temperature</name>
          <type>centigrade</type>
          <contextValue>23</contextValue>
        </contextAttribute>
        <contextAttribute>
          <name>pressure</name>
          <type>mmHg</type>
          <contextValue>720</contextValue>
        </contextAttribute>
      </contextAttributeList>
    </contextElement>
  </contextElementList>
  <updateAction>APPEND</updateAction>
</updateContextRequest>
EOF
```

JSON (since release 0.9.0)

```
(curl localhost:1026/NGSI10/updateContext -s -S --header 'Content-
Type: application/json' --header 'Accept: application/json' -d @- |
python -mjson.tool) <<EOF
{
    "contextElements": [
        {
            "type": "Room",
            "isPattern": "false",
            "id": "Room1",
            "attributes": [
            {
                "name": "temperature",
                "type": "centigrade",
                "value": "23"
            },
            {
                "name": "pressure",
                "type": "mmHg",
                "value": "720"
            }
            ]
        }
    ],
    "updateAction": "APPEND"
}
EOF
```

Entity Creation (Response)

- Using an updateContext

XML

```
<?xml version="1.0"?>
<updateContextResponse>
  <contextResponseList>
    <contextElementResponse>
      <contextElement>
        <entityId type="Room" isPattern="false">
          <id>Room1</id>
        </entityId>
        <contextAttributeList>
          <contextAttribute>
            <name>temperature</name>
            <type>centigrade</type>
            <contextValue/>
          </contextAttribute>
          <contextAttribute>
            <name>pressure</name>
            <type>mmHg</type>
            <contextValue/>
          </contextAttribute>
        </contextAttributeList>
      </contextElement>
      <statusCode>
        <code>200</code>
        <reasonPhrase>OK</reasonPhrase>
      </statusCode>
    </contextElementResponse>
  </contextResponseList>
</updateContextResponse>
```

JSON (since release 0.9.0)

```
{
    "contextResponses": [
        {
            "contextElement": {
                "attributes": [
                    {
                        "name": "temperature",
                        "type": "centigrade",
                        "value": ""
                    },
                    {
                        "name": "pressure",
                        "type": "mmHg",
                        "value": ""
                    }
                ],
                "id": "Room1",
                "isPattern": "false",
                "type": "Room"
            },
            "statusCode": {
                "code": "200",
                "reasonPhrase": "OK"
            }
        }
    ]
}
```

Query Context (request)

XML

```
(curl localhost:1026/NGSI10/queryContext -s -S --
header 'Content-Type: application/xml' -d @- |
xmllint --format -) <<EOF
<?xml version="1.0" encoding="UTF-8"?>
<queryContextRequest>
  <entityIdList>
    <entityId type="Room" isPattern="false">
      <id>Room1</id>
    </entityId>
  </entityIdList>
  <attributeList/>
</queryContextRequest>
EOF
```

JSON (since release 0.9.0)

```
(curl localhost:1026/NGSI10/queryContext -s -S --header 'Content-
Type: application/json' --header 'Accept: application/json' -d @- |
python -mjson.tool) <<EOF
{
    "entities": [
        {
            "type": "Room",
            "isPattern": "false",
            "id": "Room1"
        }
    ]
}
EOF
```

Query Context (response)

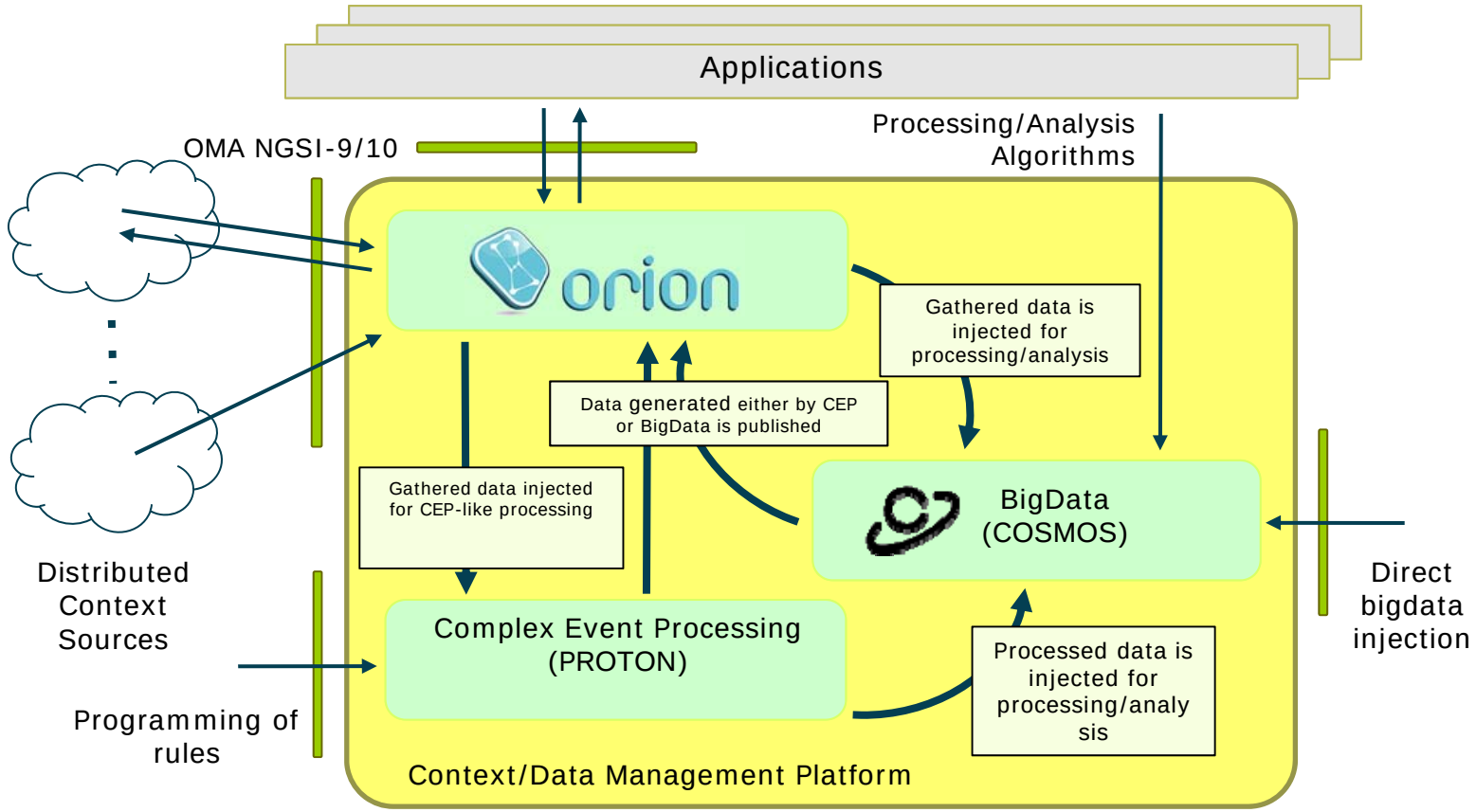
XML

```
<?xml version="1.0"?>
<queryContextResponse>
  <contextResponseList>
    <contextElementResponse>
      <contextElement>
        <entityId type="Room" isPattern="false">
          <id>Room1</id>
        </entityId>
        <contextAttributeList>
          <contextAttribute>
            <name>temperature</name>
            <type>centigrade</type>
            <contextValue>23</contextValue>
          </contextAttribute>
          <contextAttribute>
            <name>pressure</name>
            <type>mmHg</type>
            <contextValue>720</contextValue>
          </contextAttribute>
        </contextAttributeList>
      </contextElement>
      <statusCode>
        <code>200</code>
        <reasonPhrase>OK</reasonPhrase>
      </statusCode>
    </contextElementResponse>
  </contextResponseList>
</queryContextResponse>
```

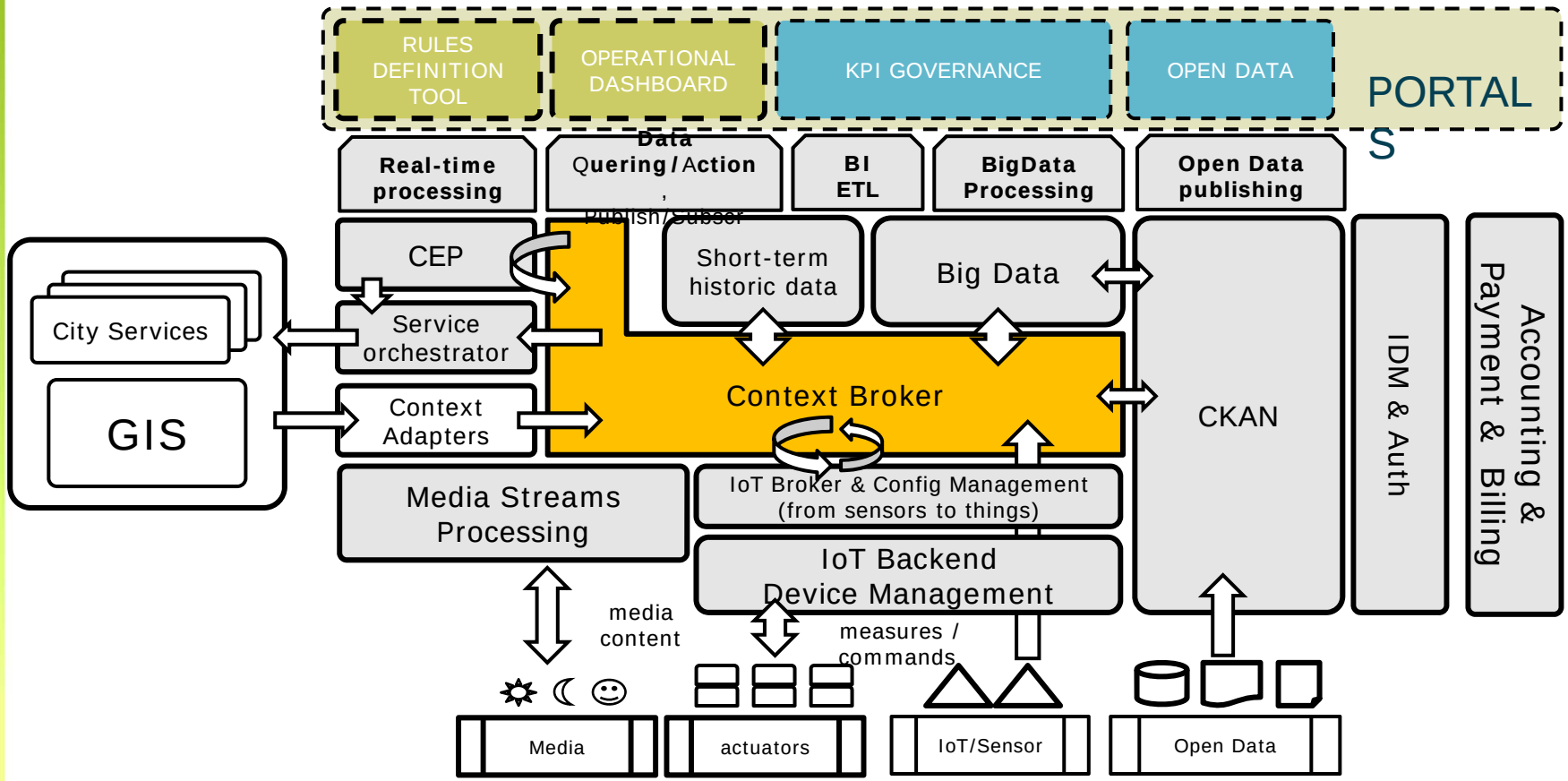
JSON (since release 0.9.0)

```
{
    "contextResponses": [
        {
            "contextElement": {
                "attributes": [
                    {
                        "name": "temperature",
                        "type": "centigrade",
                        "value": "23"
                    },
                    {
                        "name": "pressure",
                        "type": "mmHg",
                        "value": "720"
                    }
                ],
                "id": "Room1",
                "isPattern": "false",
                "type": "Room"
            },
            "statusCode": {
                "code": "200",
                "reasonPhrase": "OK"
            }
        }
    ]
}
```

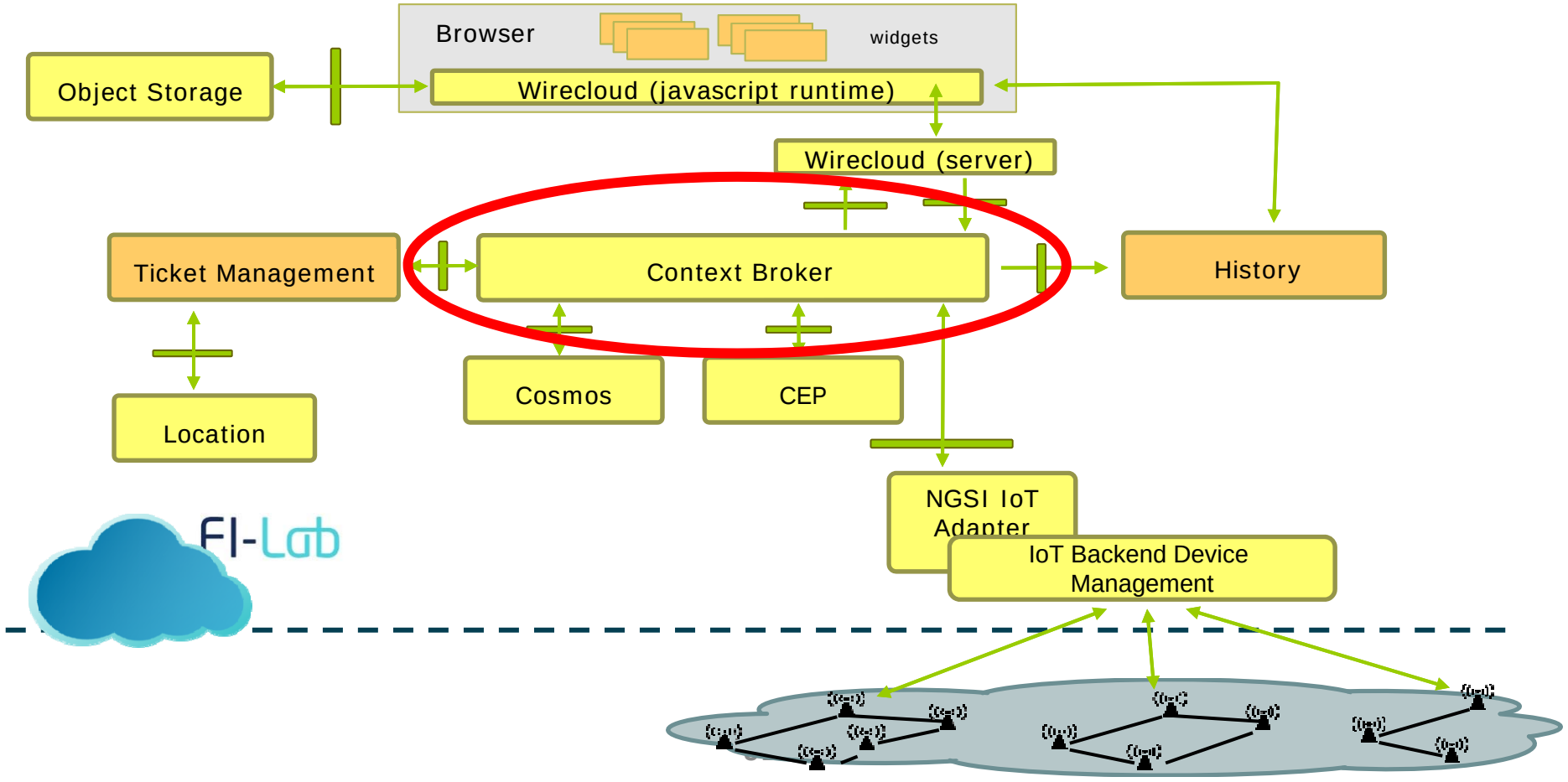
FIWARE Context/Data Management Platform



How Orion fits in the FIWARE overall platform



Orion in LiveDemo application

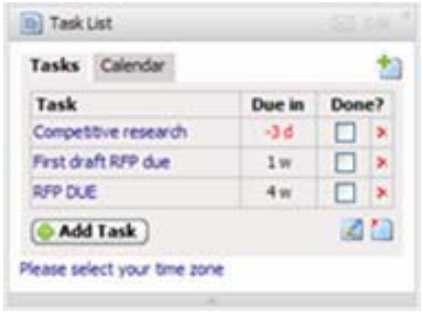


Application Mashup - Wirecloud

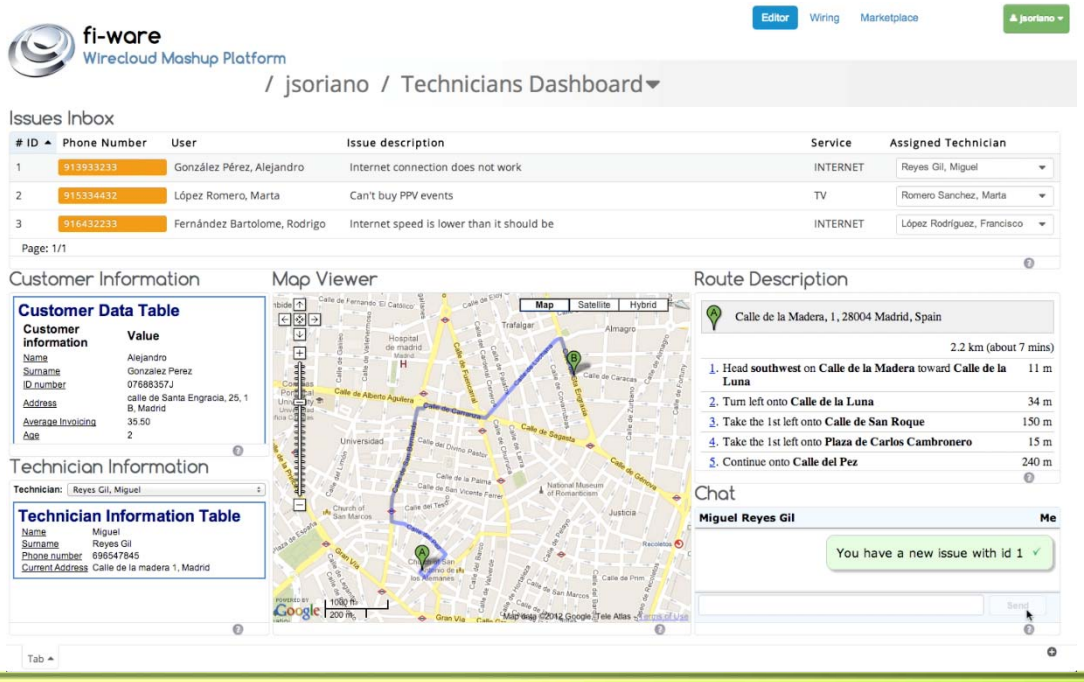
- End-user UI development by using Widget and Mashups
- Widget
  - A small application or piece of dynamic content that can be easily placed into a web page
  - Often encapsulate a Web API (directly or through an operator)
  - Can be easily embedded into webpages (HTML snippets)
  - "Mashable" widgets generate/consume events, so that they can be wired together to create a lightweight application mashup
  - This requires a widget platform
- Mashup
  - Lightweight application combining data, services and UIs from multiple sources
  - Developed by either IT or business staff, as well as by end users
  - Created in hours or days, not months
  - Uses a Web Oriented Architecture (WOA)
  - Often relies on internal + external web services (Web APIs)
  - Done at data, logic and/or presentation layers

Widgets and Mashups

- Widgets

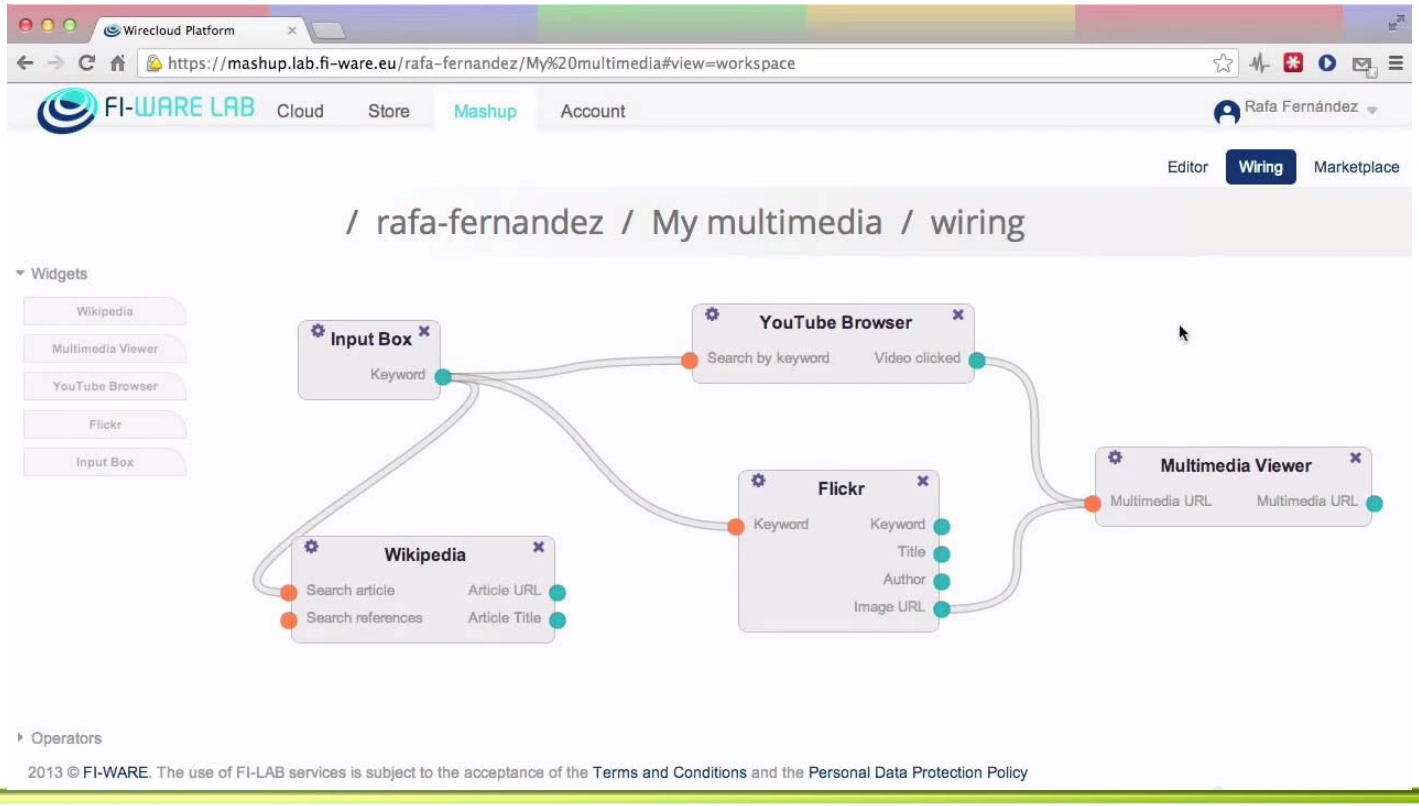


- Mashups



Mashups and Operators

- Operators represents functionality managed at the presentation layer
- Empower the user to create data mashups (Access + Transform data sources) by piping + Web API wrapping
- Enhance widget functionality by wiring them each other



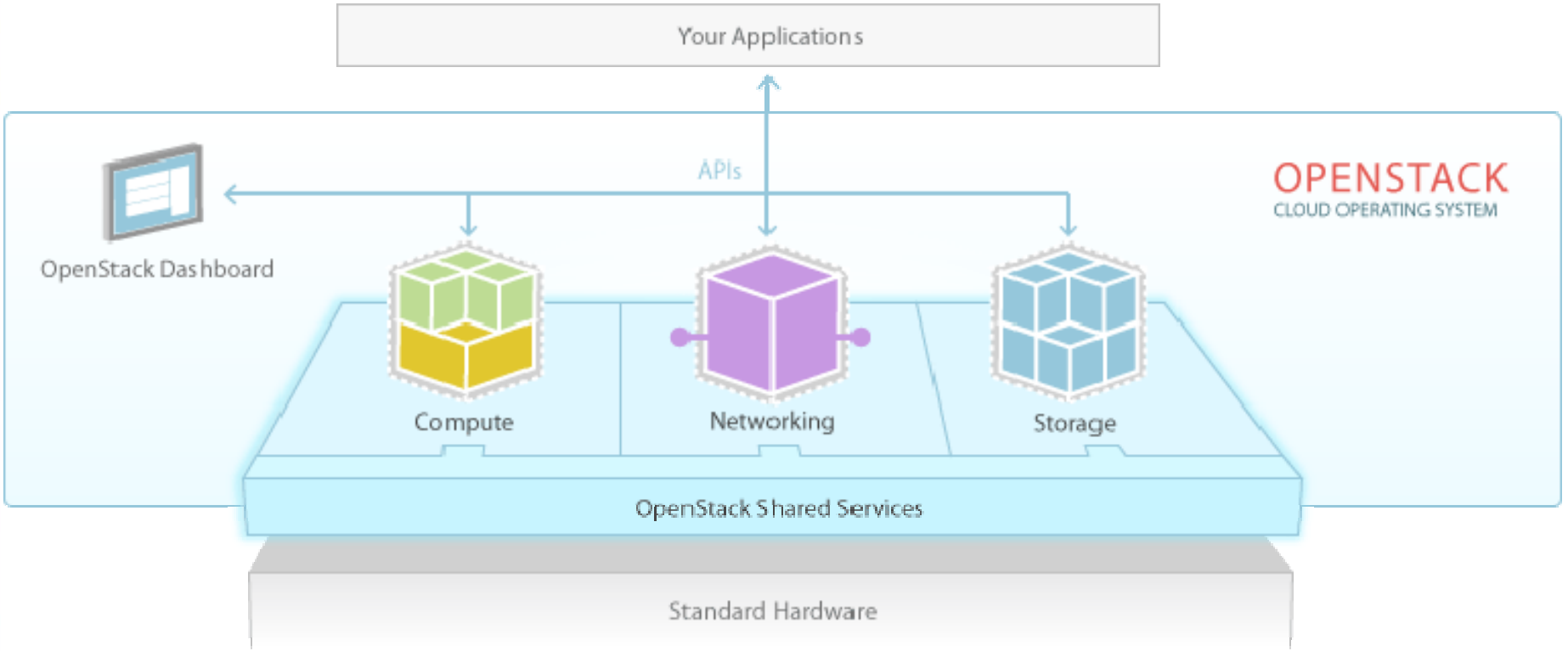
Application Mashup – Wirecloud Resources

- Catalog
  - http://catalogue.fiware.org/enablers/application-mashup-wirecloud
- Documentation
  - http://catalogue.fiware.org/enablers/application-mashup-wirecloud/documentation
- E-Learning Platform
  - http://edu.fiware.org/course/view.php?id=53
- Short video tutorial
  - https://www.youtube.com/watch?v=yzQgstBAUeo

Setting up your virtual infrastructure using FI-LAB Cloud

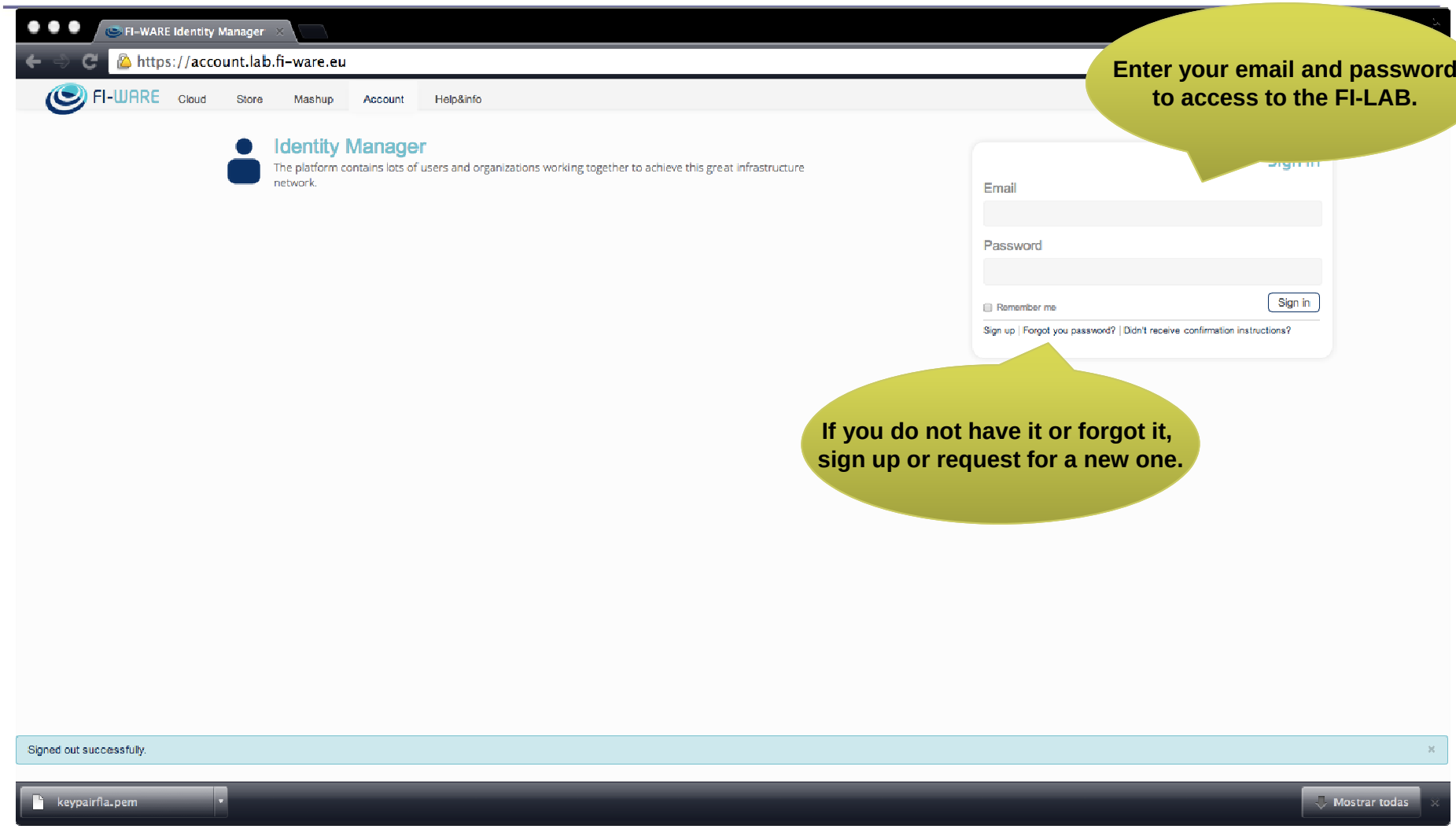
- Introduction to FI-LAB Cloud Hosting
- Deploying your first VM
- Deploying components for your application
- Object Storage API
- Reference Information

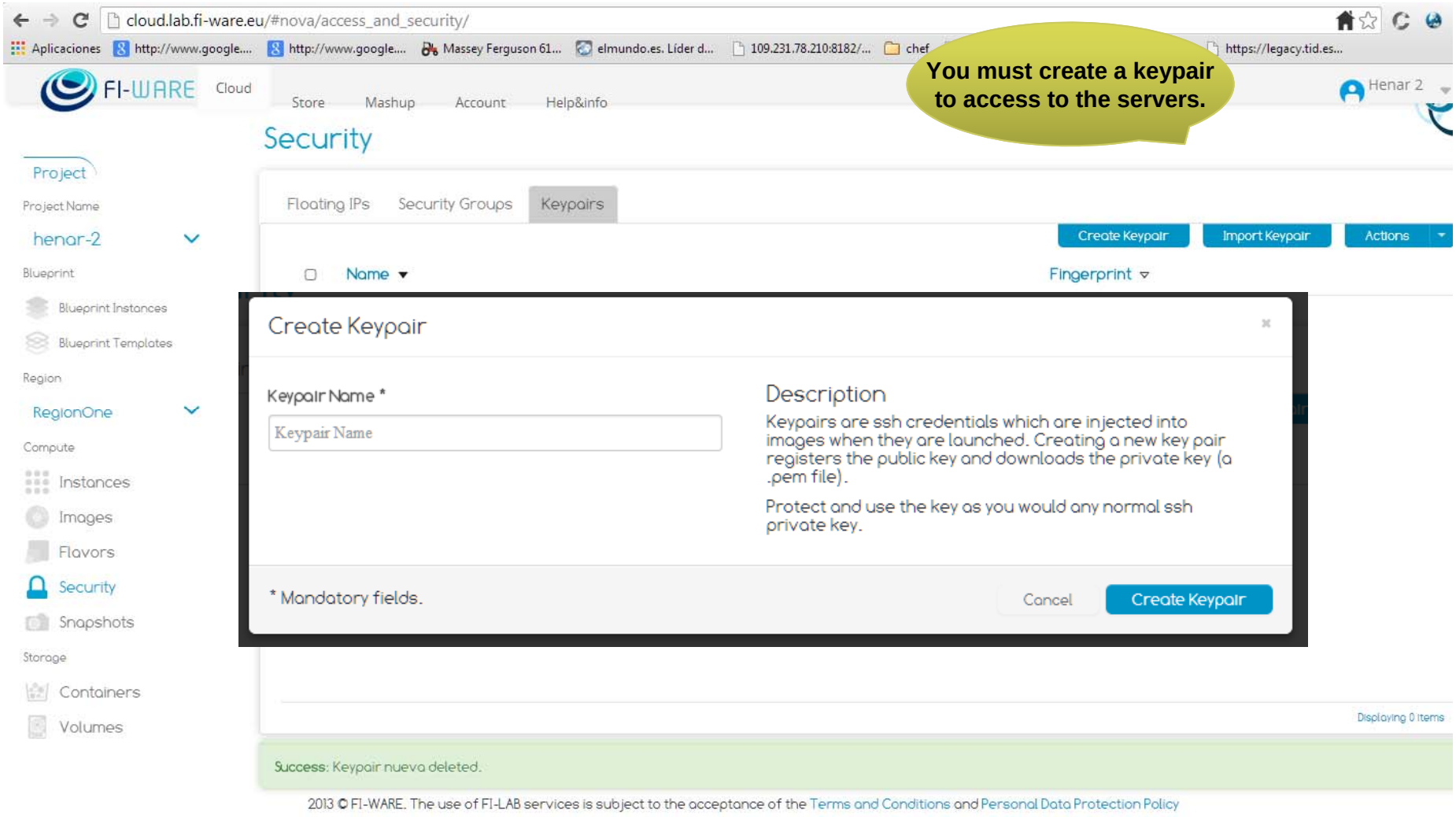
FI-LAB Cloud Hosting



FI-LAB Cloud Hosting

- Create your account in lab.fiware.eu
- Enter in the Cloud Portal
- Create your keypair (private/private key)
- Deploy your instance
- Add a public IP
- Open ports to the VM


FI-WARE Identity Manager
https://account.lab.fi-ware.eu
FI-WARE
Cloud
Store
Mashup
Account
Help&info
Identity Manager
The platform contains lots of users and organizations working together to achieve this great infrastructure network.
Email
Password
Remember me
Sign in
Sign up | Forgot you password? | Didn't receive confirmation instructions?
Enter your email and password to access to the FI-LAB.
If you do not have it or forgot it, sign up or request for a new one.
Signed out successfully.
keypairfla.pem
Mostrar todas


cloud.lab.fi-ware.eu/#nova/access_and_security/
FI-WARE
Cloud
Store
Mashup
Account
Help&info
Henar 2
You must create a keypair to access to the servers.
Security
Project
Project Name
henar-2
Blueprint
Blueprint Instances
Blueprint Templates
Region
RegionOne
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Floating IPs
Security Groups
Keypairs
Create Keypair
Import Keypair
Actions
Name
Fingerprint
Create Keypair
Keypair Name *
Keypair Name
Description
Keypairs are ssh credentials which are injected into images when they are launched. Creating a new key pair registers the public key and downloads the private key (a .pem file).
Protect and use the key as you would any normal ssh private key.
* Mandatory fields.
Cancel
Create Keypair
Displaying 0 items
Success: Keypair nueva deleted.
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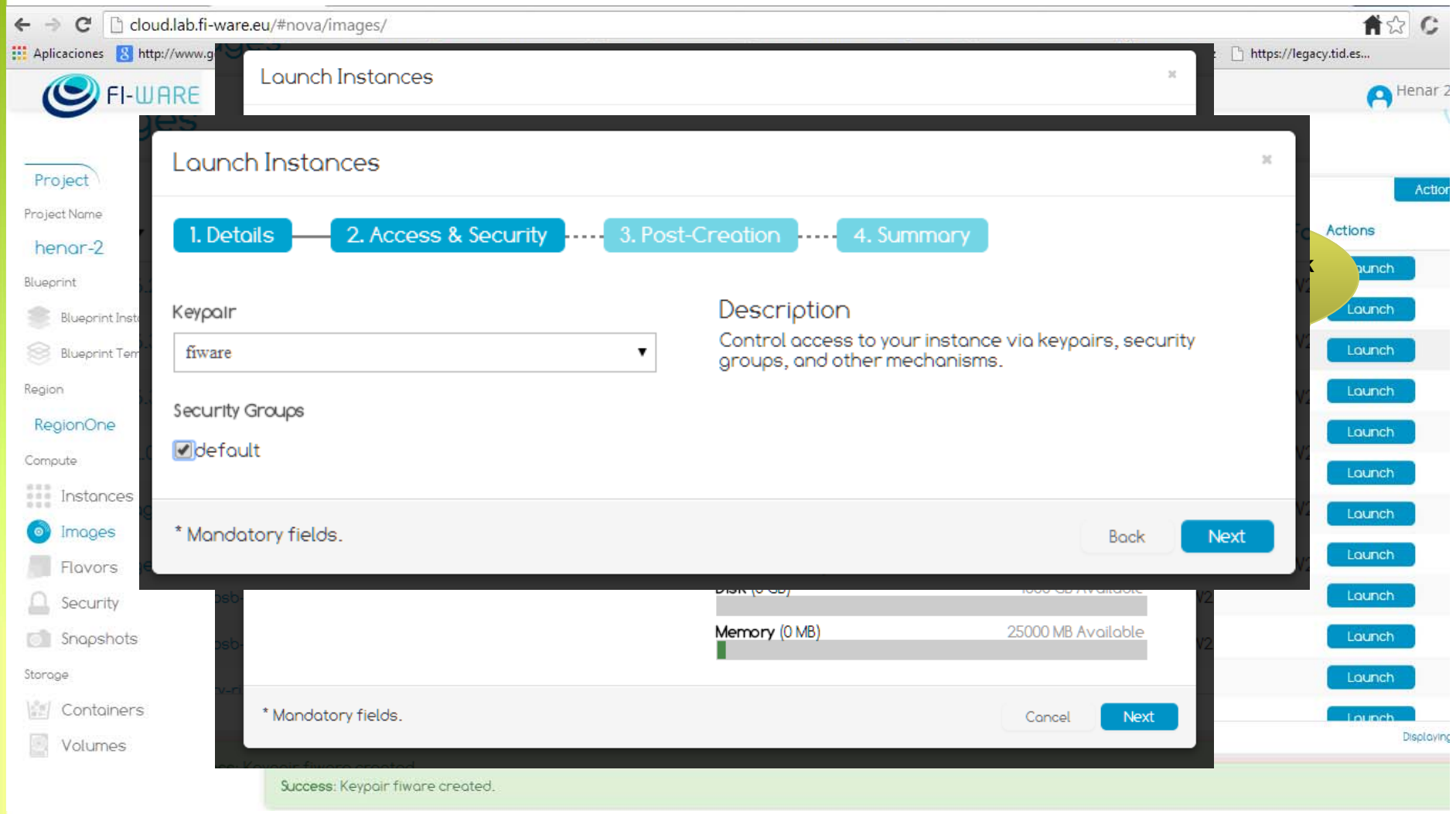
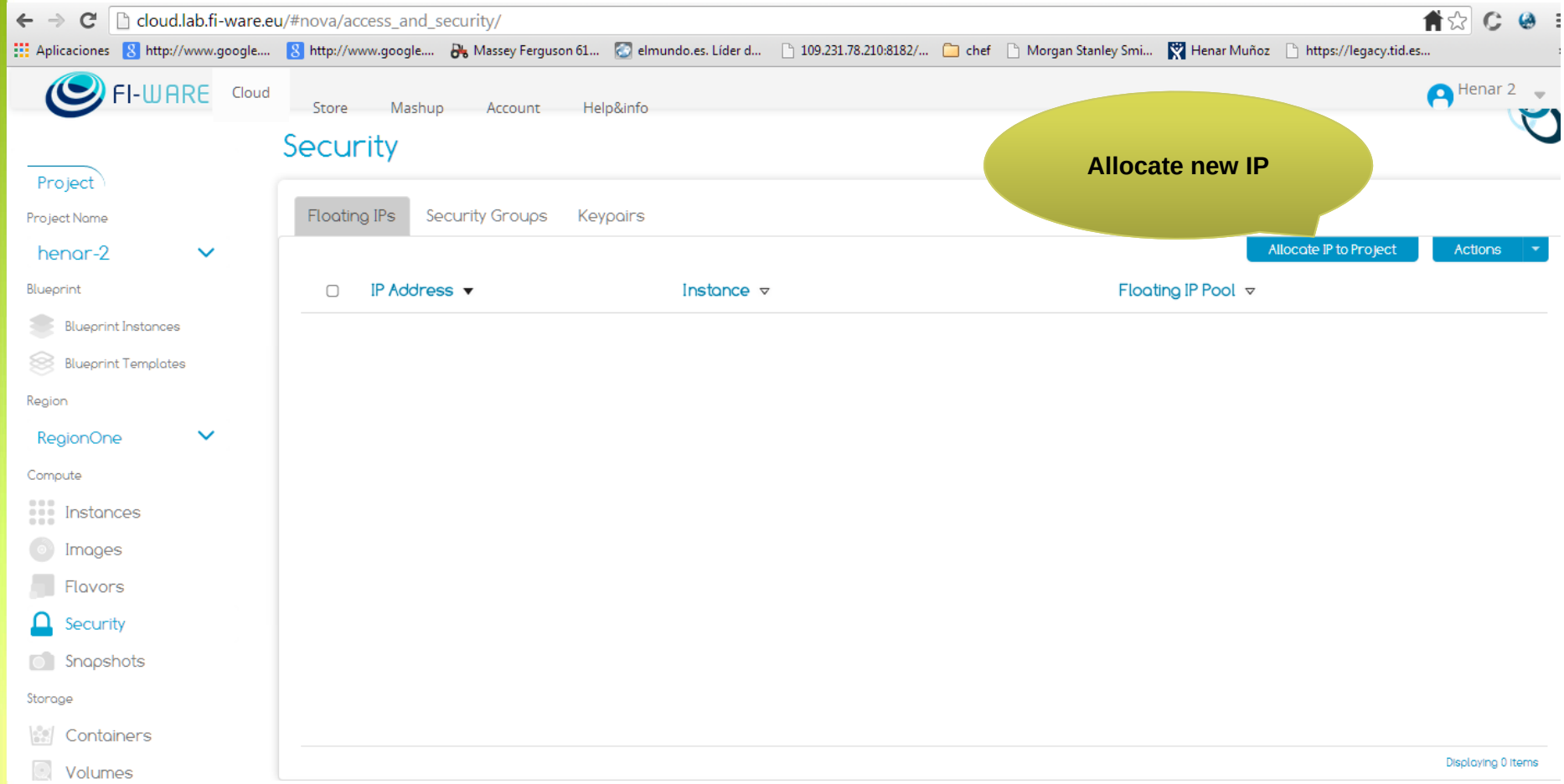
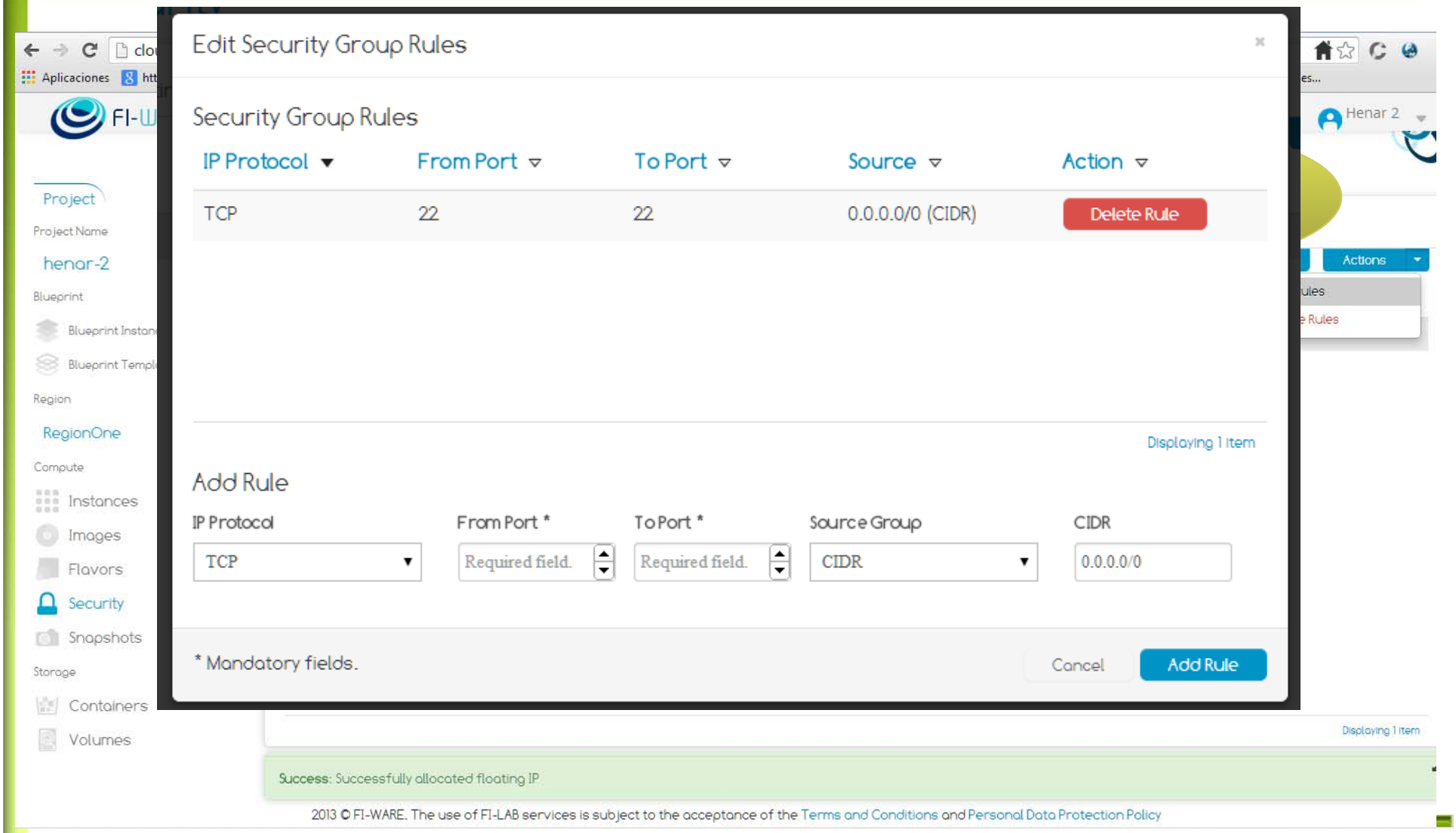

cloud.lab.fi-ware.eu/#nova/images/
FI-WARE
Launch Instances
Launch Instances
1. Details
2. Access & Security
3. Post-Creation
4. Summary
Keypair
fiware
Description
Control access to your instance via keypairs, security groups, and other mechanisms.
Security Groups
default
* Mandatory fields.
Back
Next
Memory (0 MB)
25000 MB Available
* Mandatory fields.
Cancel
Next
Project
Project Name
henar-2
Blueprint
Region
RegionOne
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Actions
Launch
Success: Keypair fiware created.


cloud.lab.fi-ware.eu/#nova/access_and_security/
FI-WARE
Cloud
Store
Mashup
Account
Help&info
Henar 2
Security
Allocate new IP
Project
Project Name
henar-2
Blueprint
Blueprint Instances
Blueprint Templates
Region
RegionOne
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Floating IPs
Security Groups
Keypairs
Allocate IP to Project
Actions
IP Address
Instance
Floating IP Pool
Displaying 0 items


Edit Security Group Rules
Security Group Rules
IP Protocol
From Port
To Port
Source
Action
TCP
22
22
0.0.0.0/0 (CIDR)
Delete Rule
Displaying 1 item
Add Rule
IP Protocol
From Port *
To Port *
Source Group
CIDR
TCP
Required field.
Required field.
CIDR
0.0.0.0/0
* Mandatory fields.
Cancel
Add Rule
Project
Project Name
henar-2
Blueprint
Region
RegionOne
Compute
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Actions
Henar 2
Success: Successfully allocated floating IP
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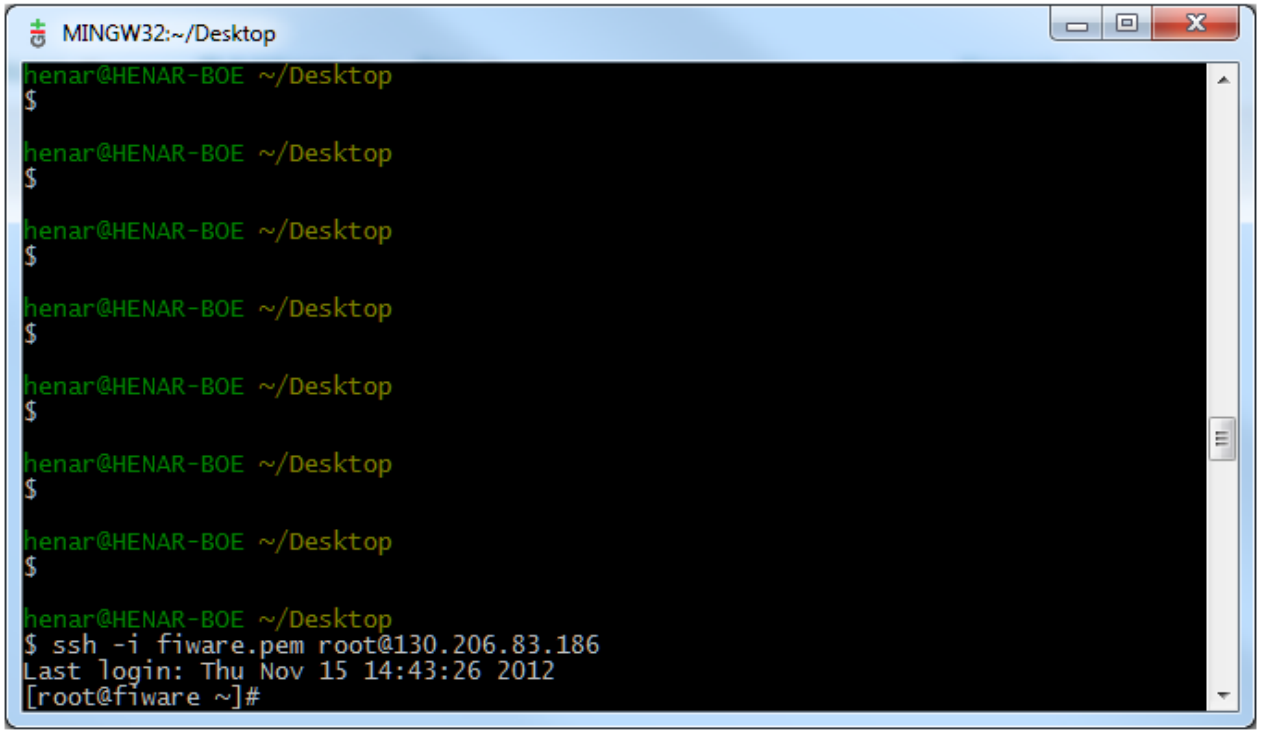
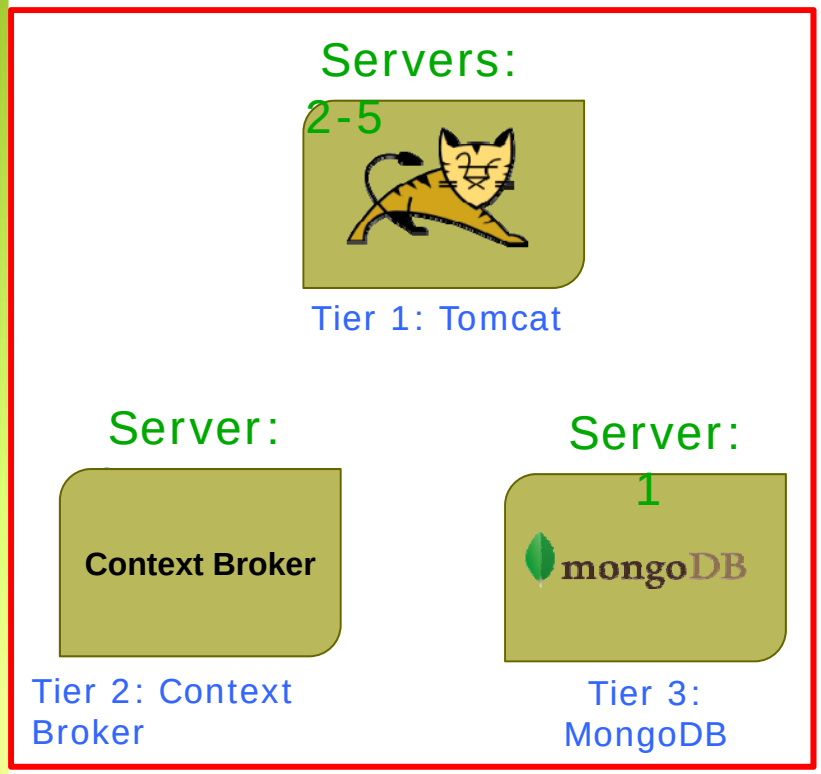

MINGW32:~/Desktop
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$
henar@HENAR-BOE ~/Desktop
$ ssh -i fiware.pem root@130.206.83.186
Last login: Thu Nov 15 14:43:26 2012
[root@fiware ~]#

Deploying components for your application

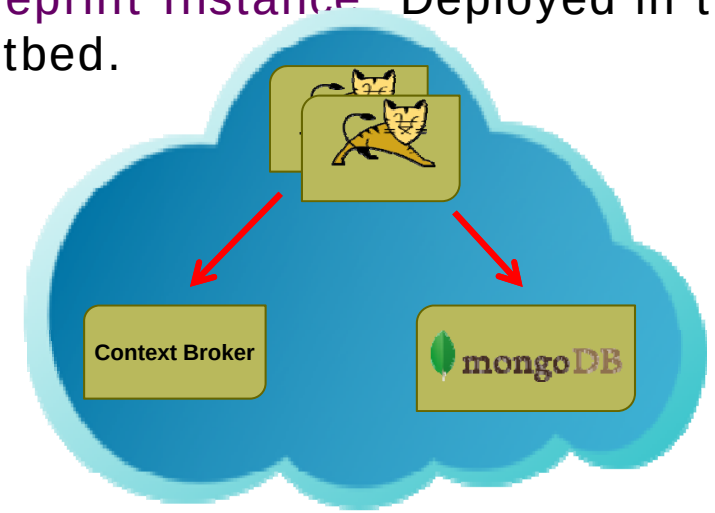
- Deploying applications and not only Servers.
  - Ad hoc installation (not template usage).
- Managing applications in Servers (install, uninstall, configure, snapshot..
- Deploying different environments for that applications.

Deploy example

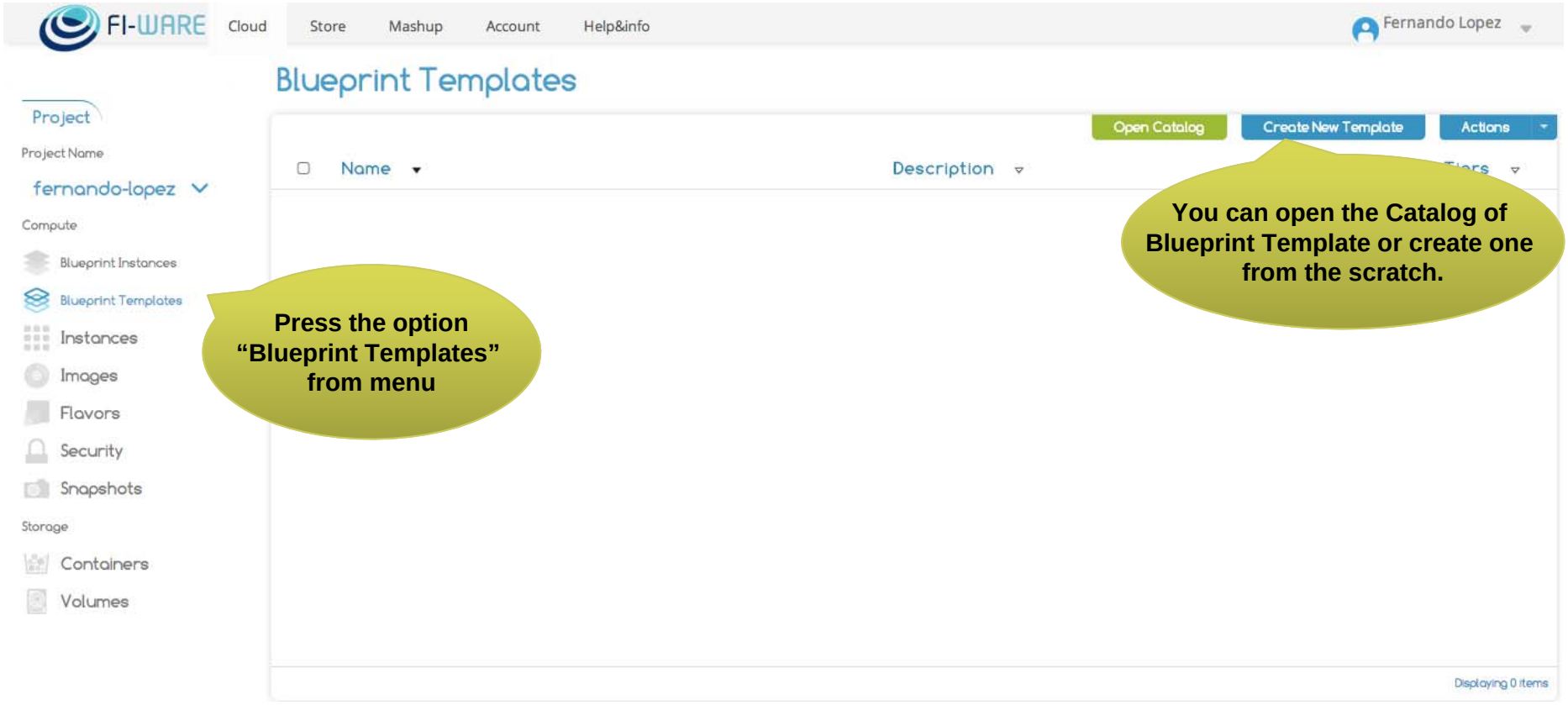
Blueprint template: fiware1



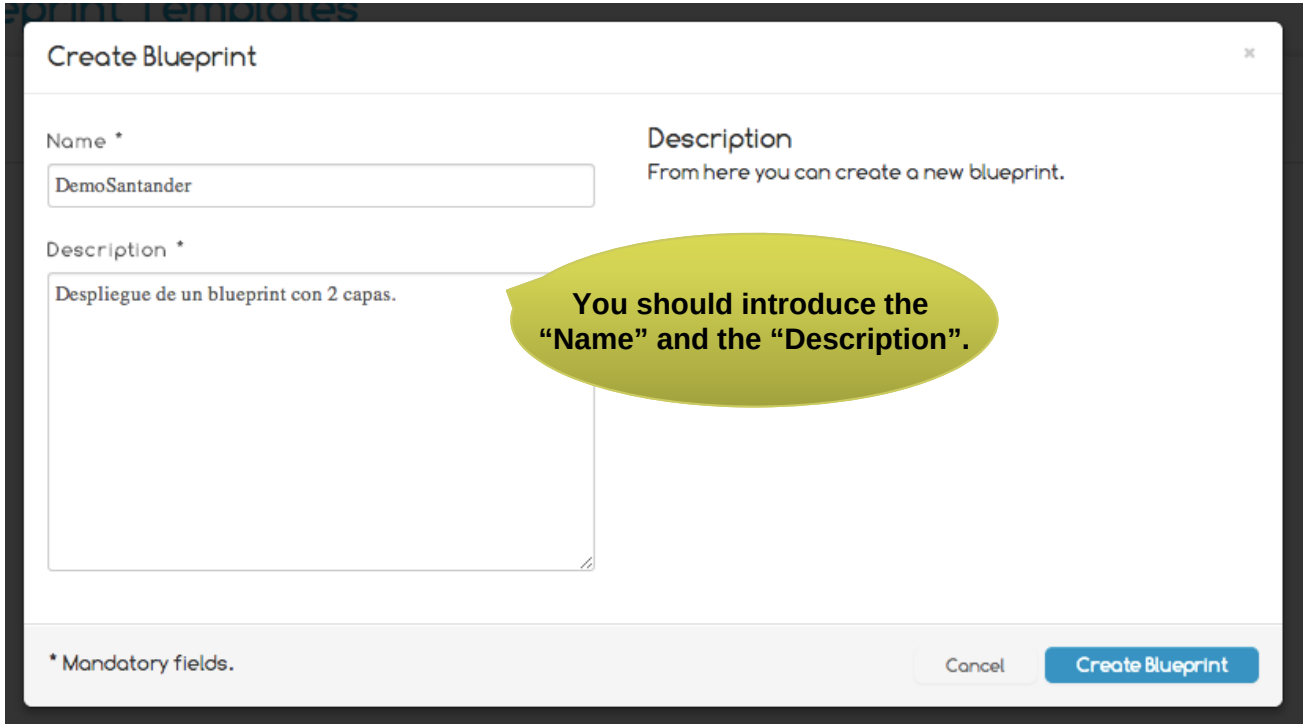
- Blueprint Template: platform specification to be deployed.
- Tier: Each kind of software and server to be deployed.
- Each Tier can be deployed in one or several servers (e.g. tomcat, 2-5 servers).
- Blueprint Instance: Deployed in the testbed.



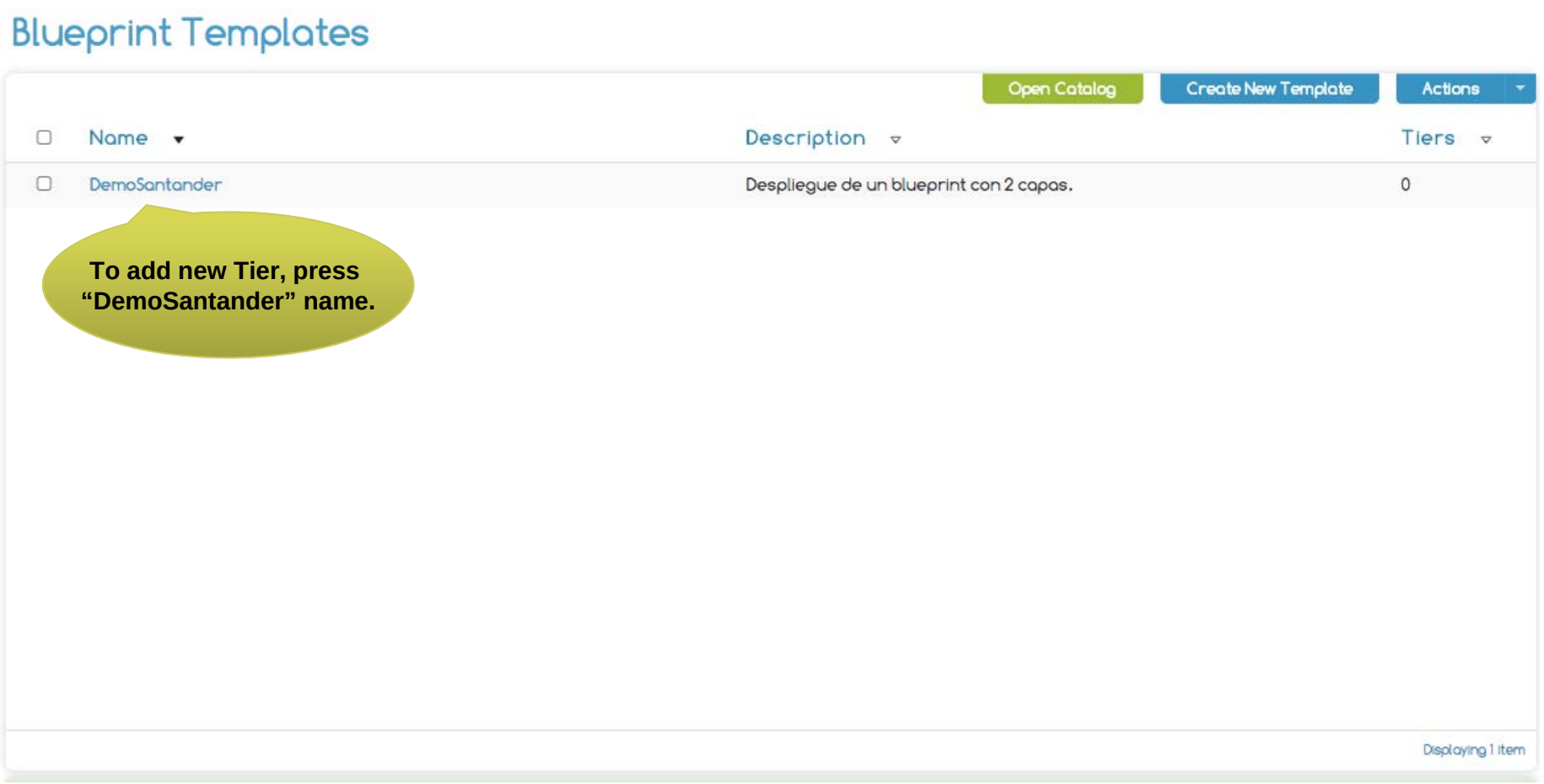
Demo


FI-WARE
Cloud
Store
Mashup
Account
Help&info
Fernando Lopez
Blueprint Templates
Project
Project Name
fernando-lopez
Compute
Blueprint Instances
Blueprint Templates
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Open Catalog
Create New Template
Actions
Name
Description
Tiers
Displaying 0 items
Press the option "Blueprint Templates" from menu
You can open the Catalog of Blueprint Template or create one from the scratch.

Demo

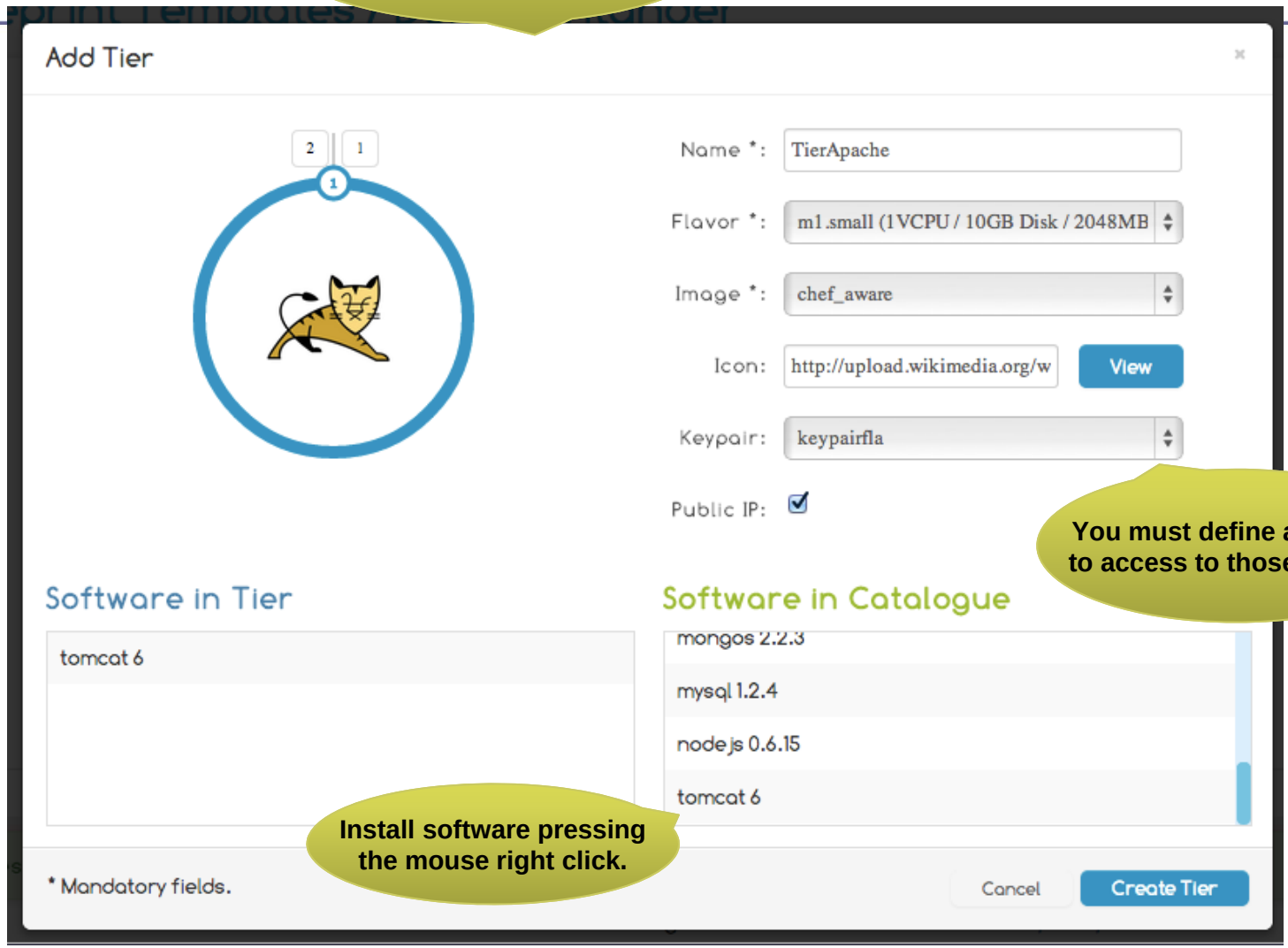

Create Blueprint
Name *
DemoSantander
Description *
Despliegue de un blueprint con 2 capas.
Description
From here you can create a new blueprint.
You should introduce the "Name" and the "Description".
* Mandatory fields.
Cancel
Create Blueprint

Demo


Blueprint Templates
Open Catalog
Create New Template
Actions
Name
Description
Tiers
DemoSantander
Despliegue de un blueprint con 2 capas.
0
To add new Tier, press "DemoSantander" name.
Displaying 1 item

Demo

After press “Add Tier” you see this windows to define the servers of this tier.

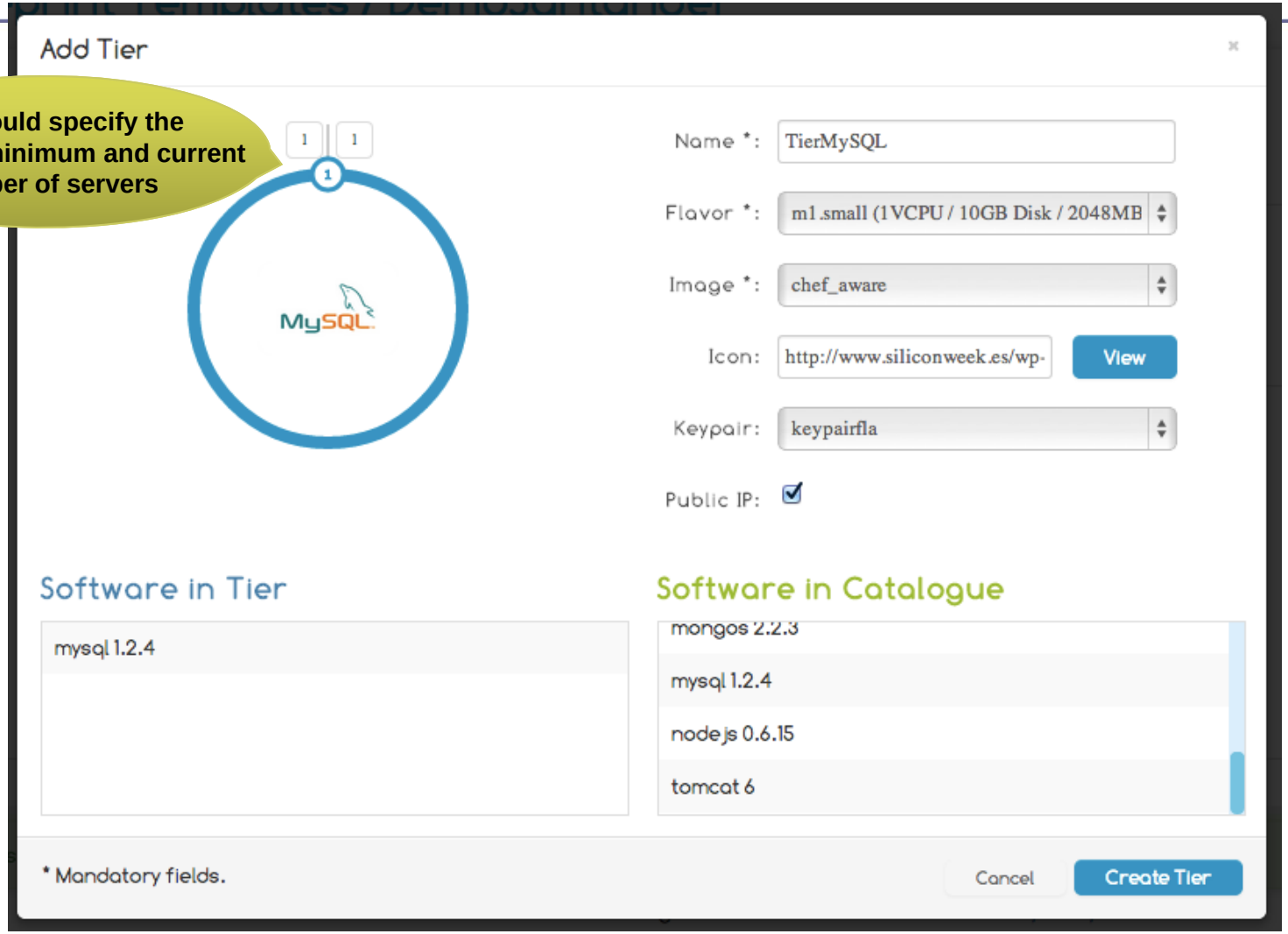


You must define a Keypair to access to those servers.

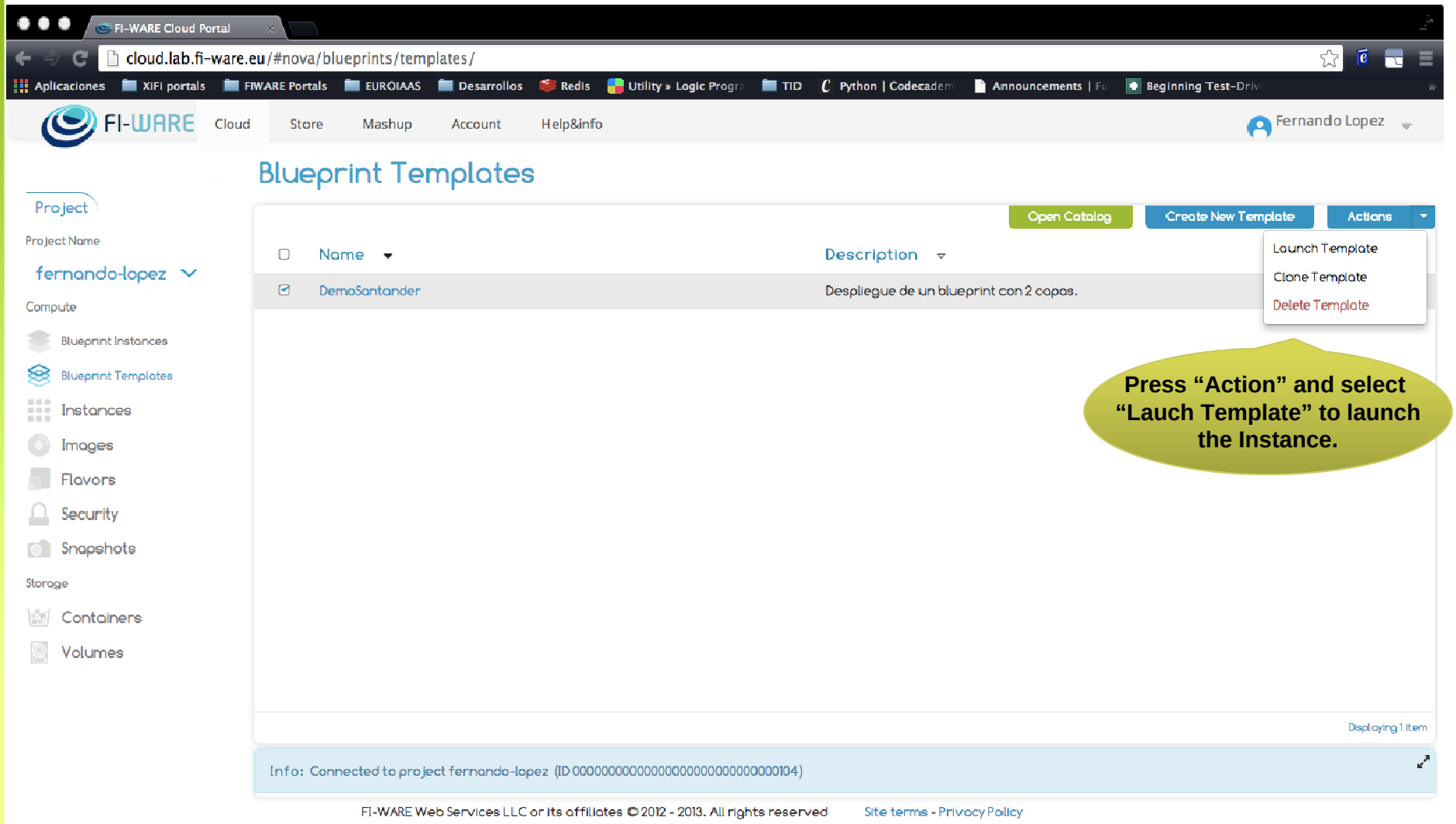
Install software pressing the mouse right click.

Demo

You should specify the maximum, minimum and current number of servers



Demo


FI-WARE Cloud Portal
cloud.lab.fi-ware.eu/#nova/blueprints/templates/
FI-WARE
Cloud
Store
Mashup
Account
Help&info
Fernando Lopez
Blueprint Templates
Project
Project Name
fernando-lopez
Compute
Blueprint Instances
Blueprint Templates
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Open Catalog
Create New Template
Actions
Launch Template
Clone Template
Delete Template
Name
Description
DemoSantander
Despliegue de un blueprint con 2 capas.
Press “Action” and select “Lauch Template” to launch the Instance.
Displaying 1 item
Info: Connected to project fernando-lopez (ID 00000000000000000000000000000104)
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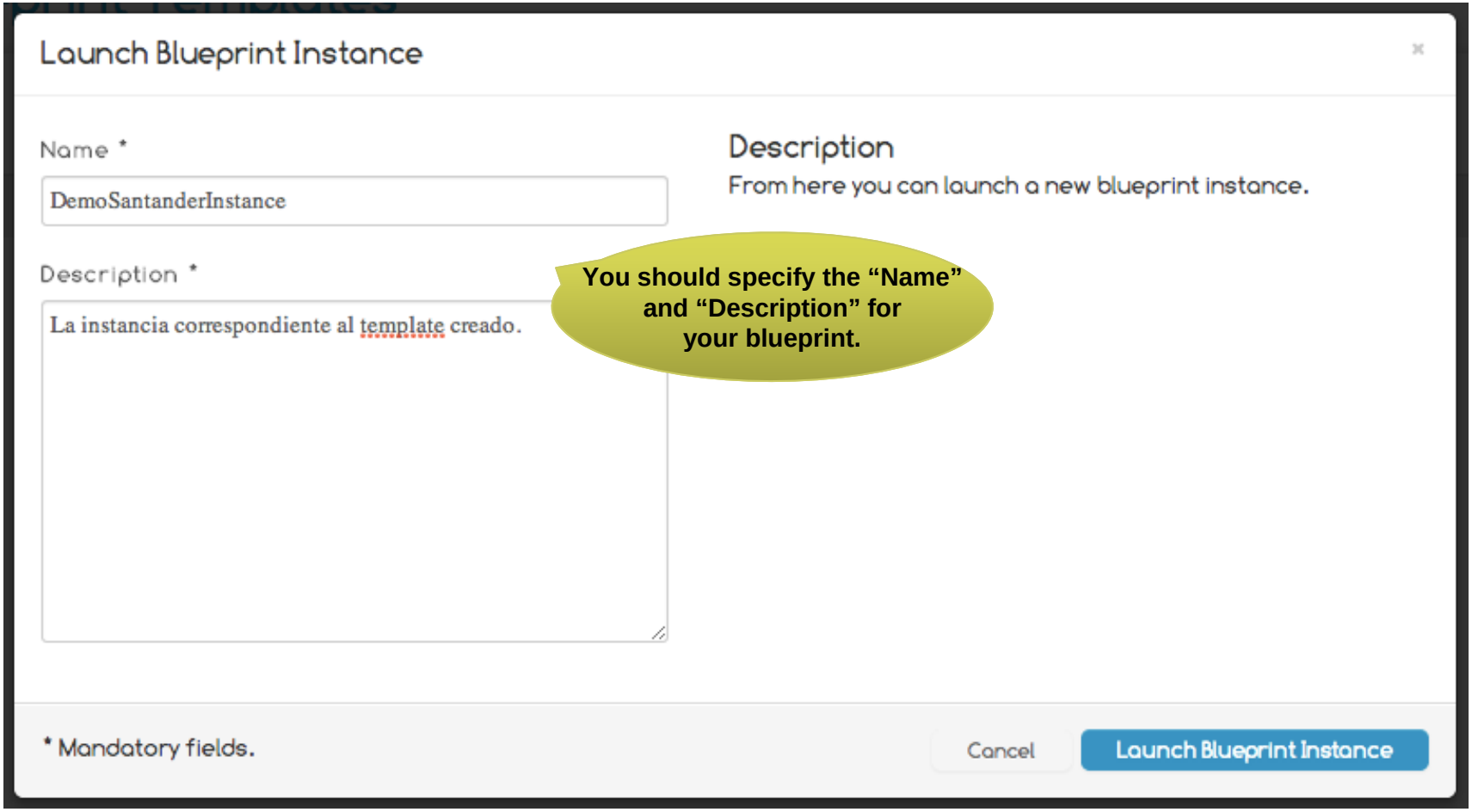
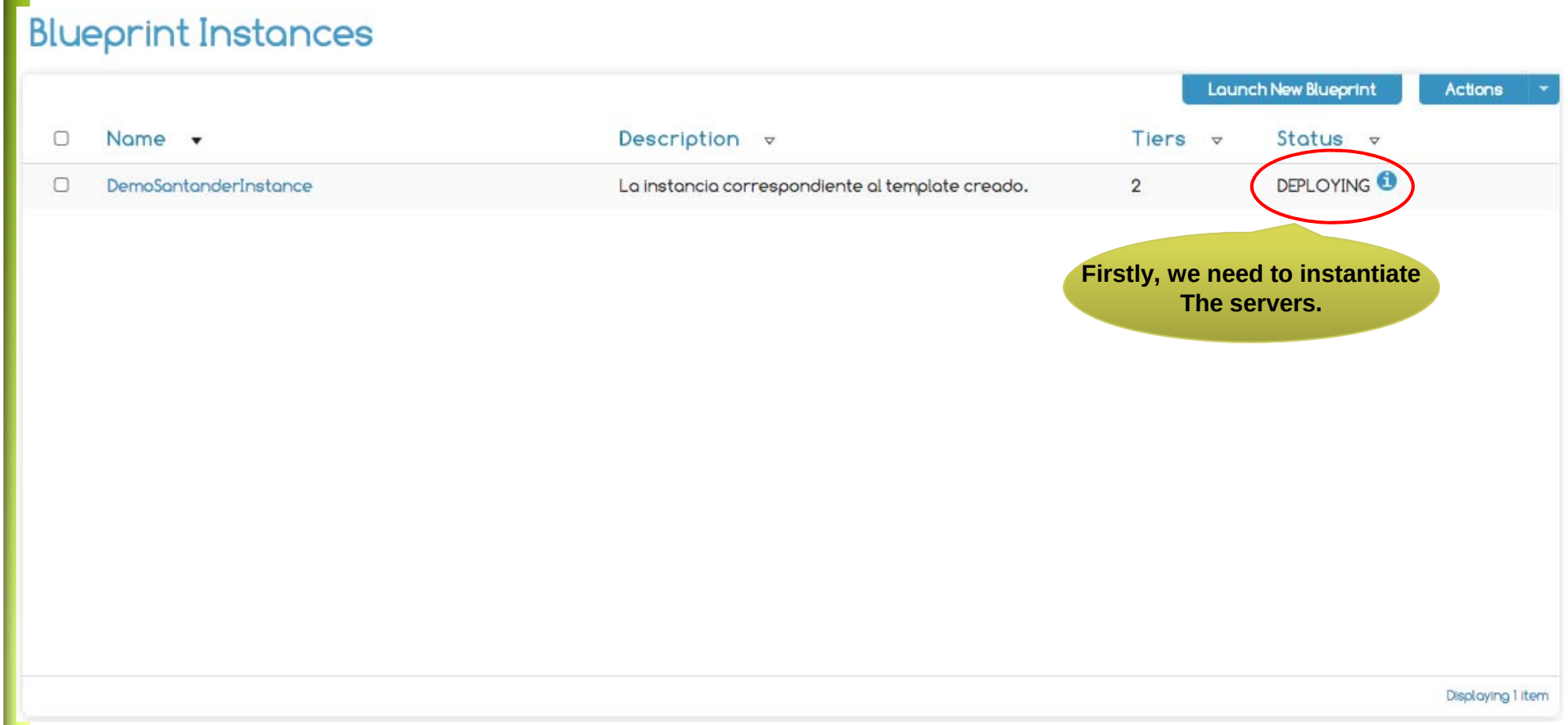
Site terms - Privacy Policy

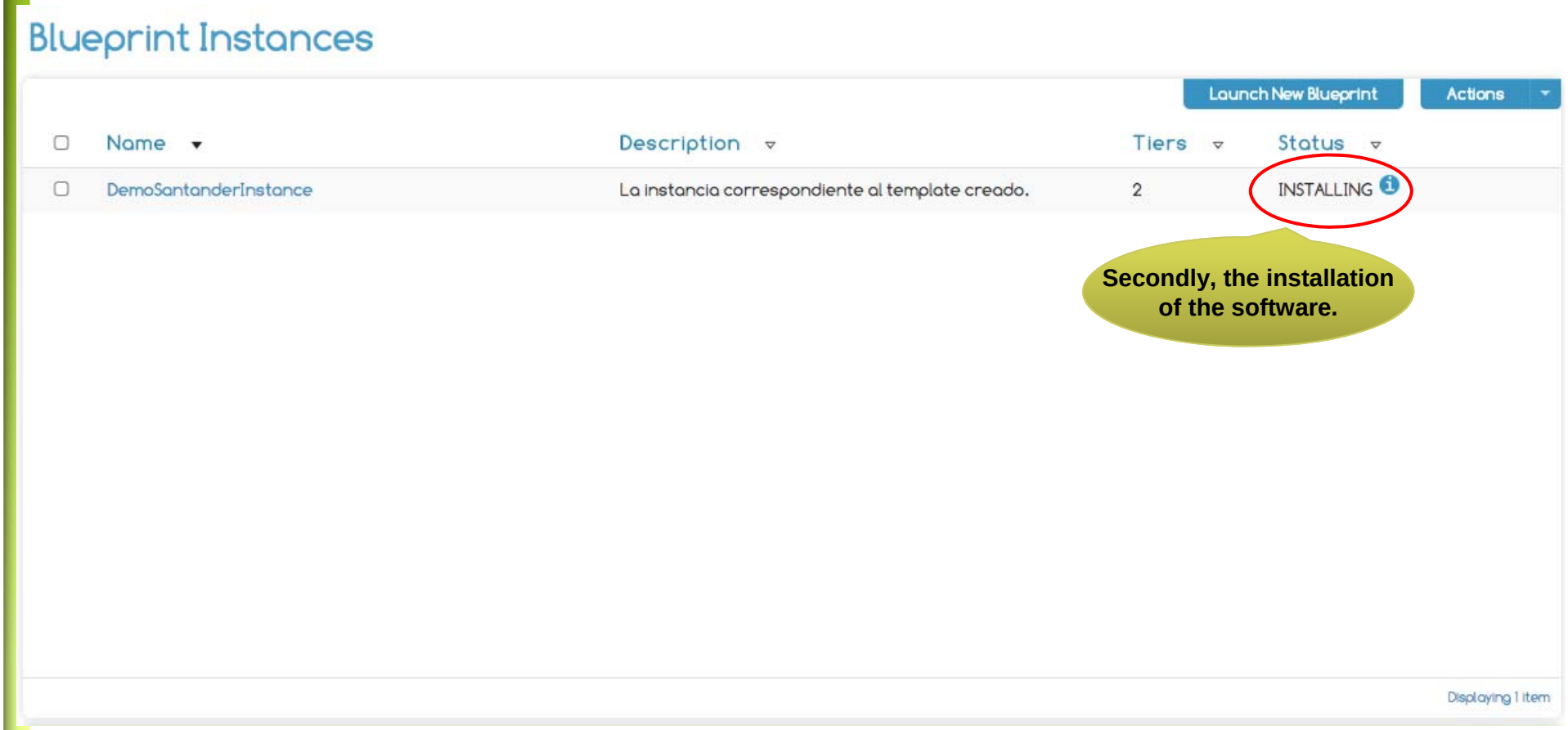
Demo


Launch Blueprint Instance
Name *
DemoSantanderInstance
Description *
La instancia correspondiente al template creado.
Description
From here you can launch a new blueprint instance.
You should specify the “Name” and “Description” for your blueprint.
* Mandatory fields.
Cancel
Launch Blueprint Instance

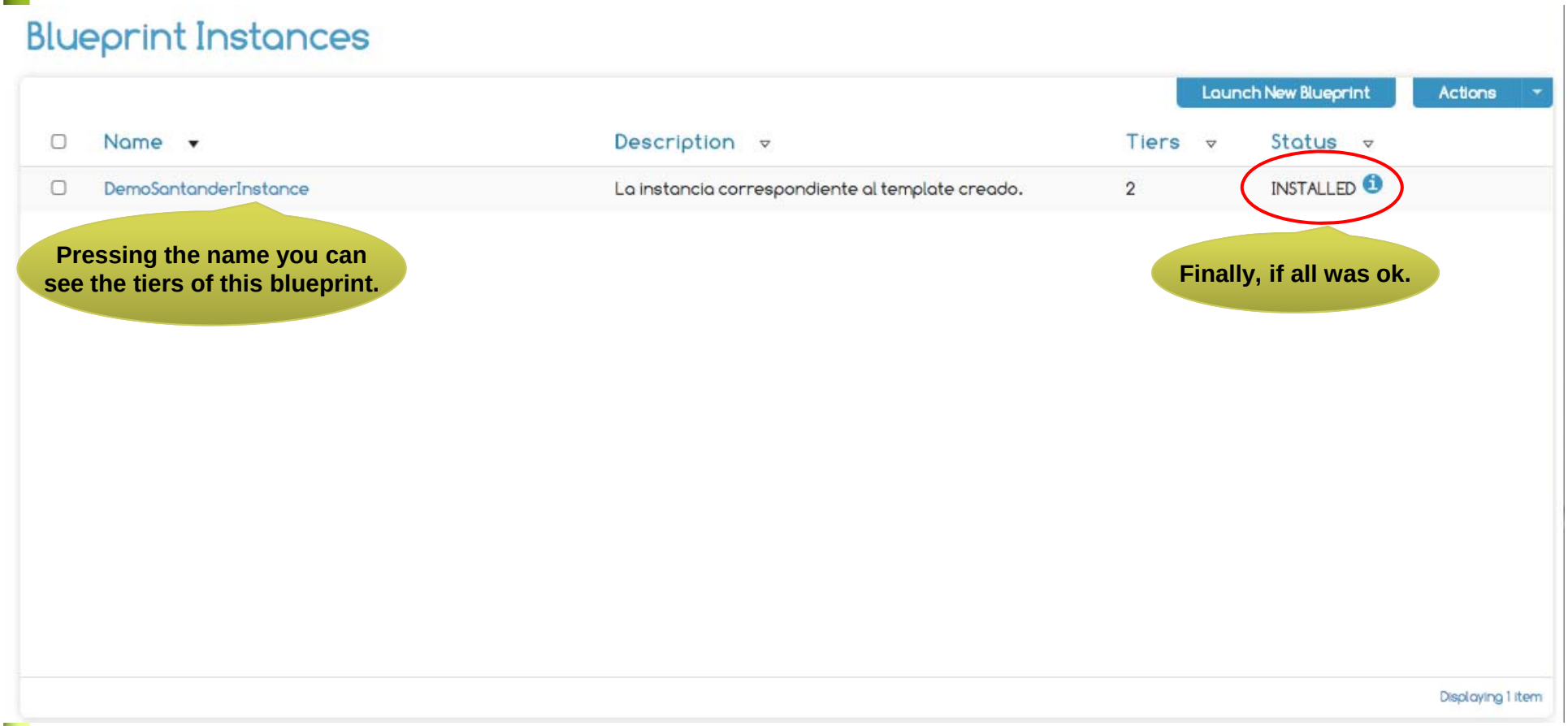
Demo


Blueprint Instances
Launch New Blueprint
Actions
Name
Description
Tiers
Status
DemoSantanderInstance
La instancia correspondiente al template creado.
2
DEPLOYING
Firstly, we need to instantiate
The servers.
Displaying 1 item

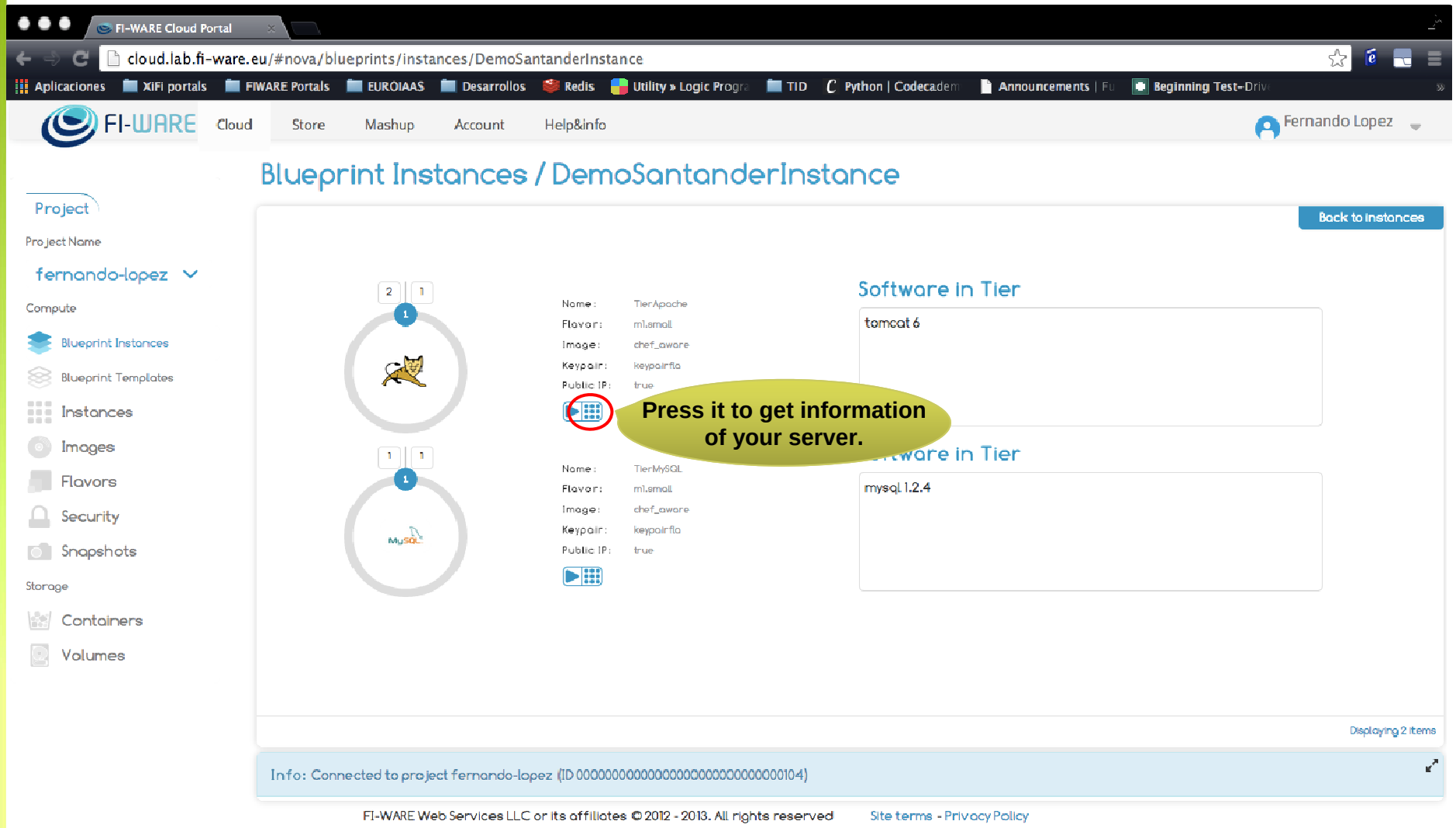
Demo


Blueprint Instances
Launch New Blueprint
Actions
Name
Description
Tiers
Status
DemoSantanderInstance
La instancia correspondiente al template creado.
2
INSTALLING
Secondly, the installation of the software.
Displaying 1 item

Demo


Blueprint Instances
Launch New Blueprint
Actions
Name
Description
Tiers
Status
DemoSantanderInstance
La instancia correspondiente al template creado.
2
INSTALLED
Pressing the name you can see the tiers of this blueprint.
Finally, if all was ok.
Displaying 1 item

Demo


FI-WARE Cloud Portal
cloud.lab.fi-ware.eu/#nova/blueprints/instances/DemoSantanderInstance
FI-WARE
Cloud
Store
Mashup
Account
Help&info
Fernando Lopez
Blueprint Instances / DemoSantanderInstance
Project
Project Name
fernando-lopez
Compute
Blueprint Instances
Blueprint Templates
Instances
Images
Flavors
Security
Snapshots
Storage
Containers
Volumes
Back to Instances
Name: TierApache
Flavor: m1.small
Image: chef_aware
Keypair: keypairfla
Public IP: true
Press it to get information of your server.
Software in Tier
tomcat 6
Name: TierMySQL
Flavor: m1.small
Image: chef_aware
Keypair: keypairfla
Public IP: true
mysql 1.2.4
Displaying 2 items
Info: Connected to project fernando-lopez (ID 00000000000000000000000000000104)
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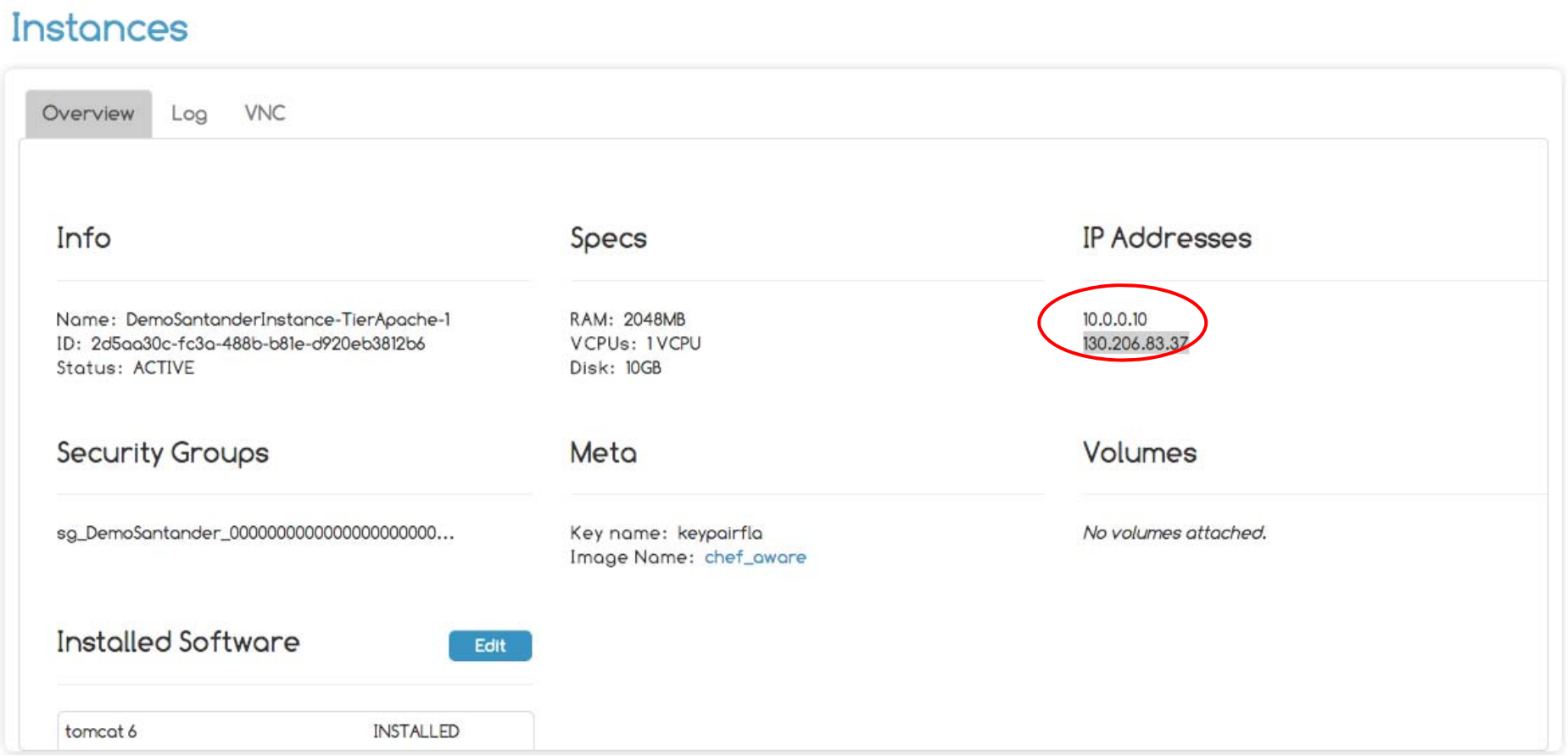
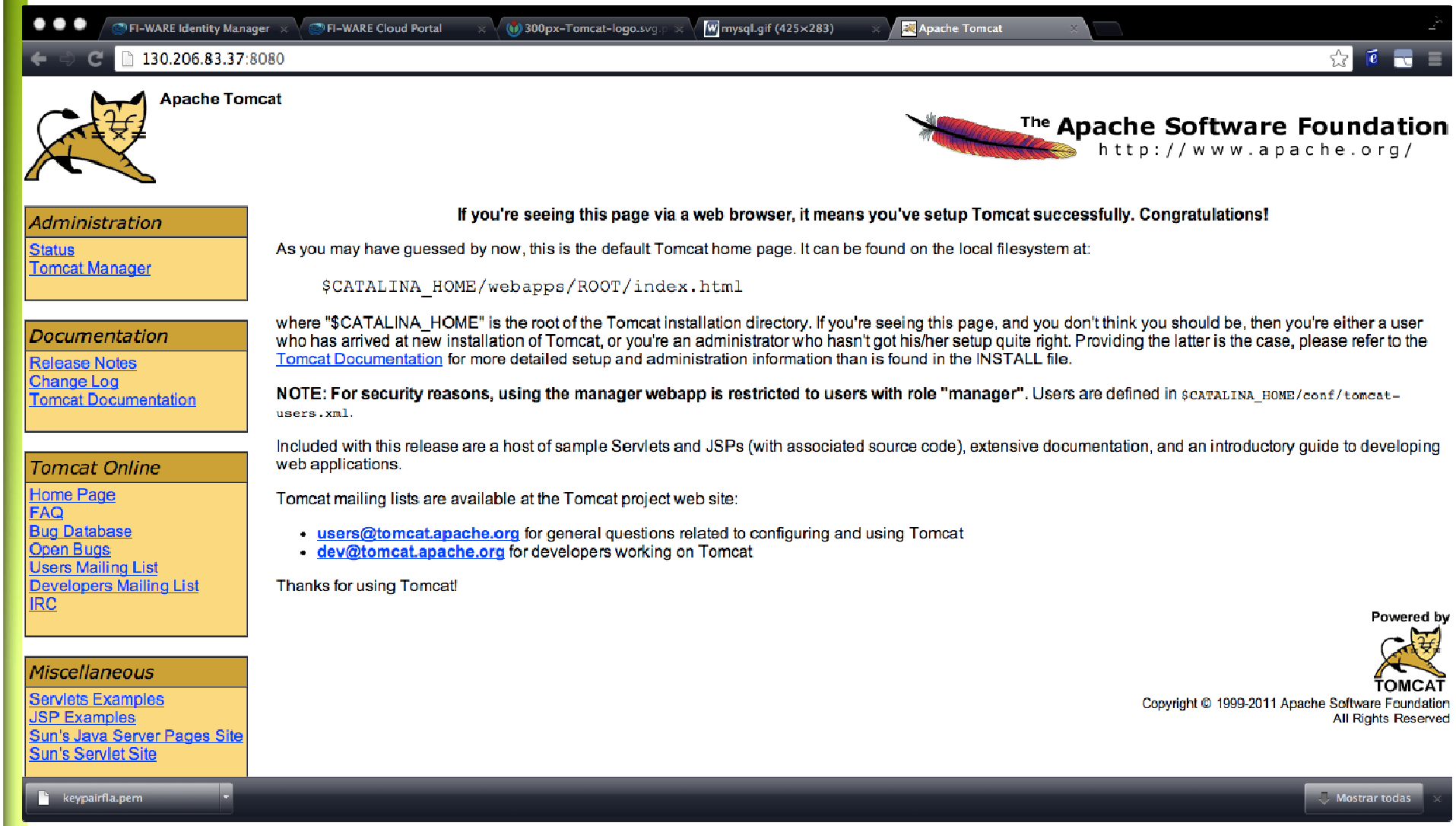
Demo


Instances
Overview
Log
VNC
Info
Name: DemoSantanderInstance-TierApache-1
ID: 2d5aa30c-fc3a-488b-b81e-d920eb3812b6
Status: ACTIVE
Specs
RAM: 2048MB
VCPUs: 1 VCPU
Disk: 10GB
IP Addresses
10.0.0.10
130.206.83.37
Security Groups
sg_DemoSantander_00000000000000000000...
Meta
Key name: keypairfla
Image Name: chef_aware
Volumes
No volumes attached.
Installed Software
Edit
tomcat 6
INSTALLED

Demo


FI-WARE Identity Manager
FI-WARE Cloud Portal
300px-Tomcat-logo.svg.p
mysql.gif (425×283)
Apache Tomcat
130.206.83.37:8080
Apache Tomcat
The Apache Software Foundation
http://www.apache.org/
If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!
As you may have guessed by now, this is the default Tomcat home page. It can be found on the local filesystem at:
$CATALINA_HOME/webapps/ROOT/index.html
where "$CATALINA_HOME" is the root of the Tomcat installation directory. If you're seeing this page, and you don't think you should be, then you're either a user who has arrived at new installation of Tomcat, or you're an administrator who hasn't got his/her setup quite right. Providing the latter is the case, please refer to the Tomcat Documentation for more detailed setup and administration information than is found in the INSTALL file.
NOTE: For security reasons, using the manager webapp is restricted to users with role "manager". Users are defined in $CATALINA_HOME/conf/tomcat-users.xml.
Included with this release are a host of sample Servlets and JSPs (with associated source code), extensive documentation, and an introductory guide to developing web applications.
Tomcat mailing lists are available at the Tomcat project web site:
users@tomcat.apache.org for general questions related to configuring and using Tomcat
dev@tomcat.apache.org for developers working on Tomcat
Thanks for using Tomcat!
Administration
Status
Tomcat Manager
Documentation
Release Notes
Change Log
Tomcat Documentation
Tomcat Online
Home Page
FAQ
Bug Database
Open Bugs
Users Mailing List
Developers Mailing List
IRC
Miscellaneous
Servlets Examples
JSP Examples
Sun's Java Server Pages Site
Sun's Servlet Site
Powered by
TOMCAT
Copyright © 1999-2011 Apache Software Foundation
All Rights Reserved
keypairfla.pem
Mostrar todas

Demo

fernandolopezaguilar — root@demosantanderinstance-tiermysql-1:~ — ssh — 204×55

```
Last login: Fri Oct 11 18:15:58 on ttys001
martes, 15 de octubre de 2013, 01:52:04 CEST
fla@flamacbpro:~$ ssh -i ~/Downloads/keypairfla.pem root@130.206.83.38
Last login: Tue Oct 15 01:51:33 2013 from 132.red-83-60-167.dynamicip.rima-tde.net
[root@demosantanderinstance-tiermysql-1 ~]# mysql -u admin
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 5.1.69-log Source distribution

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| test               |
+--------------------+
2 rows in set (0.00 sec)

mysql> use test;
Database changed
mysql> show tables;
Empty set (0.00 sec)

mysql> use information_schema;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+---------------------------------------+
| Tables_in_information_schema          |
+---------------------------------------+
| CHARACTER_SETS                        |
| COLLATIONS                            |
| COLLATION_CHARACTER_SET_APPLICABILITY |
| COLUMNS                               |
| COLUMN_PRIVILEGES                     |
| ENGINES                               |
| EVENTS                                |
| FILES                                 |
| GLOBAL_STATUS                         |
| GLOBAL_VARIABLES                      |
| KEY_COLUMN_USAGE                      |
| PARTITIONS                            |
| PLUGINS                               |
| PROCESSLIST                           |
| PROFILING                             |
```

Big Data Analysis - Cosmos

- Catalog
  - http://catalogue.fiware.org/enablers/bigdata-analysis-cosmos
- Documentation
  - http://catalogue.fiware.org/enablers/bigdata-analysis-cosmos/documentation
- E-Learning Platform
  - http://edu.fiware.org/course/view.php?id=69
- Long video tutorial
  - https://www.youtube.com/watch?v=JJ6QCojnCh4
- Programmers Guide
  - http://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/BigData_Analysis_-_User_and_Programmer_Guide
- Quick Start
  - http://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/BigData_Analysis_-_Quick_Start_for_Programmers

Complex Event Processing (CEP)

- http://catalogue.fiware.org/enablers/complex-event-processing-cep-ibm-proactive-technology-online

Stream and Multimedia - Kurento

- http://catalogue.fiware.org/enablers/stream-oriented-kurento

- https://www.youtube.com/watch?v=TC5bAIVyE-M
- https://www.youtube.com/watch?v=TBkrl3fmHWI
- https://www.youtube.com/watch?v=5eJRnwKxgbY
- https://www.youtube.com/watch?v=PYCw9-4oWWA

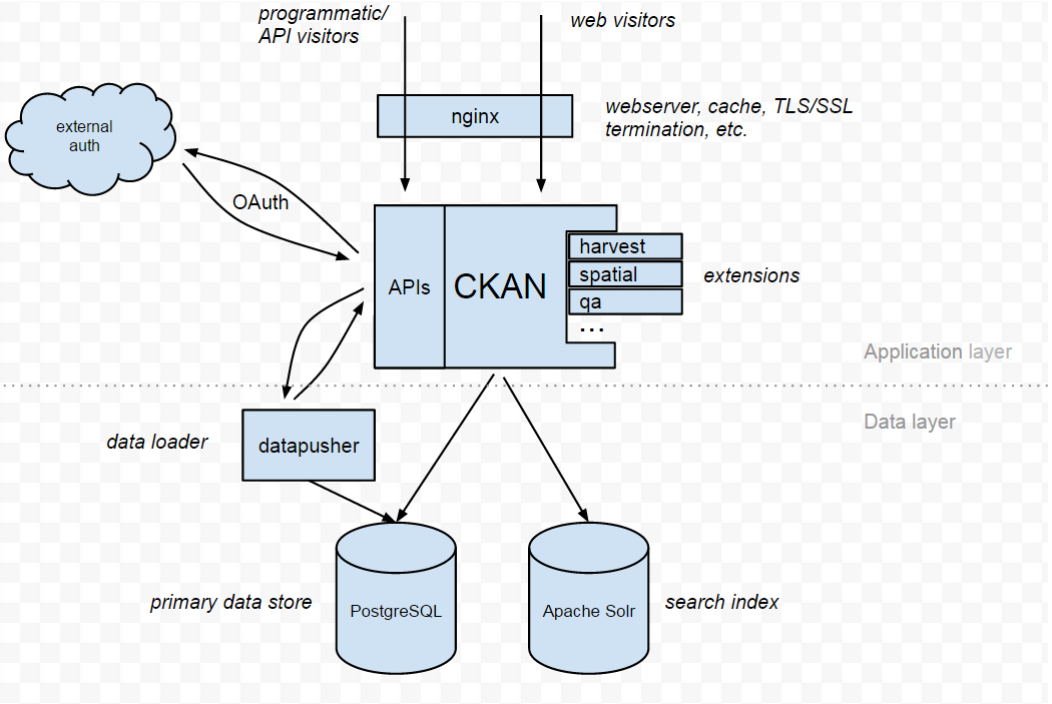
CKAN

- CKAN is an open data management platform
- helps publishers make their data accessible and findable by potential users.
  - Publisher: Data + Metadata
  - Consumer: Browse, Search, Access
  - http://ckan.org/
- CKAN Tour
  - http://ckan.org/tour/
- CKAN Features Overview
  - http://ckan.org/features/
- FIWARE
  - https://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/FIWARE.ArchitectureDescription.Data.CKAN
- Cygnus conector
  - https://github.com/telefonicaid/fiware-connectors/tree/master/flume

CKAN

- WireCloud Integration
  - https://github.com/wirecloud-fiware/ckan-source-operator
- Cygnus Connector
  - https://github.com/telefonicaid/fiware-connectors/tree/develop/flume

CKAN Architecture



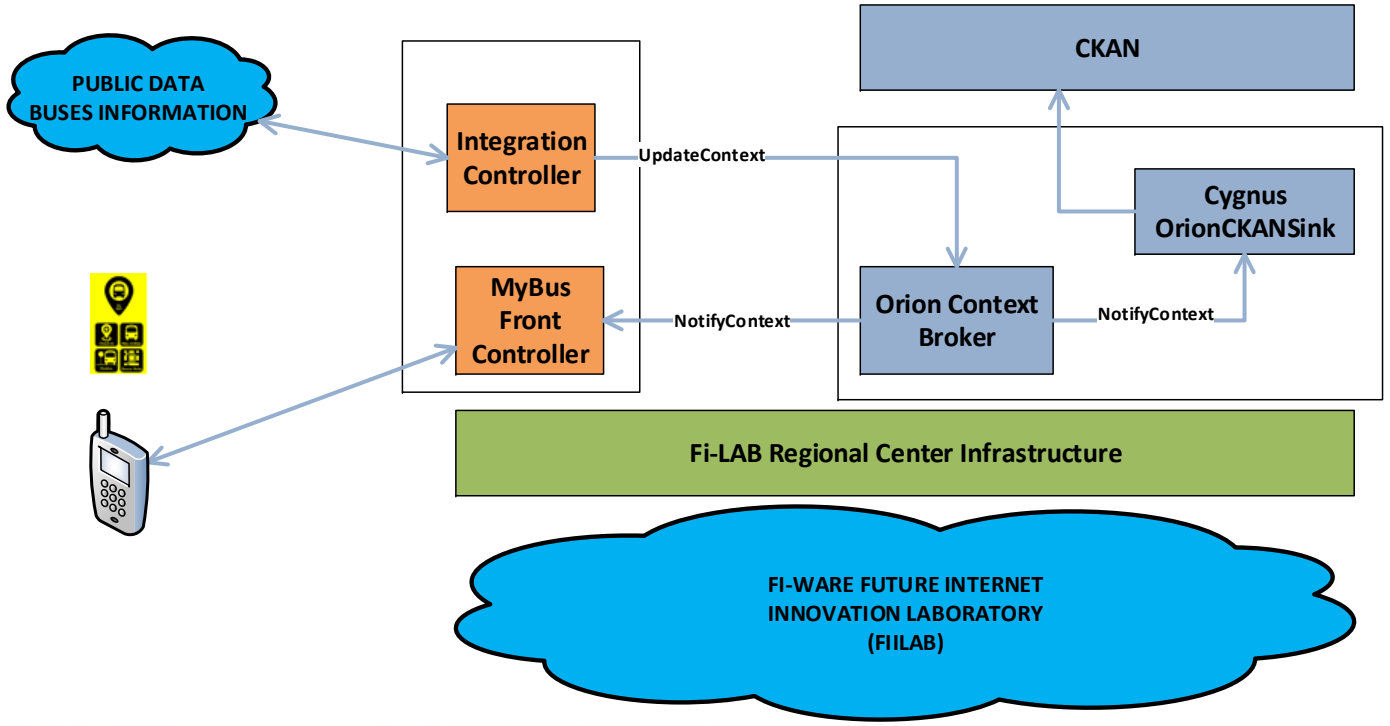
- Application Layer
- Data Layer

Security

- OAuth 2.0
  - http://oauth.net/2/
- Course (OAuth in FI-LAB)
  - http://edu.fiware.org/course/view.php?id=63
- OAuth Sample
  - https://github.com/ging/oauth2-example-client

Prova de Conceito MyBUS

- Aplicação baseada em Open Data (SETTRAN)
- Utiliza os Generic Enablers da Arquitetura FIWARE
- Baseada no conceito de Smart City com foco mobilidade urbana



Prova de Conceito
MyBUS

PUBLIC DATA BUSES INFORMATION - Generator

- Open data from the municipality of Uberlandia
- For the workshop we will use sample data
- Data Generation
  - com.br.control.Linha131
- Rest Web service
  - com.br.view.Get131
  - @Path("/get/131")
  - @GET
  - @Produces(MediaType.APPLICATION_JSON)

Integration Controller

- Standard Java console base application
  - Main
  - Calls the generator WebService
  - Post data to Orion
- Get data from the Generator Serivce and Post Data to Orion
  - GetInfoWebGen. GetBus
  - GET - public void getBus()
    - http://localhost:8080/WebGen/get/131
  - POST - public void sendToOrion()
    - http://localhost:1026/v1/updateContext

Configure Orion to Notify MyBusFrontController

```
{
   "entities": [
      {
         "type": "BusCar",
         "isPattern": "false",
         "id": "1"
      }
   ],
   "attributes": ["Latitude","Longitude"],
   "reference": "http://localhost:8080/busweb/bus/receive",
   "duration": "P1M",
   "notifyConditions": [
      {
         "type": "ONCHANGE",
         "condValues": [
            "Latitude","Longitude"
         ]
      }
   ],
   "throttling": "PT1S"
}
```

Configure Orion to Notify Cygnus

```
{
   "entities": [
      {
         "type": "BusCar",
         "isPattern": "false",
         "id": "1"
      }
   ],
   "attributes": ["Latitude","Longitude"],
   "reference": "http://localhost:5050/notify",
   "duration": "P1M",
   "notifyConditions": [
      {
         "type": "ONCHANGE",
         "condValues": [
            "Latitude","Longitude"
         ]
      }
   ],
   "throttling": "PT1S"
}
```

MyBusFrontController

- Receive Orion Notification
- Offers an interface for the Mobile App to get new information from a bus
- br.com.webbus.controller.OrionController
  - Receives a notification from Orion
  - @RequestMapping(value="/receive", method=RequestMethod.POST)
  - public @ResponseBody String getBusOrion
  - Deserialize to a Java Data object
  - Stores new Data object in memory
- br.com.webbus.controller.BusRouteController
  - Offers buses position to the Application
  - @RequestMapping(value="/listbus/{valor}", method=RequestMethod.GET)
  - public @ResponseBody List<Bus> getListBus

Bus Mobile App

- Activity responsible to get buses positions
- br.com.busapp.FindBusactivity