FIWARE Platform/FIWARE Lab/FIWARE Ops

How and why to use them!
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FIWARE

OPEN APIs FOR OPEN MINDS

www.fiware.org
@Fiware

FIWARE Lab

Spark your imagination

FIWARE Ops

Easing your operations

Internet: a transformation engine

Navigation, Calling a taxi (Uber), Recruiting (Linkedin)…

Understanding FIWARE (Open Standard Platform)
advanced OpenStack-based Cloud + rich library of Generic Enablers

The next computer

Driven by implementation

Sustainability ensured

Why an open standard platform is required

- Avoid vendor lock-in:
  - Standard Southbound APIs for sensor providers
  - Standard Northbound APIs offered to applications
  - Portability across platform providers
  - Interoperability of apps on top of different providers

- Larger community of developers (critical mass, economies of scale)
  - True innovation
  - More competition, leading to cost savings

- Not any standard is enough
  - Modularity
  - Allow different business models
  - Integration with standard open data platform
  - Non-intrusive (smooth integration with legacies)

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

- **One open source reference implementation** of each FIWARE GE (**FIWARE GEri**):
  - Well-known open source license
  - Publicly available **Technical Roadmap** updated in every release

- Available FIWARE GEis, GEris and incubated enablers are published on the **FIWARE Catalogue**

FIWARE major differential features

Cloud		• Federation of infrastructures (private/public regions) • Automated GE deployment
Data/Services De...		• 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
Web UI		• Easy incorporation of advanced 3D and AR features • Visual representation of context information
Security		• Security Monitoring • Built-in Identity/Access/Privacy Management
I2ND		• Advanced networking (SDN) and middleware • Interface to robots

Take the most of infrastructures while keeping costs lower and under control

Cloud Enablers

Object Storage
PaaS Management
Monitoring
Edgelet Management
Software Deployment and Configuration SDC
IaaS Data Center Resource Management DCRM
Cloud Proxy Job Scheduler
IaaS Service Management SM

Managing, processing and analyzing private and open data at large scale

Data /Context Enablers

Semantic Big Data Analysis
Annotation Meta-Data Preprocessing
Complex Event Processing CEP
Publish Subscribe Broker Compressed Domain Video Analysis
Advanced Communication Middleware
Media Enhanced Query Broker Location Platform
Semantic Application Support

Simple yet powerful interaction model

- OMA NGSI Context Management is about management of Context data (aka Context Information)

- Context Information is always relevant to "entities", although entities can be anything (applications, users, things, …)

Application

subscription_id_1 = subscribe (consumer1, expr1, duration1)

updateContext

notifyContext

Context Producer

Context Broker 2

query

Context Consumer 1

Context Consumer 2

queryContext

registerContext (Context Provider, what, duration2)

Context Provider
(maybe another Context Broker)

Application
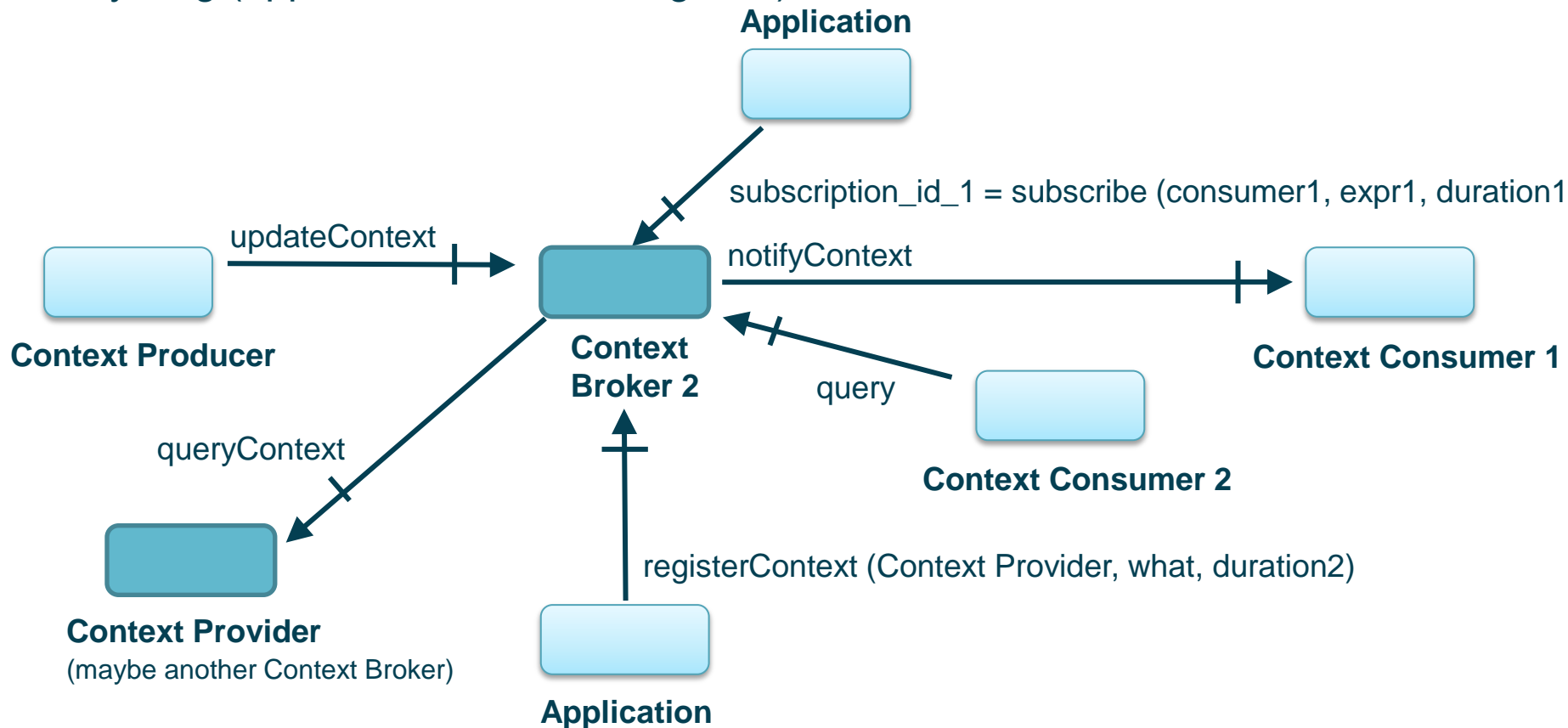
Easing connection to the physical world

IoT Chapter Enablers

Gateway Data Handling
Gateway Protocol Adapter
Backend Device Management
Gateway Device Management
Backend Configuration Management
Backend IoT Broker

FIWARE IoT & Context/Management altogether

Applications

FIWARE NGSI-9/10
(entities: things, other)

Other sources

Context Broker

BigData Analysis

CEP

IoT-enabled Context Management

Direct connection for higher performance

FIWARE NGSI-9/10
(entities: things)

IoT Broker

IoT ConfigMan

NGSI IoT Adapter

IoT Backend Device Management

Device-level Management API

Backend

Native NGSI IoT Agent

Native NGSI IoT Agent

Gateway/Device Platform GEs

Gateway/Device Platform GEs

Gateway/Device Platform GEs

Gateway/Device Platform GEs

FIWARE NGSI-9/10

Backend

FIWARE FIWARE Lab FIWARE Ops

Benefit from open innovation
Reaching target users, monetize

Apps Chapter Enablers

Repository

Marketplace   Store

Light Semantic Composition

Revenue Sharing System Business Calculator

Service Composition   Service Mashup

Application Mashup   Mediator

Business Modeler

Registry

Ensuring Privacy, Security and Trust

Security Enablers

Privacy
Database Anonymizer
Identity Management
Privacy Enhanced Identity Management
Context-based Security and Compliance
Content-based Security
Data Handling
Android Flow Monitoring
Access Control
Malware Detection Service
Security Monitoring

Offering rich web-based user interfaces
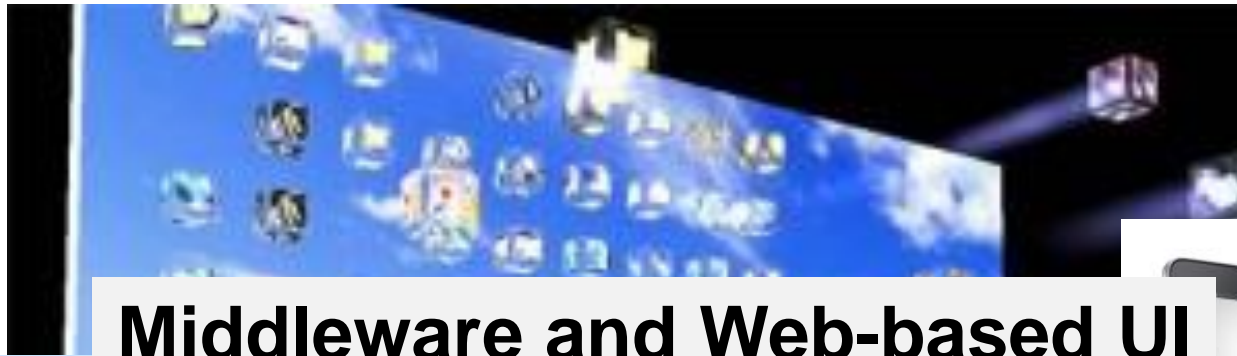
Middleware and Web-based UI

Virtual Designer
2D/3D UI   Real-Virtual Interaction
POI Data Provider   Display as a Service   2D-3D Capture
Augmented Reality   Cloud Rendering
GIS Data Provider   Advanced Middleware

HTML5

Access from everywhere, taking the most of the network and capabilities of devices

I2ND Enablers

Network Information and Control NetIC
Service Capability Connectivity and Control S3C
Connected Devices Interfacing CDI
Cloud Edge CE

Robotics

The FIWARE Catalogue

- catalogue.fiware.org a kind of executive summary per Generic Enabler

Going from clusters to ecosystems
Cross-fertilization between sectors; avoid silos

- Leading to a more powerful platform offering (based on common functionalities; develop once and reuse as much as you can)

- Then, translating the sectorial knowledge into domain-specific plafforms

Ecosystem and platform: two tied concepts
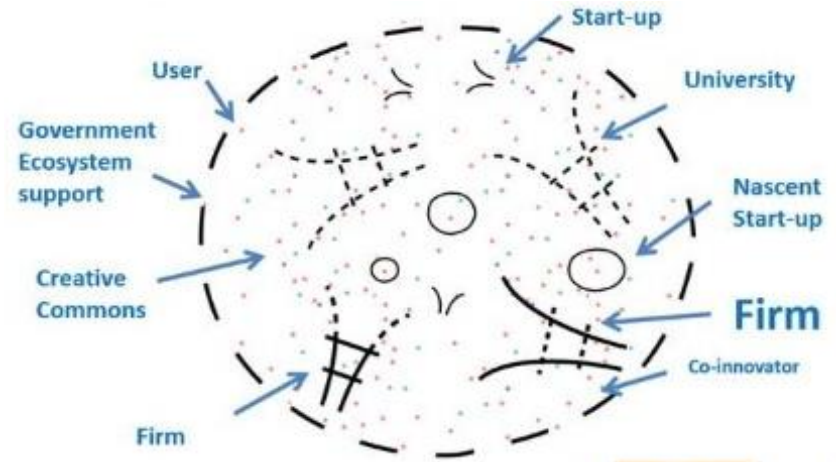
Open Standard Platform

Sustainable Open Innovation Ecosystem

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
- Simple yet powerful APIs that accelerate product development

FIWARE Lab
Spark your imagination

FIWARE Technology Providers

- "Coopetitive" 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

The FIWARE Lab Portal

http://lab.fiware.org

A live instance of FIWARE available to developers for free experimentation

Not only platform, tools…this is powered by data!

Data in FIWARE Lab

Support and coaching

The FIWARE e-Learning Platform

- edu.fiware.org lets you discover Generic Enablers Features

- You can find detailed courses per Generic Enabler

What can you do with FIWARE?

350 connected sensors for the management of public resources through a single connectivity platform and enhancing various areas such as **transport, energy efficiency and environmental services**

Smartaxi
demand forecasting

HELP TAXI DRIVERS

REAL-TIME FORECAST

Success Stories? Get inspiration!

Building Streaming Media Applications with FI-WAR... — 20:35
41 visualizaciones   Hace 1 mes

Creating Interactive 3D Applications and Shared... — 25:18
20 visualizaciones   Hace 1 mes

The FI-Content use case project - Social and... — 12:45
14 visualizaciones   Hace 1 mes

Naevatec (Kurento Generic Enabler) - Interview with... — 0:51
23 visualizaciones   Hace 1 mes

Magic Box Interview with Javier Herrero at CeBIT... — 0:39
27 visualizaciones   Hace 1 mes

Thorsten Sandfuchs (SAP) interview at CeBIT 2014 — 1:13
22 visualizaciones   Hace 1 mes

FI-WARE Business Framework by Thorsten... — 10:21
24 visualizaciones   Hace 1 mes

Connecting to the Internet of Things (IoT) with FI-... — 24:47
23 visualizaciones   Hace 1 mes

Connecting to the Internet of Things (IoT) with FI-... — 9:48
12 visualizaciones   Hace 1 mes

FI-WARE and FI-Content in the EU Future Internet... — 11:56
33 visualizaciones   Hace 1 mes

Magic Box & FI-WARE, Javier Herrero at CeBIT... — 15:51
15 visualizaciones   Hace 1 mes

CeBIT Future Talks 2014 — 0:02
15 visualizaciones   Hace 1 mes

SmartTaxi: The Value for a Developer - FI-WARE in... — 9:11
119 visualizaciones   Hace 2 meses

FI-LAB: A guide to the most exciting Future Internet... — 26:26
133 visualizaciones   Hace 2 meses

FI-OPS: access from everywhere in Europe by... — 10:10
20 visualizaciones   Hace 2 meses

www.youtube.com/user/FIWARE

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 added-value components

FIWARE Catalogue

assemble…

Future Internet App

FIWARE Instance

FIWARE GE implementations

Added-value components
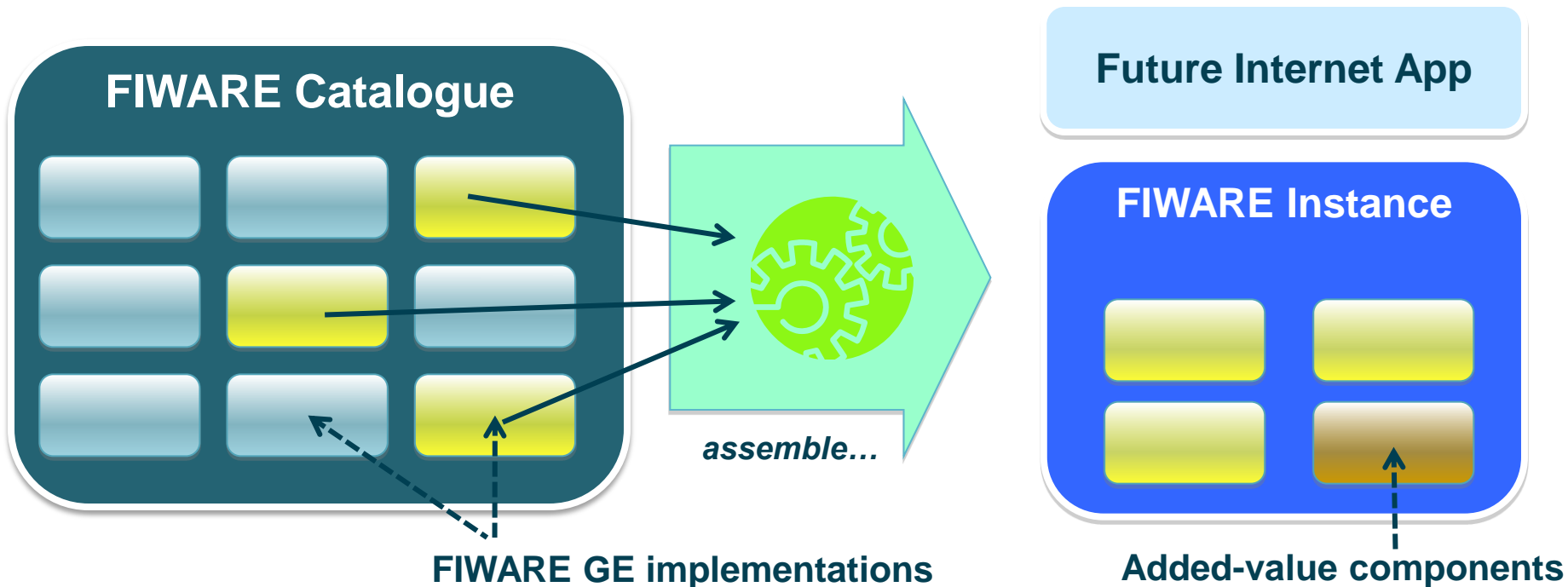
Modularity; integration with legacies
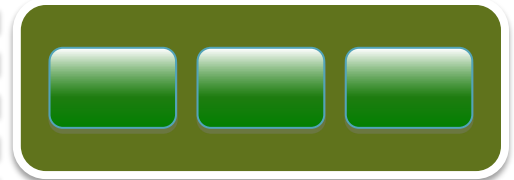# Domain-specific platforms = FIWARE + specific enablers

SMART Agrifood Apps

SMART City Apps

SMART Factory Apps

Domain specific enablers

FIWARE

GEs
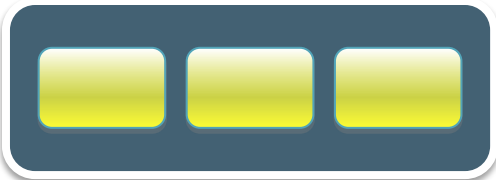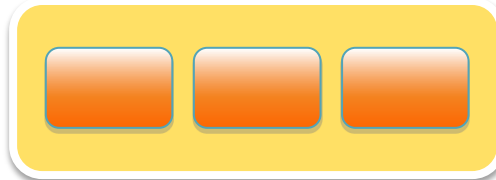
Example: Smart City platform

- Smart city platform as a Data/Knowledge Hub

- Non-intrusive, open to third parties

What is and what can you do with FIWARE Ops
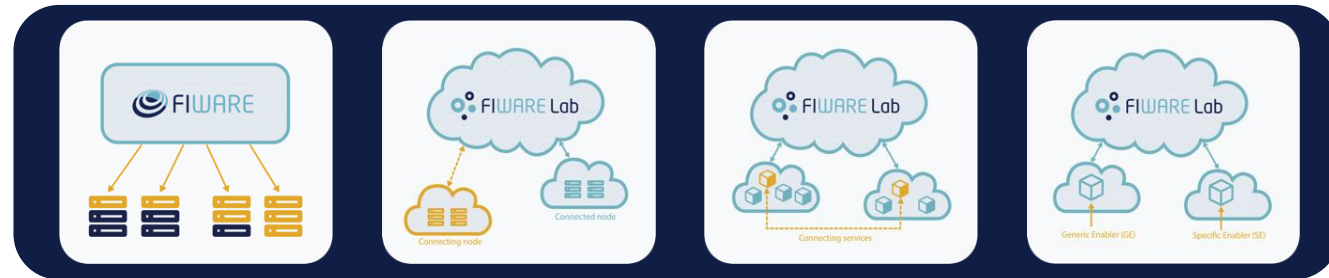
Deployment 1

Federation Management 2

Connectivity Management 3

Service Offer Management 4

What can you do with FIWARE Ops?

Deployment

- Deploy a new FIWARE node and provide the basics for its federation with other nodes of an existing FIWARE instance
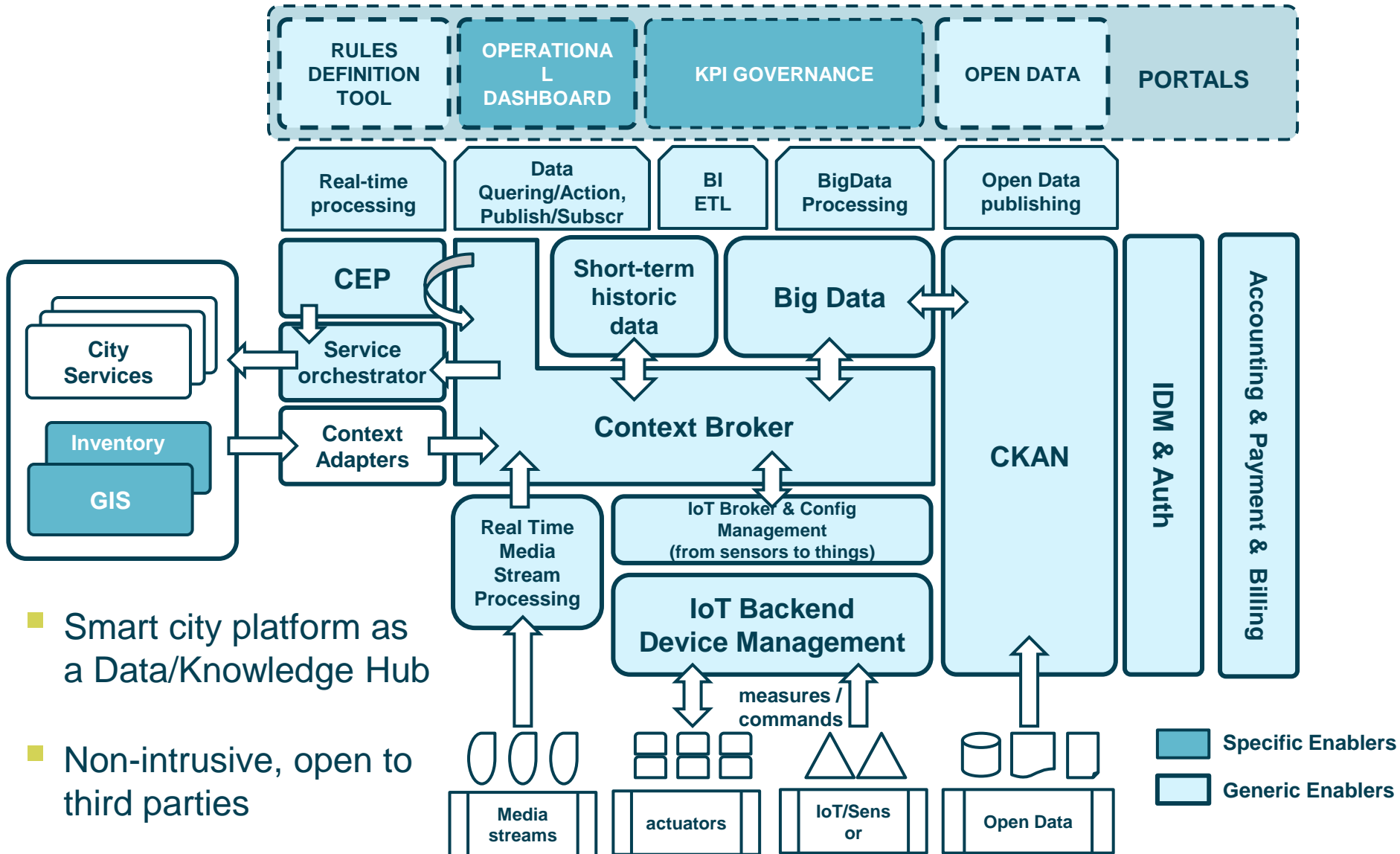
Federation Management

- Federate a FIWARE node to an existing FIWARE instance and monitor the status of the different services through a global operation portal

What can you do with FIWARE Ops?

Connectivity Management

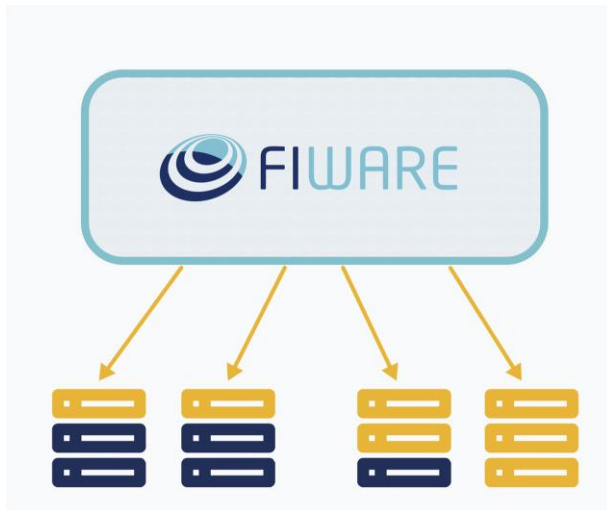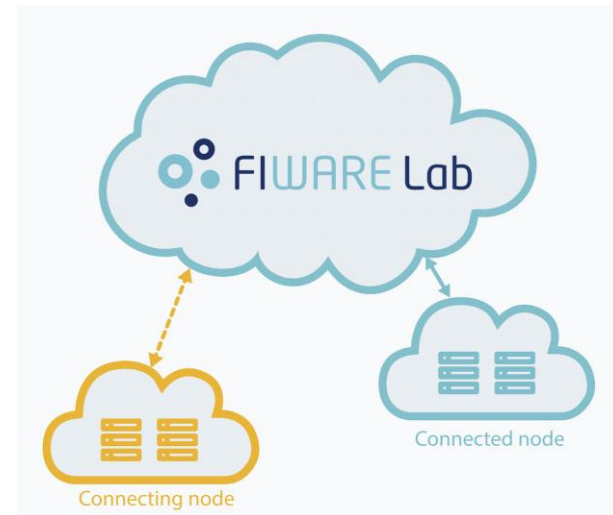- Manage service connectivity across different FIWARE nodes allowing for highly distributed cloud applications

Service Offer Management

- Register and deploy additional enablers and infrastructure services in an existing FIWARE node

WHAT'S NEXT

- Dashboard to support node operation activities such as quota management
- Enhancement of the Multi-region network controller to support BOD
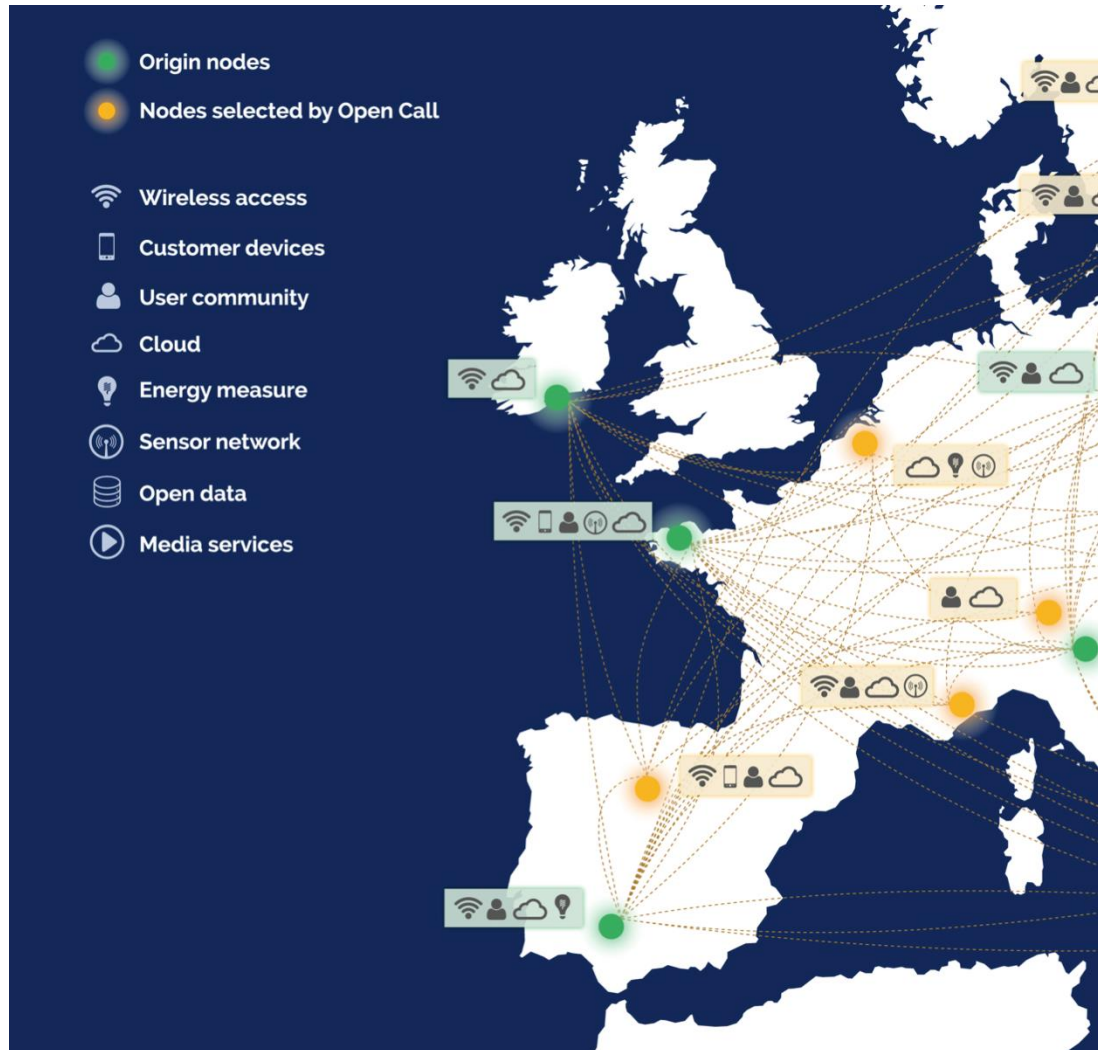- Status dashboard integrated with the Help Desk
- Support in the Infrastructure Toolbox for set-up of FI-Lab master node
- SLA Management Dashboard for FI-Lab node operators

And more to come!

FIWARE · FIWARE Lab · FIWARE Ops

FIWARE Ops is the tool used to build operate and expand FIWARE Lab

Legend:
- Origin nodes
- Nodes selected by Open Call

- Wireless access
- Customer devices
- User community
- Cloud
- Energy measure
- Sensor network
- Open data
- Media services

- Availability of 5 nodes (end of March 2014) with 500+ cores, 1TB+ Ram, 100TB+ HD

- Additional 12 nodes (April / September 2014) with 1000+ cores, 2TB+ Ram, 200TB+ HD

- Level 1 and Level 2 support for the nodes

- Showcases for developers, infrastructures, smart businesses

A FIWARE node in Poznan @ PSNC

- Parameters of PSNC node
  - CPUs: 120 cores
  - RAM: 156 Gb
  - Storage: 7.5 Tb
  - Connection to XIFI: 10 Gb/s
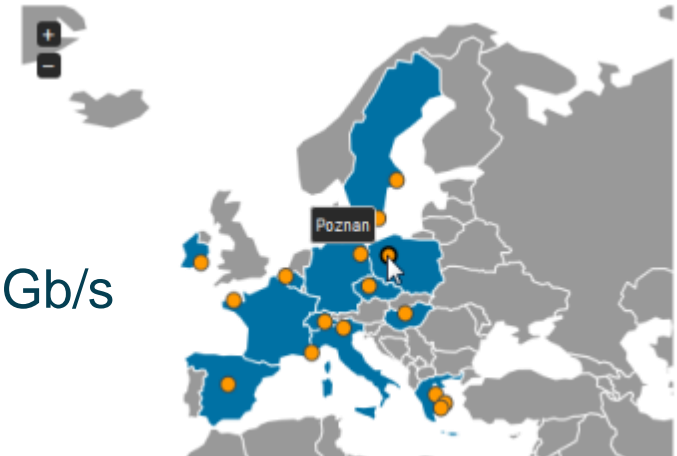
- Software installed on PSNC
  - ITBox ver. 1.3.2.1,
  - Nogios ver. 3.4.1,
  - OpenStack ver. 2013.1.4 (Grizzly)

More info: http://infographic.lab.fi-ware.org

The FIWARE Programme in Summary…

- **Has the goal of capturing opportunities derived from the new wave of digitalization of life and businesses**

- **Strategy based on building an ecosystem that will work as catalyst for capturing the opportunities. Lead standardization in Smart Cities and IoT (Internet of Things)**

- **The four main pillars are:**

  FIWARE **A generic, open standard platform which serves the needs of developers in multiple domains**

  FIWARE Lab **A meeting point where innovation takes place, and opportunities can be incubated**

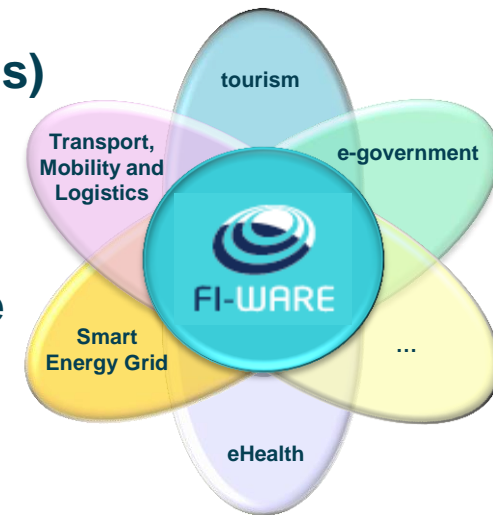 **FIWARE Accelerate** Join the innovation ecosystem **A program that funds developers and entrepreneurs, and ignites roll-out of the ecosystem**

  FIWARE Ops **The suite of tools that ease deployment and operation of FIWARE instance nodes**

- **Global footprint: open to regions sharing the ambition**

Thanks!

www.fiware.org
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