

Introduction to FIWARE Open Ecosystem

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OPEN APIs FOR OPEN MINDS

www.fiware.org
@Fiware

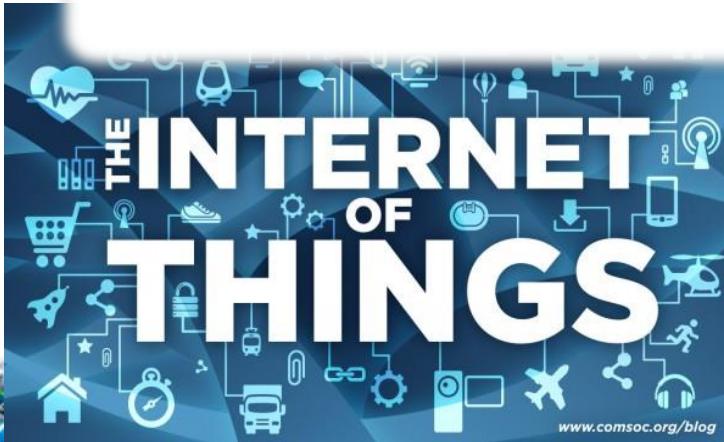


<http://tinyurl.com/fiware-open-ecosystem>

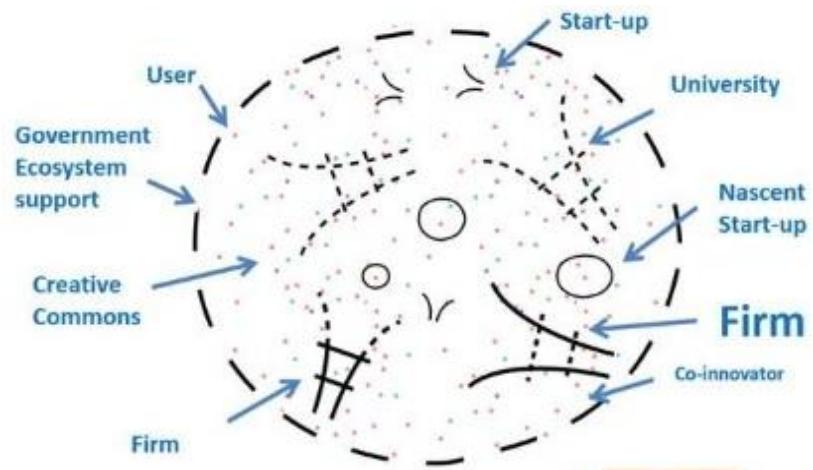
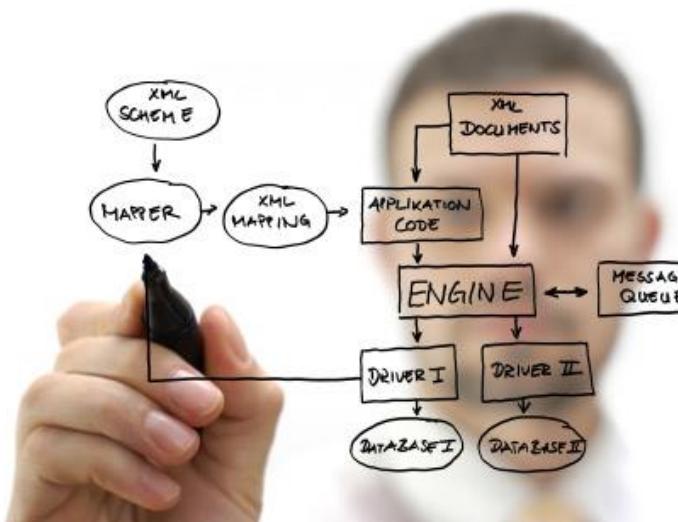
The Internet will again transform the daily life of individuals and businesses



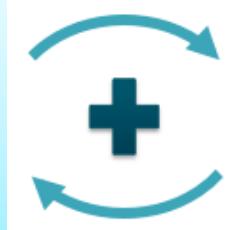
The Next Computer



Ecosystem and platform: two tied concepts



**Open Standard
Platform**



ecosystem
open sustainable global



FIWARE = advanced OpenStack-based Cloud + rich library of Generic Enablers



Why an open standard platform is required

- Avoid vendor lock-in:
 - Standard Southbound APIs for sensor providers.
 - Standard Northbound APIs offered to applications.
 - Portability among platform providers.
 - Interoperability of solutions enabled by the platform.
- Larger community of developers
 - True innovation.
 - Better prices.
- Not any standard is enough
 - Modularity.
 - Allow different business models.
 - Integration with standard open data platform.
 - Non-intrusive.



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

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

Web UI



- Easy support of UIs with advanced web-based 3D and AR capabilities
- Visual representation of context information.

I2ND



- Advanced networking capabilities (SDN) and Middleware
- Interface to robots

Security



- Security Monitoring
- Built-in Identity/Access/Privacy Management



FIWARE Lab: going beyond technology, 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 Technology Providers

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



FIWARE Lab (<http://lab.fiware.org>)

The screenshot shows the FIWARE Lab website. At the top, there's a navigation bar with links for Cloud, Store, Mashup, Account, and Help&Info. Below the navigation is a video player for a 'Cloud screencast Blueprint Templates' video. The video thumbnail features the FI-WARE logo and the text 'OPEN APIs FOR OPEN MINDS'. To the right of the video, there's a sidebar with a heading 'Click on the links to see the FIWARE video tutorials' and a list of categories: Cloud, Store, Mashup, Account, Blueprints, Instances, and Object Storage. Below this, a text block explains Blueprint Templates: 'Blueprint Templates let you quickly create a template from which to build your application. You can specify the software you need in the Tier Templates and easily deploy all the instances with one click.' At the bottom, there are four links: 'Need Help?', 'Our GEs', 'FIWARE Lab nodes', and 'eLearning'.

FI-WARE Cloud Blueprint templates

Cloud screencast Blueprint Templates

OPEN APIs FOR OPEN MINDS

0:00 / 3:16

Cloud Store Mashup Account

Blueprints Instances Object Storage

Blueprint Templates let you quickly create a template from which to build your application. You can specify the software you need in the Tier Templates and easily deploy all the instances with one click.

Need Help? Ask a question.

Our GEs See our Catalogue.

FIWARE Lab nodes Learn about FIWARE Ops.

eLearning Train yourself.

The challenges are closing

POSTED APRIL 22, 2014 BY ADMIN

The Smart Society Challenge and the FI-WARE Excellence Award are nearing the deadline. After an extension to make room for more ideas and contestants, the call for ideas is closing on the 24th

Tweets

 IMPACT_acc @IMPACT_acc 12 Sep
If u r a coder or an entrepreneur,

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



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		



Instances

Project: testJC

Project Name: demo_project

Blueprint:

Instance Name	IP Address	Size	Keypair	Status	Task	Actions
blueprint14-tomcat5-1	10.100.20.5	2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Launch New Instance
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Connect to Instance
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	View Log
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Create Snapshot
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Pause Instance
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Unpause Instance
		2048 MB RAM 1 VCPU 20GB Disk		ACTIVE	None	Suspend Instance
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Resume Instance
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Change Password
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Reboot Instance
		2048 MB RAM 1 VCPU 20GB Disk		SHUTOFF	None	Terminate Instance

Launch Instances

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

Selected Networks

nic1: demonetwork

Description

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

Available Networks

storage_network

* Mandatory fields.

Back

Next



Storage provisioning

fi-ware Dashboard

Logged in as: admin Settings Sign Out

Volumes

Name	Description	Size (GB)	Status	Attachments
24372804-storage.occi-wg.org	24372804-storage.o...	1	available	-
FIWARE-demo-videos	Videos for FIWARE...	10	available	-
SafeCity_DataFusion	Test purposes only	1	available	-
SafeCity_DataFusion_64bit_logs	-	-	in-use	1
TlVirtualDisk	-	-	in-use	1
VolumeVideo1	Demo	1	available	-
couchdb	-	500	in-use	1
create_net_test	-	-	-	-
glikson-vol1	-	-	-	-
iosb-volume	volume for iosb	-	-	-
my hard drive	-	-	-	-
pilot_vol	-	-	-	-

Project Admin

Project Name: admin

Compute Instances Images Flavors Security Snapshots Storage Containers Volumes

Logged in as: admin Settings Sign Out

Containers

Name	Objects	Size
OUTSMART	0	0 bytes
cdmi_test_top_container_1354623164.802175	2	23 bytes
cdmi_test_top_container_1354623167.064051	2	23 bytes
cdmi_test_top_container_1354623434.610547	2	23 bytes
cdmi_test_top_container_1354623436.736778	2	23 bytes
cdmi_test_top_container_1354623543.109470	2	23 bytes
cdmi_test_top_container_1354623545.464213	2	23 bytes
cdmi_test_top_container_1354623770.524726	2	23 bytes
cdmi_test_top_container_1354623772.657127	2	23 bytes
cdmi_test_top_container_1354623884.122284	2	23 bytes
cdmi_test_top_container_1354623886.357285	2	23 bytes
cdmi_test_top_container_1354624127.190521	2	23 bytes

Project Admin

Project Name: admin

Compute Instances Images Flavors Security Snapshots Storage Containers Volumes

fi-ware Dashboard

Logged in as: admin Settings Sign Out

Manage Volume Attachments

Attachments	Instance	Device	Actions
Displaying 0 items			

Attach To Instance

Attach to instance * kisin-snapshot-test Device Name * /dev/vdc

* Mandatory fields.

Cancel Attach Volume

Network provisioning

fi-ware
Dashboard

Project Admin

Project Name: demo_project

Blueprint Instances

Blueprint Templates

Region

Networks

Name	Subnets associated	Shared	Status	Admin State
shared-net	172.31.0.0/24	Yes	ACTIVE	UP
storage_network	subnet 10.100.84.0/25	No	ACTIVE	UP

Create Network

Network Subnet Subnet Detail

Network Name: demonetwork

Description: From here you can create a new network. In addition a subnet associated with the network can be created in the next panel.

Admin State:

* Mandatory fields.

Cancel Create

Shared Status

Shared	Status
No	ACTIVE
Yes	ACTIVE
No	ACTIVE

Actions

Edit Network
Add Subnet
Delete Networks

* Mandatory fields.

Cancel Create

Multi-Region Management

The screenshot displays the FIWARE Dashboard interface, specifically the 'Instances' section, comparing two regions: RegionOne and RegionTwo.

RegionOne (Left):

- Project:** demo_project
- Blueprint:** Blueprint Instances, Blueprint Templates
- Region:** RegionOne (selected), RegionTwo
- Storage:** Images, Flavors, Security, Snapshots
- Compute:** Containers, Volumes

RegionTwo (Right):

- Project:** demo_project
- Blueprint:** Blueprint Instances, Blueprint Templates
- Region:** RegionOne (selected), RegionTwo
- Storage:** Images, Flavors, Security

Instances Table (RegionOne):

Instance Name	IP Address	Size	Keypair	Status	Task	Power State
myinstance	172.31.0.4	2048 MB RAM 1VCPU 20GB Disk		ACTIVE	None	RUNNING

Instances Table (RegionTwo):

Instance Name	IP Address	Size	Keypair	Status
blueprint14-tomcat5-1	10.100.20.5	2048 MB RAM 1VCPU 20GB Disk		SHUTOFF
blueprint15-mysql-1	10.100.20.6	2048 MB RAM 1VCPU 20GB Disk		SHUTOFF
blueprint16-mysql-1	10.100.20.7 130.206.81.131	2048 MB RAM 1VCPU 20GB Disk		SHUTOFF
blueprint16-tomcat5-1	10.100.20.8 130.206.81.132	2048 MB RAM 1VCPU 20GB Disk		SHUTOFF
testPuppet-1-testPupp...	10.100.20.4 130.206.81.135	2048 MB RAM 1VCPU 20GB Disk		ACTIVE
testPuppet-10-testPup...	10.100.20.2	2048 MB RAM 1VCPU 20GB Disk		SHUTOFF

Management of Blueprints

fi-ware Dashboard

Project Admin

Project Name: FI-WARE-demo

Compute:

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

Blueprint Templates/ Example 1

Software dependencies

Add

Software in Tier

Name: test
Region: XXXXXXXX
Image: XXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Software in Tier

Name: test
Region: XXXXXXXX
Image: XXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Add Tier

Name: mytier
Region: RegionOne
Flavor: m1.small (1vCPU / 20GB Disk / 2048MB Ram)
Image: Centos-6.3-x86
Icon:
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.

Create Tier

Blueprint Instances/ Example 1

Back to Instances

Project Admin

Project Name: FI-WARE-demo

Compute:

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

Software in Tier

Name: test
Region: XXXXXXXX
Image: XXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Software in Tier

Name: test
Region: XXXXXXXX
Image: XXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Software in Tier

Name: test
Region: XXXXXXXX
Image: XXXXXXXXX
Keypair: XXXXXXXXXX
Public IP: XXXXXXXXXX

Displaying 22 items

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

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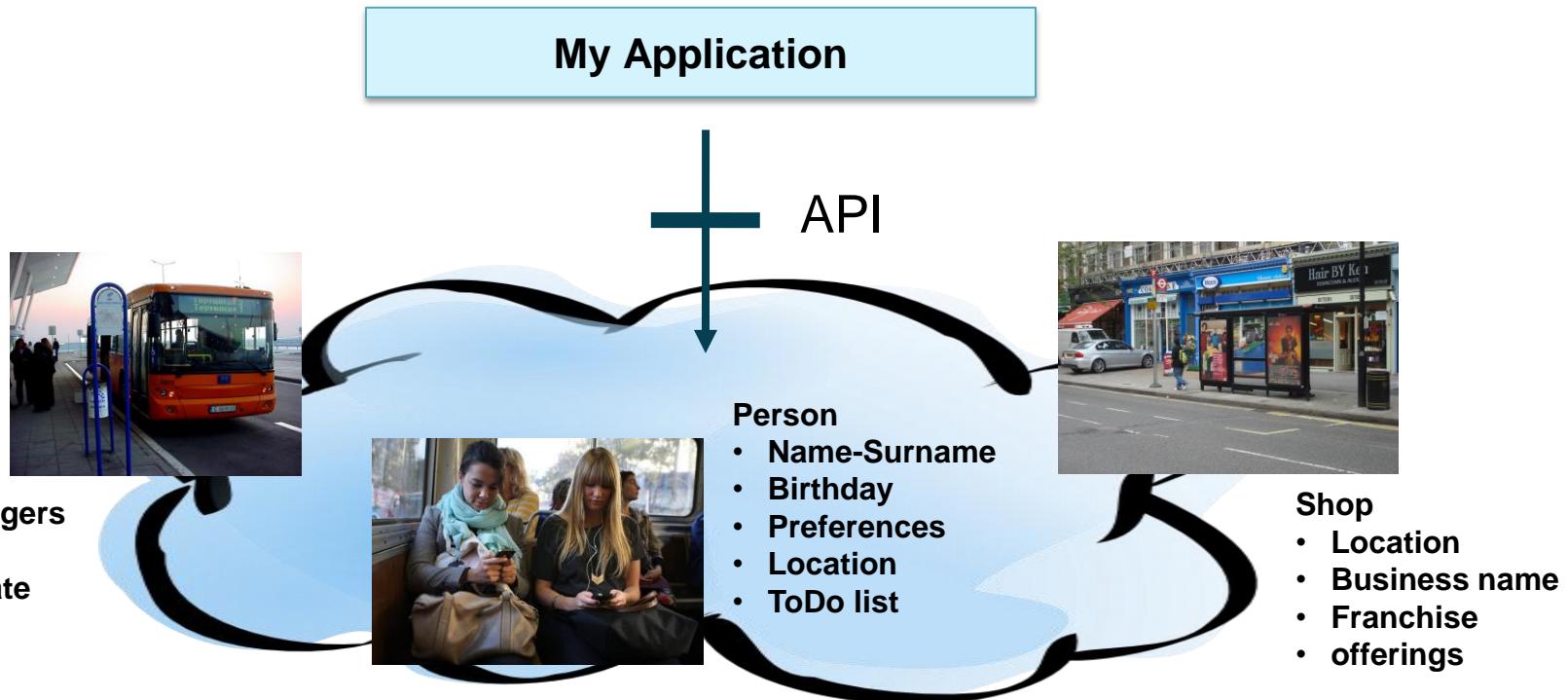
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Gathering, publishing, processing and analyzing private and open data at large scale



Context Management in FIWARE

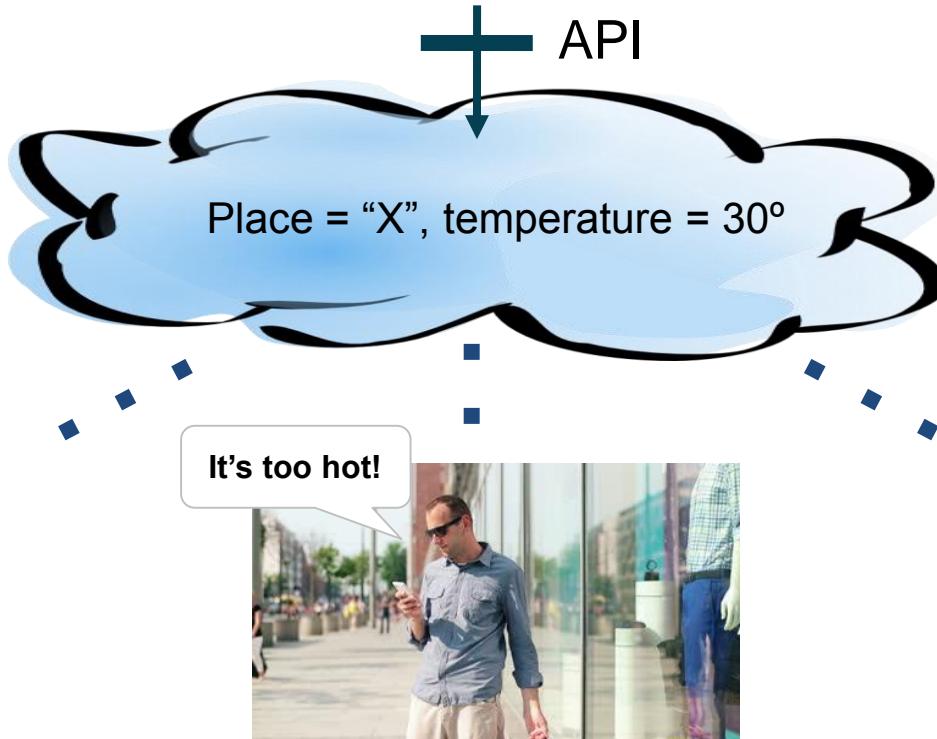
- A simple yet powerful standard API should be defined that helps programmers to manage Context information.
- Context information refers to the values of attributes characterizing entities relevant to applications



Context Management in FIWARE

- Context information may come from many sources using different interfaces and protocols ... but programmers should just care about entities and their attributes ...

What's the current temperature in place "X"?



A sensor in a
pedestrian street

A person from his smartphone

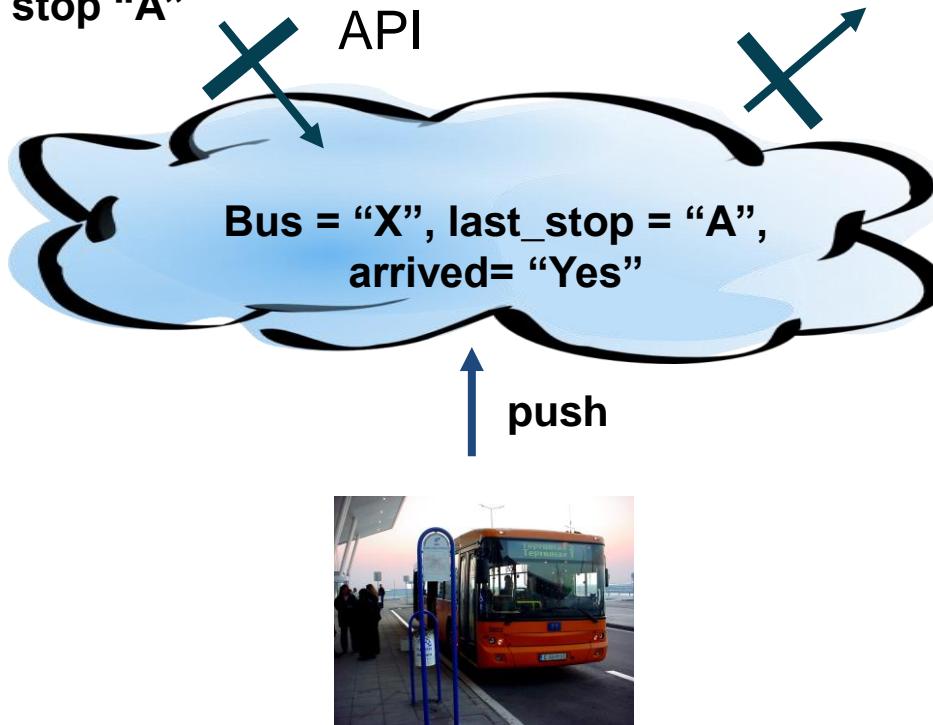


The Public Bus
Transport Management
system

Context Management in FIWARE

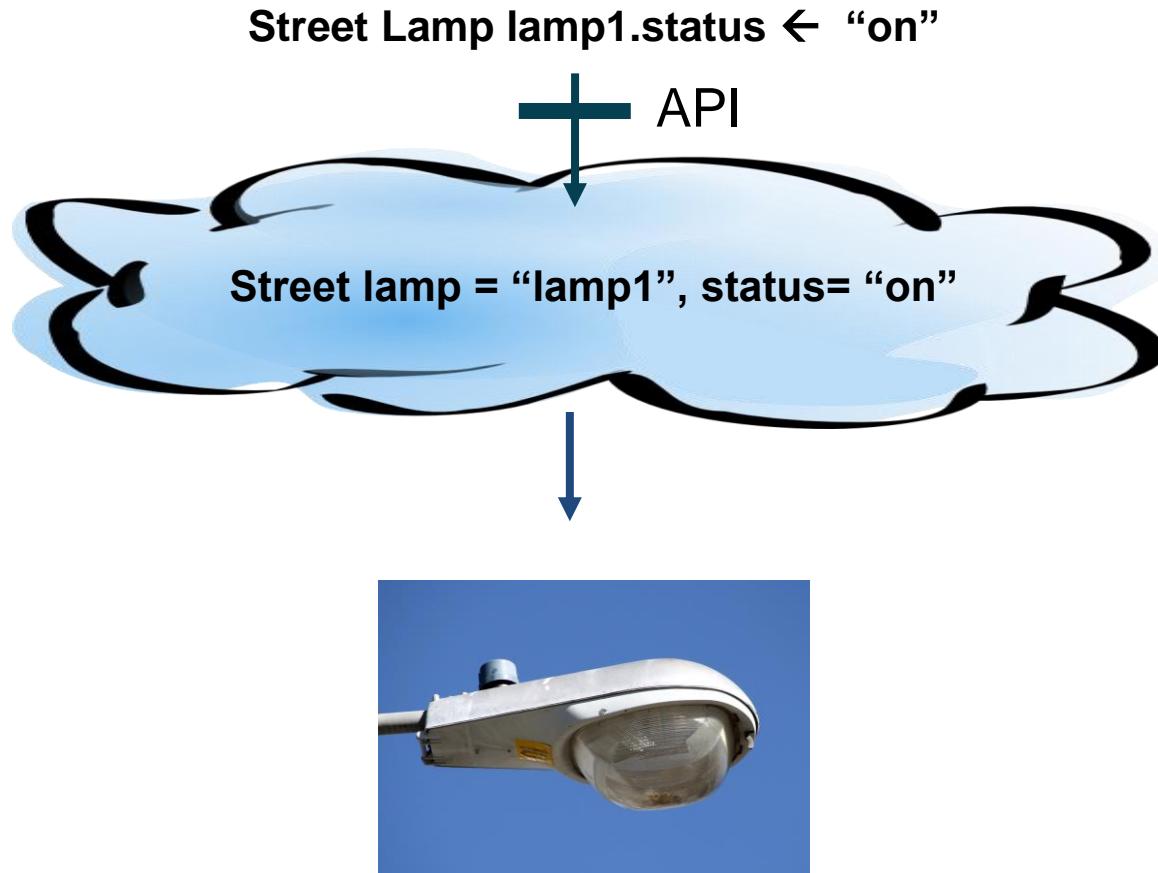
- Programmers may want to get notified when an update on context information takes place ...

Notify me when bus “X” arrives at the bus stop “A”



Context Management in FIWARE

- Acting on certain devices should be as easy as to change the value of attributes linked to certain entities



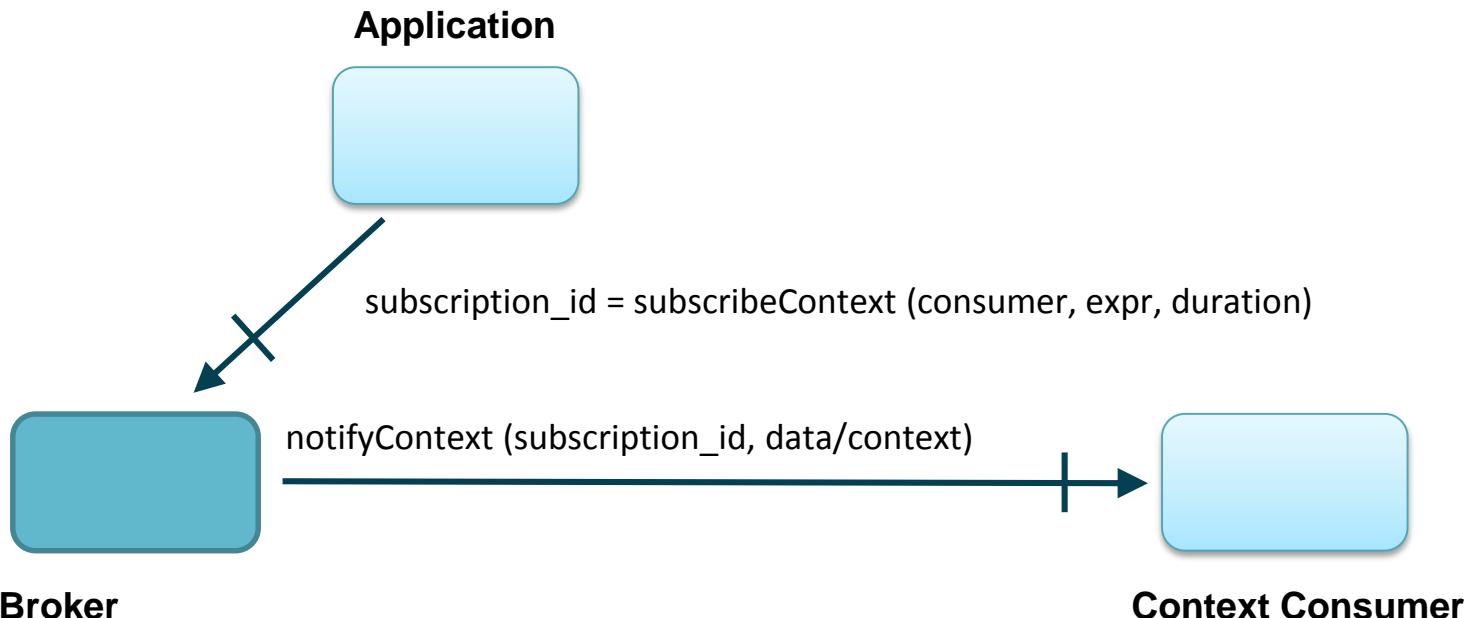
Basic Context Broker operations (1)

- **Context Producers** publish data/context elements by invoking the `updateContext` operation on a Context Broker.
- **Context Consumers** can retrieve data/context elements by invoking the `queryContext` operation on a Context Broker



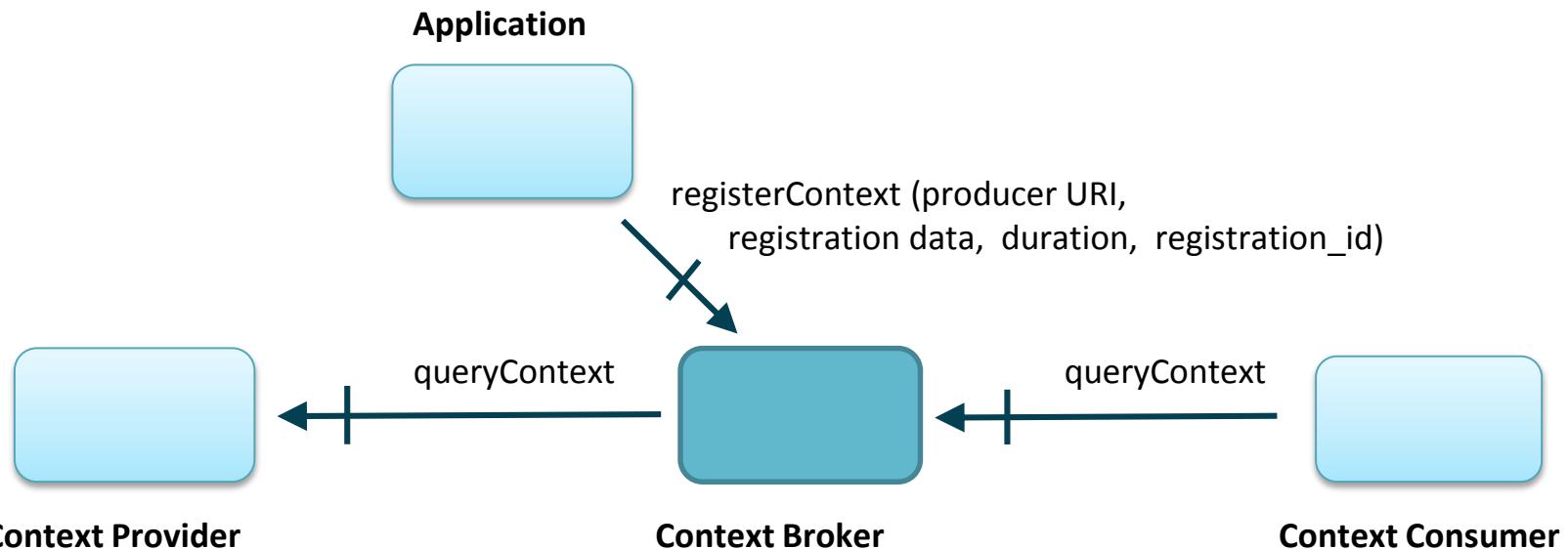
Basic entities and operations (2)

- **Context Consumers** can be subscribed to reception of context information complying with certain conditions, using the **subscribeContext** operation a ContextBroker exports. Such subscriptions may have a duration.
- The Context Broker notifies updates on context information to subscribed Context Consumers by invoking the **notifyContext** operation they export



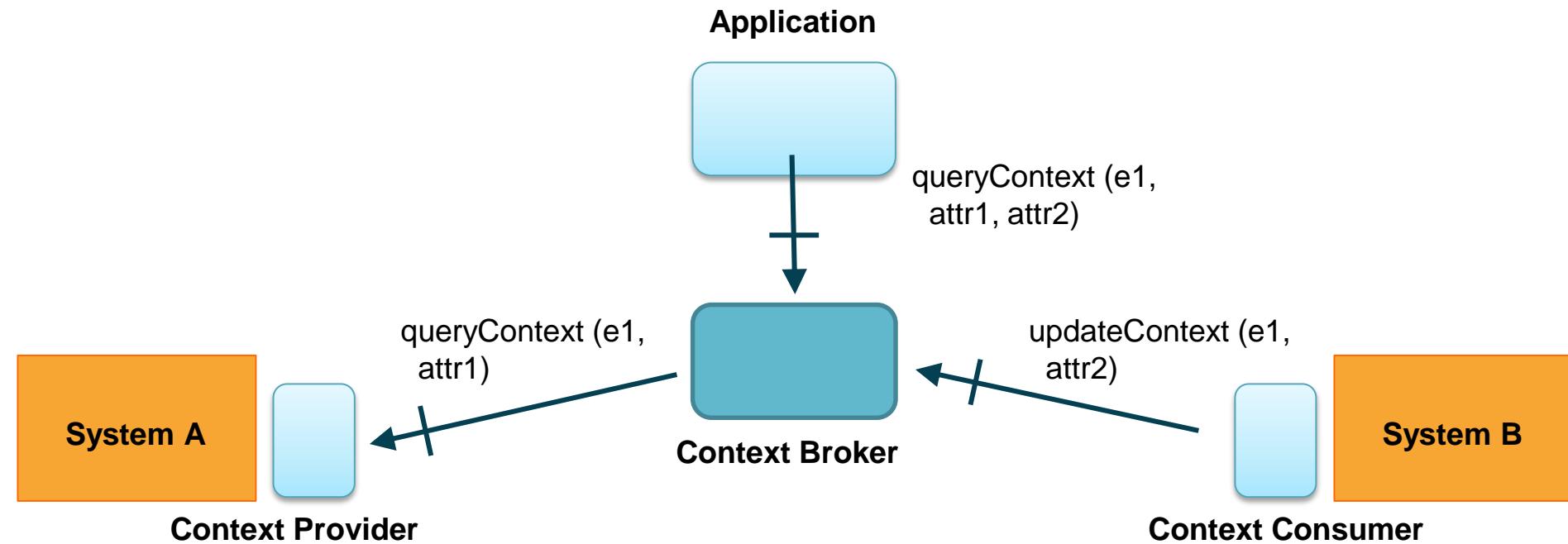
Basic entities and operations (3)

- Context Providers can be registered to the Context Broker linked to certain context information.
- A Context Broker will invoke the queryContext operation exported by Context Providers whenever they are queried for context information or have to notify updates in context information



Integration with existing systems

- Context adapters will be developed to interface with existing systems (e.g., municipal services management systems in a smart city) acting as Context Providers, Context Producers, or both
- Some attributes from a given entity may be linked to a Context Provider while other attributes may be linked to Context Producers

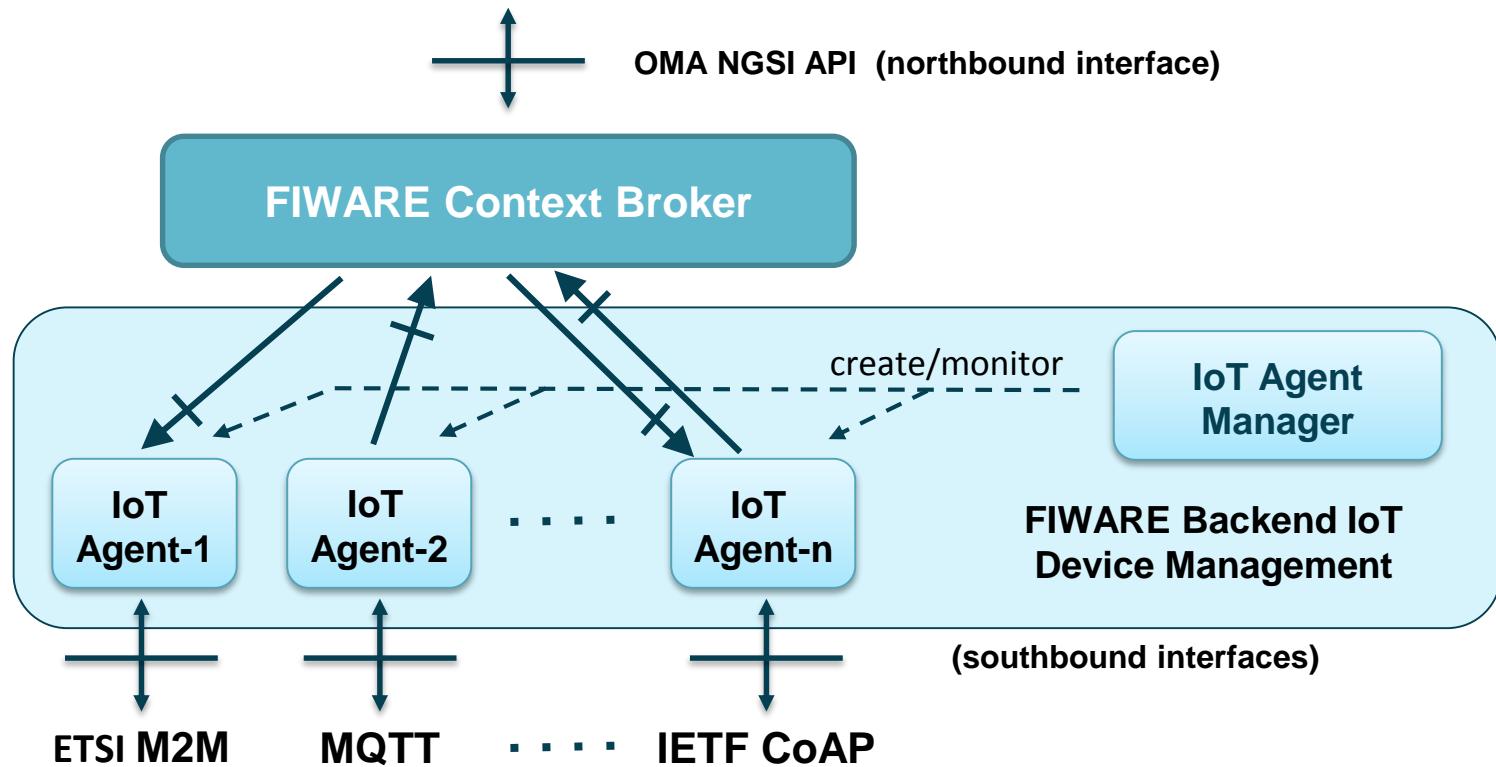


Easing connection to the physical world

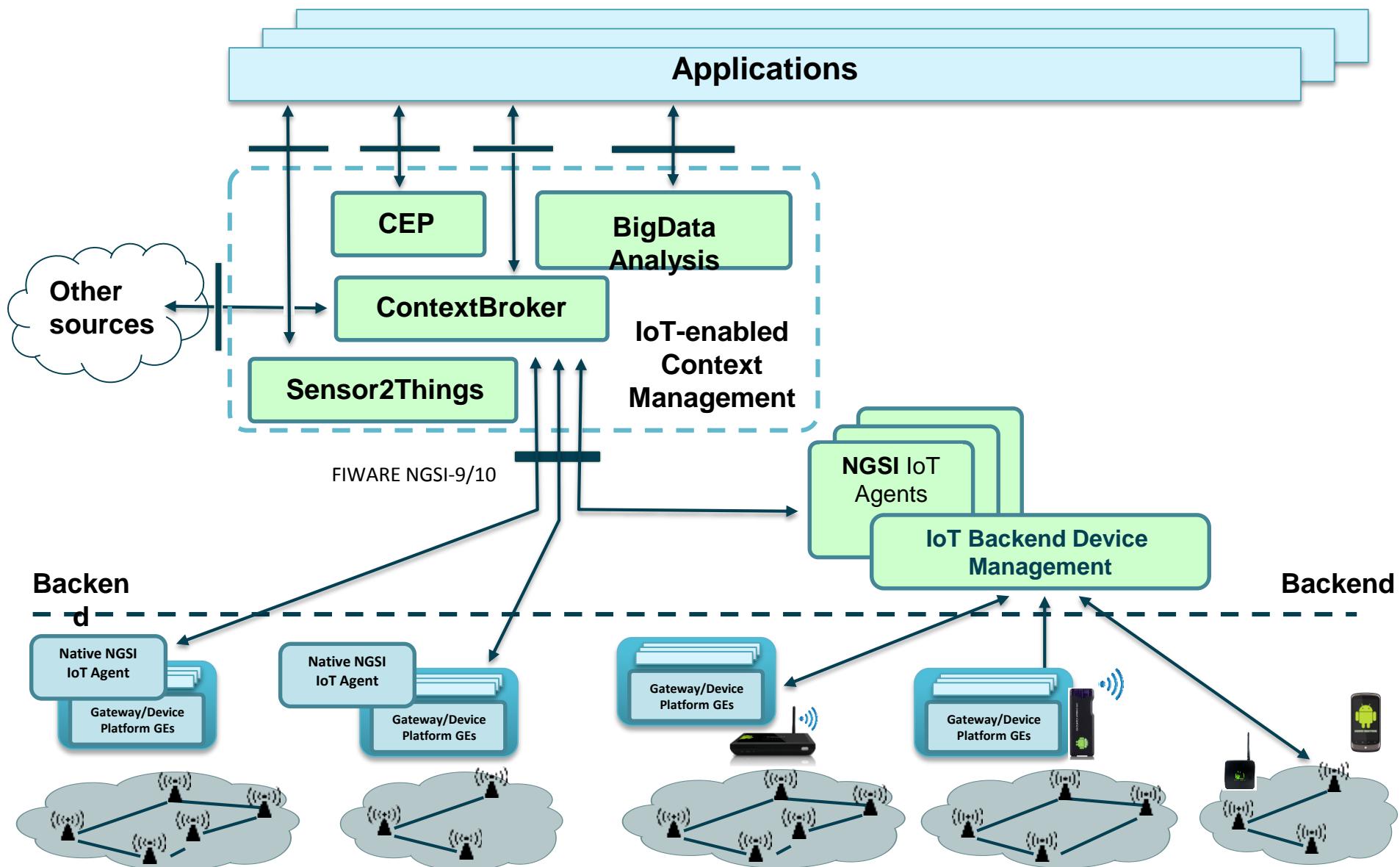


Integration with sensor networks

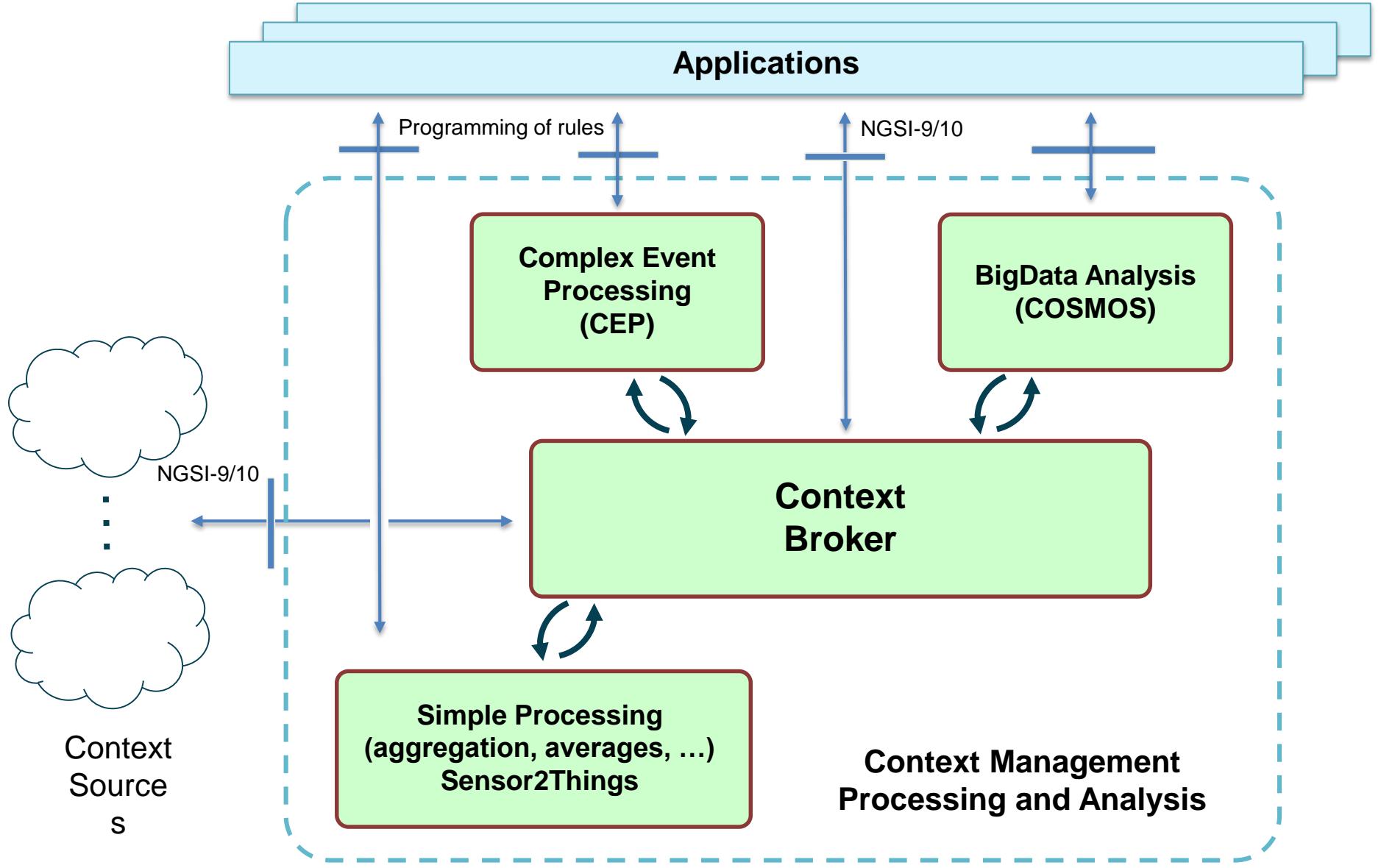
- The backend IoT Device Management GE enables creation and configuration of NGSI IoT Agents that connect to sensor networks
- Each NGSI IoT Agent can behave as Context Consumers or Context Providers, or both



FIWARE IoT-M2M & Context/Management altogether

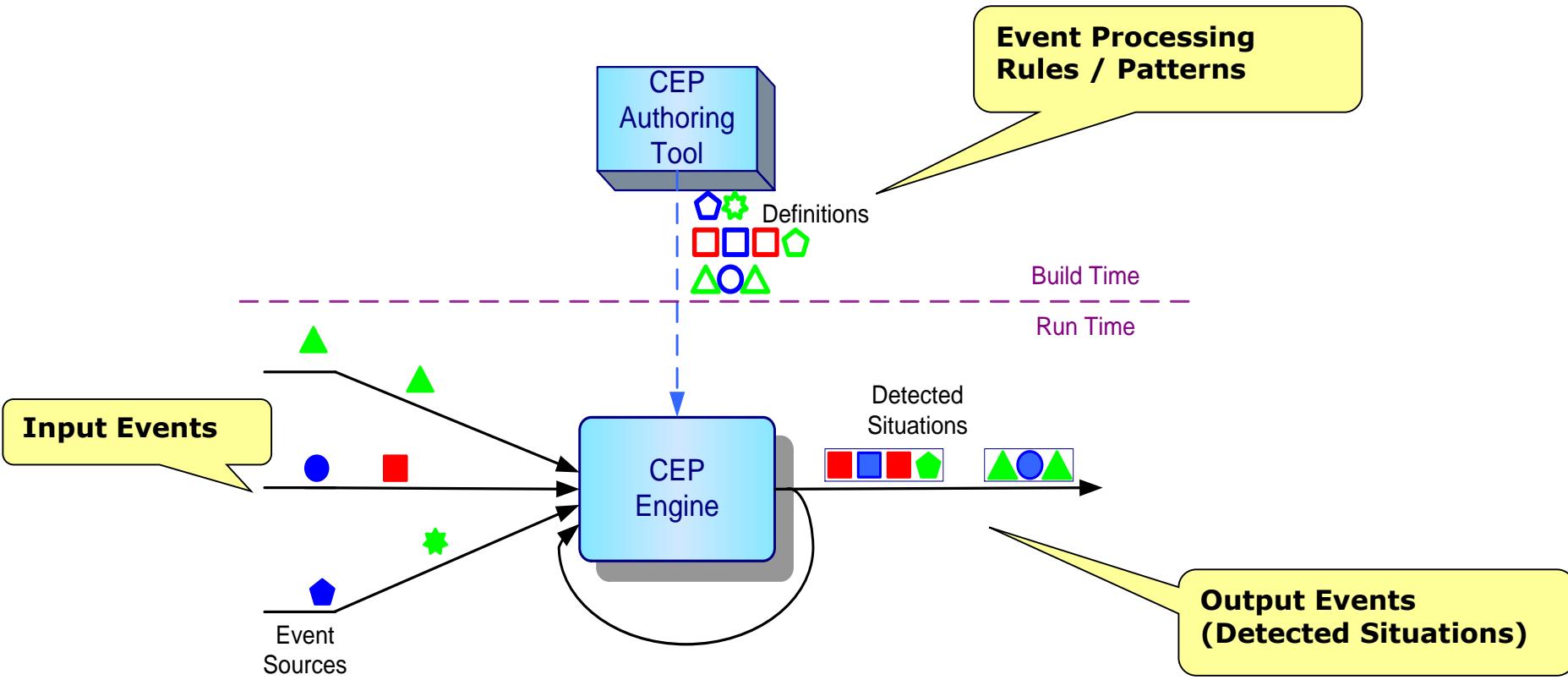


Context Processing and Analysis



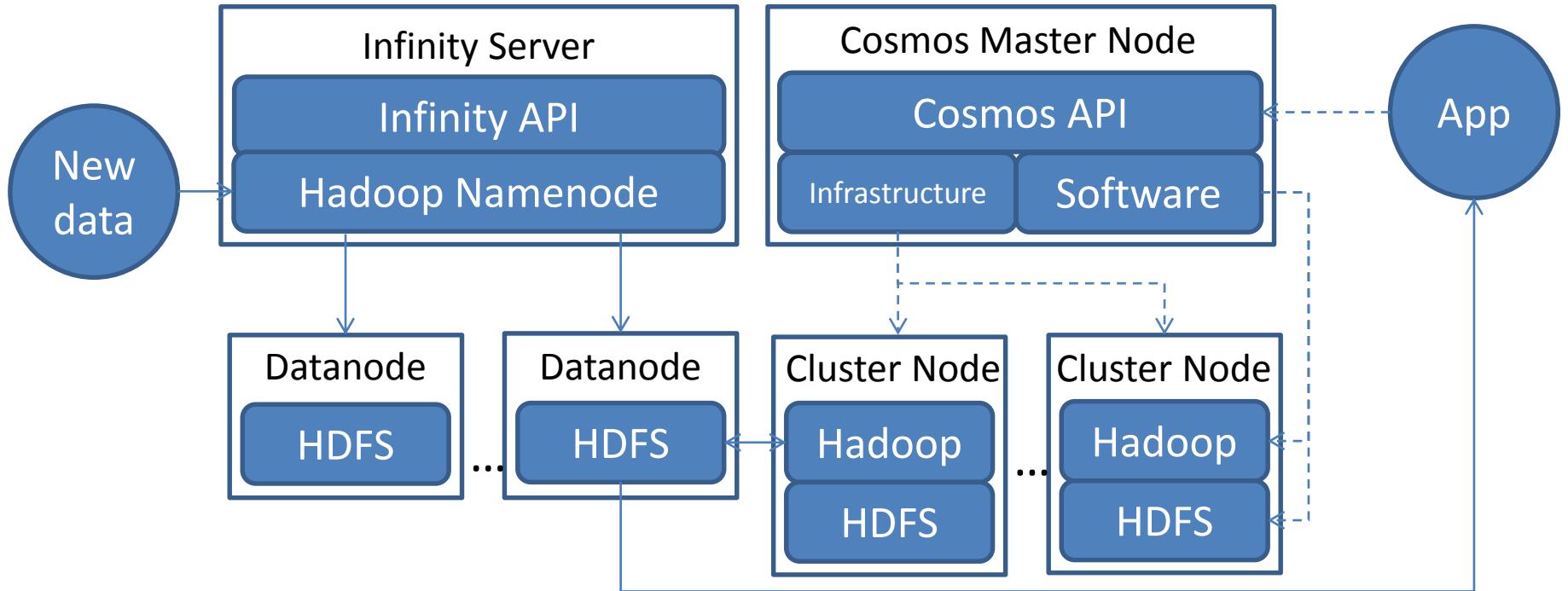
CEP Technology – expanding the ECA paradigm

- From Event-Condition-Action to Pattern-Condition-Action
- In certain scenarios, single events are insignificant, a CEP engine can detect combinations of events which are meaningful, called situations, and generate derived events.

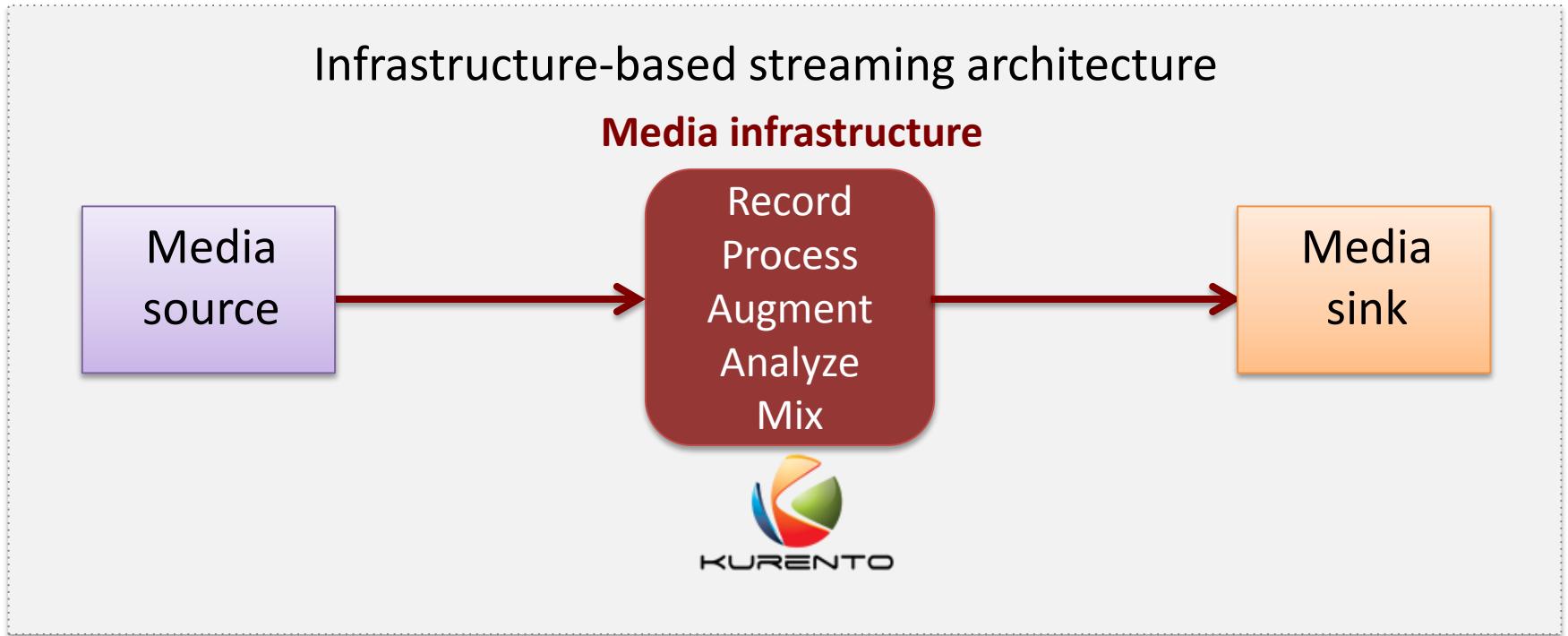


Cosmos / Big Data overview

- Cosmos + Infinity
 - Ephemeral private Hadoop computing clusters management
 - Security enhanced HDFS-based permanent storage



The Stream Oriented Generic Enabler



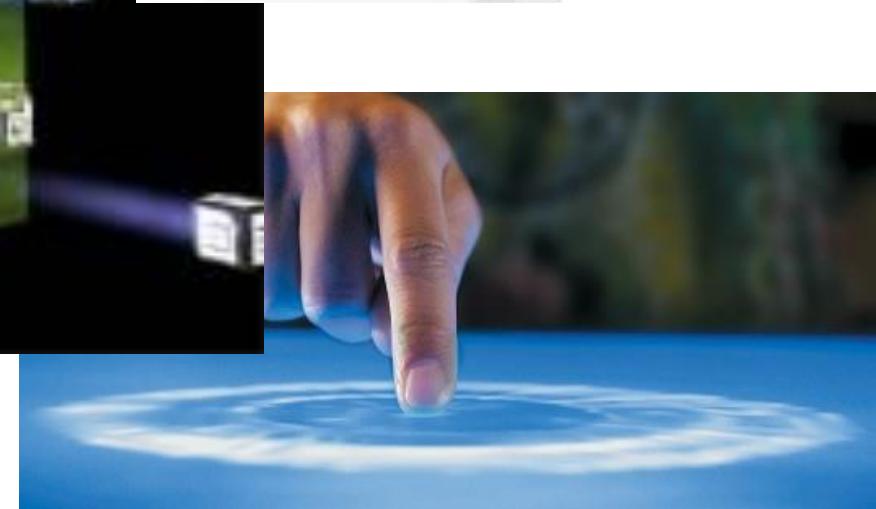
- Most important protocols and codecs (WebRTC, H.264)
- Real Time communications (B2B UA, MCU router and mixer)
- VoD: Media recording & Media playing
- Seamless Computer Vision algorithms: detection, tracking...
- 2D Agumented reality: 2D overlays, alpha blending,...



ckan (Open) Data Platform

- Search & Discover Data:
 - keywords, browse by facets, previews & visualization
 - REST/Json APIs to access data and metadata
- Data Management for publishers
 - Easy store & update of metadata.
 - Workflows & authorization
 - Support of private datasets acquisition from FIWARE Store & Data Portal.

Offering rich web-based user interfaces



Data/Applications Visualization and Delivery



Reaching target users, monetize



Ensuring Privacy, Security and Trust



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



FIWARE Catalogue (<http://catalogue.fiware.org>)

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FIWARE Catalogue



Hosting enablers
for creation of
**FUTURE INTERNET
APPLICATIONS**

Welcome to the FIWARE Catalogue! Here you will find all the information, documentation and tools you need as a developer to start using a Generic Enabler Implementation.

About the Catalogue



View the Enablers



Tools



FIWARE Catalogue (<http://catalogue.fiware.org>)



Hosting enablers
for creating
FUTURE IN
APPLICATIONS

Welcome to the FIWARE Catalogue

About the Catalogue

3D-UI-XML3D

3DUI - WebTundra

Access Control - THA Implementation

Time Tracker

FI-WARE

3D Printing: new contents, new formats

IoT Business (R)Evolution

FoodLoop: responsible consumption, sustainable society!

ECCI: 80 Million Euros to be awarded to SMEs and Startups

FIWARE Jump Conference: Boost SME's and Startups with FIWARE

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Generic Enablers

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Search

Connecting...

realXtend's Web client for realtime collaborative 3d applications

ADVANCED MIDDLEWARE AND WEB USER INTERFACES

Administration & Enforcement of RESTful API Authorization Policy

SECURITY

Time Tracker

5 stars

No votes yet

No votes yet

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About the Catal



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3D-UI-XML3D



Extend the current declarative, rich media content model

ADVANCED MIDDLEWARE AND WEB USER INTERFACES

3DUI - WebTundra



realXtend's Web client for realtime collaborative 3d applic

ADVANCED MIDDLEWARE AND WEB USER INTERFACES

Access Control - THA Implementation



Administration & Enforcement of RESTful API Authorizatio

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Publish/Subscribe Context Broker - Orion Context Broker

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Overview

Creating Instances

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Instances

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FIWARE Catalogue



Chapter:
Data/Context Management

Version:

Updated:
2014-06-13

Rating:

Average: 5 (2 votes)

What you get

The Orion Context Broker is an implementation of the Publish/Subscribe Context Broker GE, providing the NGSI9 and NGSI10 interfaces. Using these interfaces, clients can do several operations:

- Register context producer applications, e.g. a temperature sensor within a room
- Update context information, e.g. send updates of temperature
- Being notified when changes on context information take place (e.g. the temperature has changed) or with a given frequency (e.g. get the temperature each minute)
- Query context information. The Orion Context Broker stores context information updated from applications, so queries are resolved based on that information.

Why you get

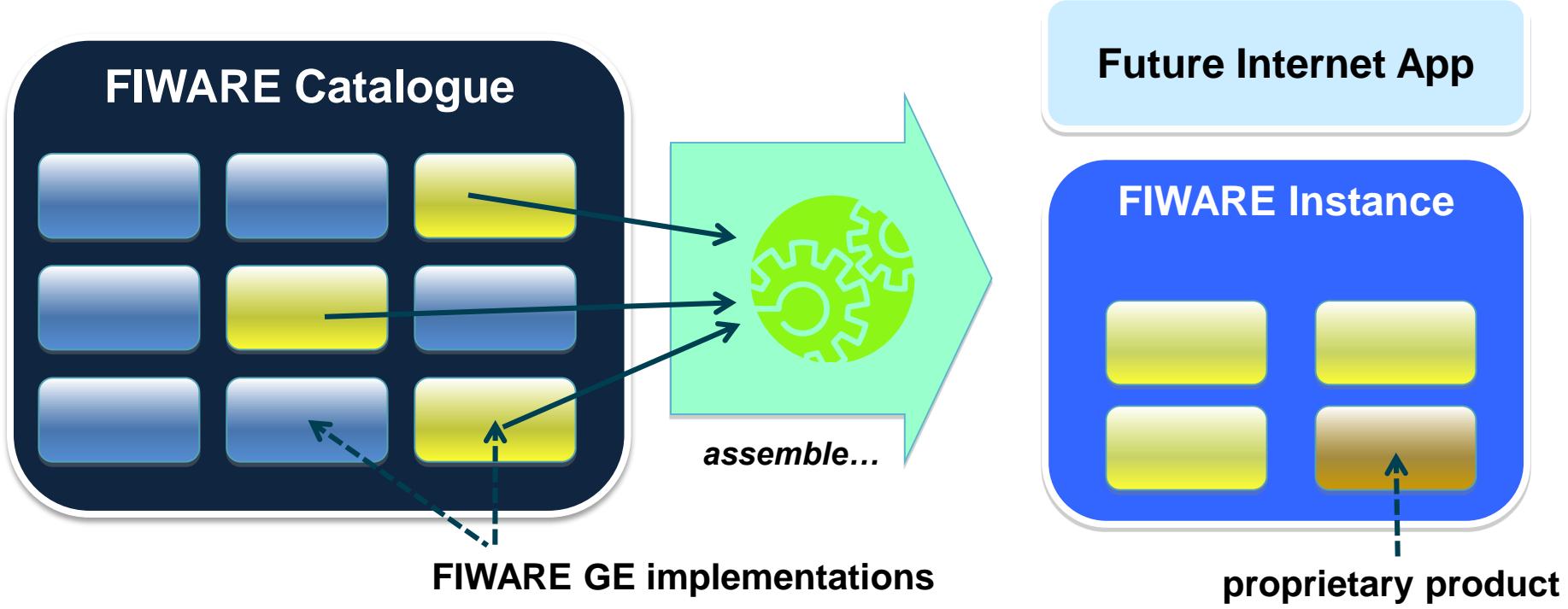
If you are developing a Data/Context scenario, a broker like the Orion Context Broker is a must. You would need a component in the architecture able to mediate between consumer producers (e.g. sensors) and the context consumer applications (e.g. an smartphone applications taking advantage of the context information provided by the sensors). The Orion Context Broker fulfills this functionality in your architecture.

Open specification reference

This component has been designed according to the [Publish/Subscribe Broker GE Open Specification](#). Please check also the [NGS19](#) and [NGS10 REST API](#).

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.



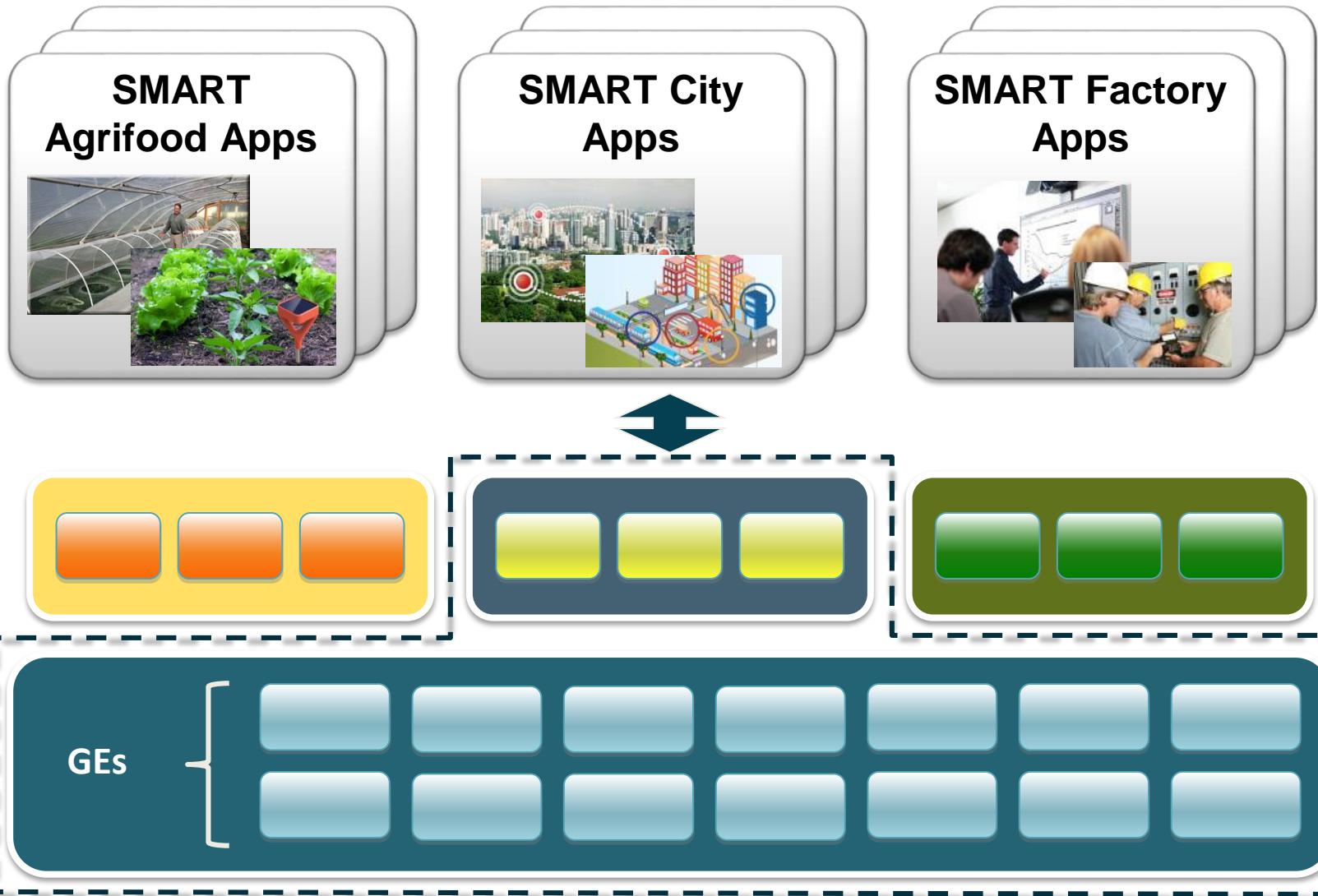
FIWARE University (<http://edu.fi-ware.org>)

The screenshot shows the FI-WARE eLearning platform homepage. At the top, there is a navigation bar with links to Home, Available Courses, My Courses, My Dates, My Activities, and News. To the right of the navigation bar is a large image of a computer monitor displaying a blue abstract background. Below the navigation bar, on the left, is a sidebar titled "Navigation" with links to Home and Courses. The main content area features a "Welcome" message and a list of course categories: Cloud Hosting (2), Data/Context Management, Internet of Things (IoT) Services Enablement (1), Applications and Services Ecosystem and Delivery. A hand cursor is hovering over the "Internet of Things (IoT) Services Enablement" link. To the right of the welcome message is a calendar for January 2014, showing dates from 1 to 31. Below the welcome message, there is a step-by-step guide for starting a course:

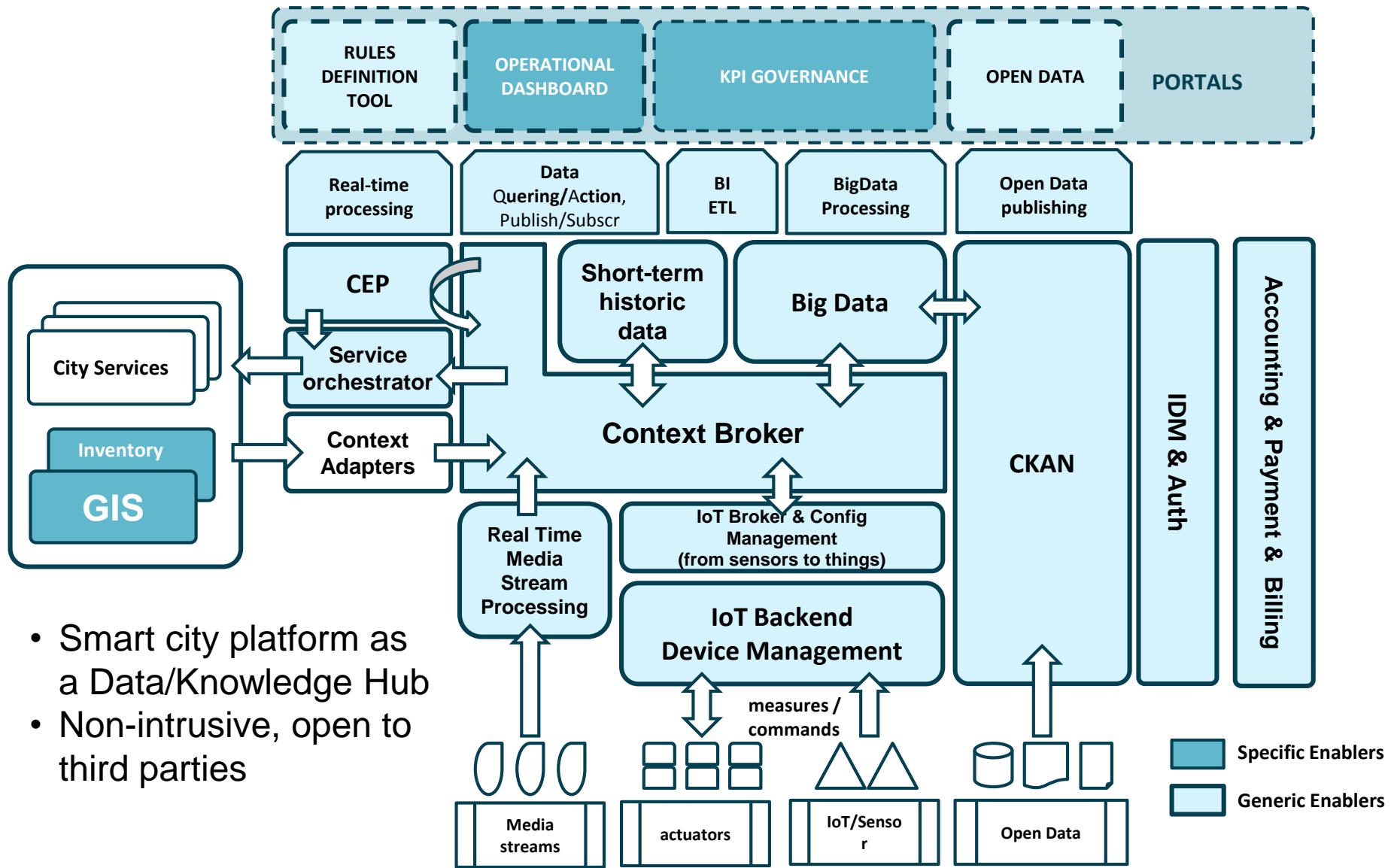
- 1 Select a Category
- 2 Select a Course
- 3 Log in as Guest (if necessary)
- 4 Select the Course Topic
- 5 Confirm the Course Topic
- 6 Start the Course

Each step is accompanied by a small screenshot showing the corresponding UI element being interacted with by a cursor.

Domain-specific platforms = FIWARE + specific enablers

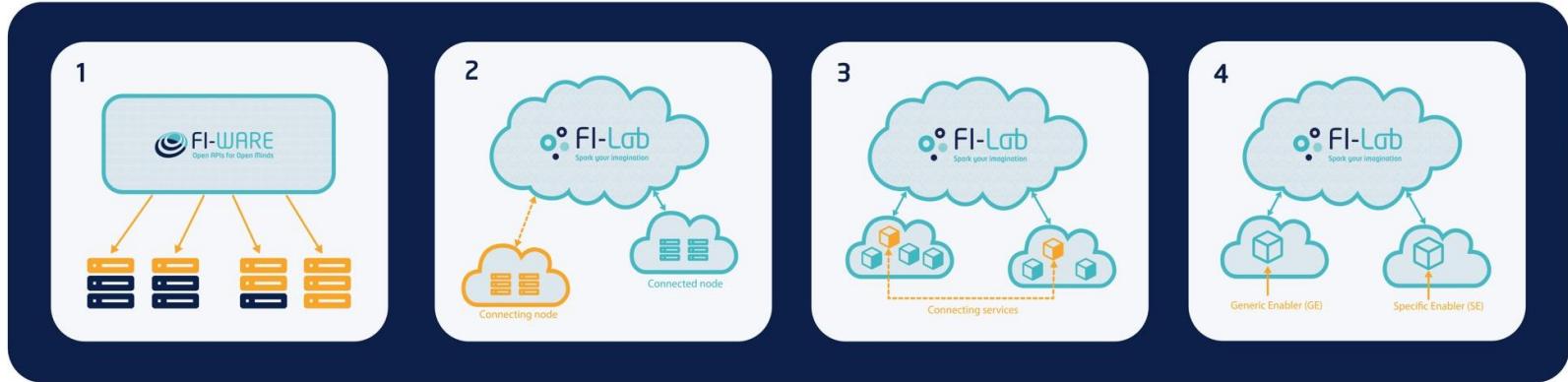


Envisioned target Smart City platform



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

FIWARE Ops: 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 Offer Management

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



Thanks!



Join us!

www.lab.fiware.org

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BACKUP SLIDES

Internet: a transformation engine

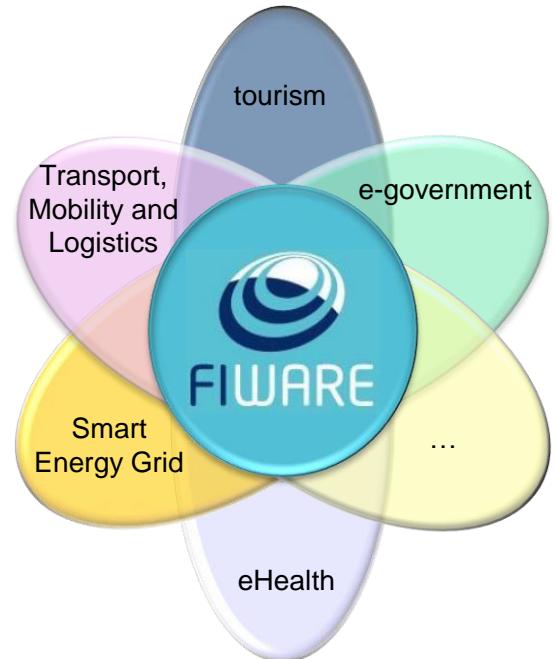


Navigation, Calling a taxi (Uber), Recruiting (Linkedin)...



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



How can the new opportunities be captured and ultimately translated into local economy growth and creation of jobs?

App Sponsors 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

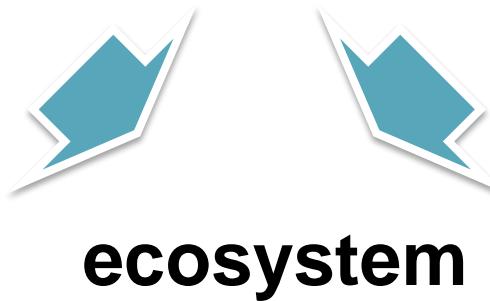
Technology Providers

- Ability to “coopete”
- Connect to entrepreneurs: jointly exploit the opportunities

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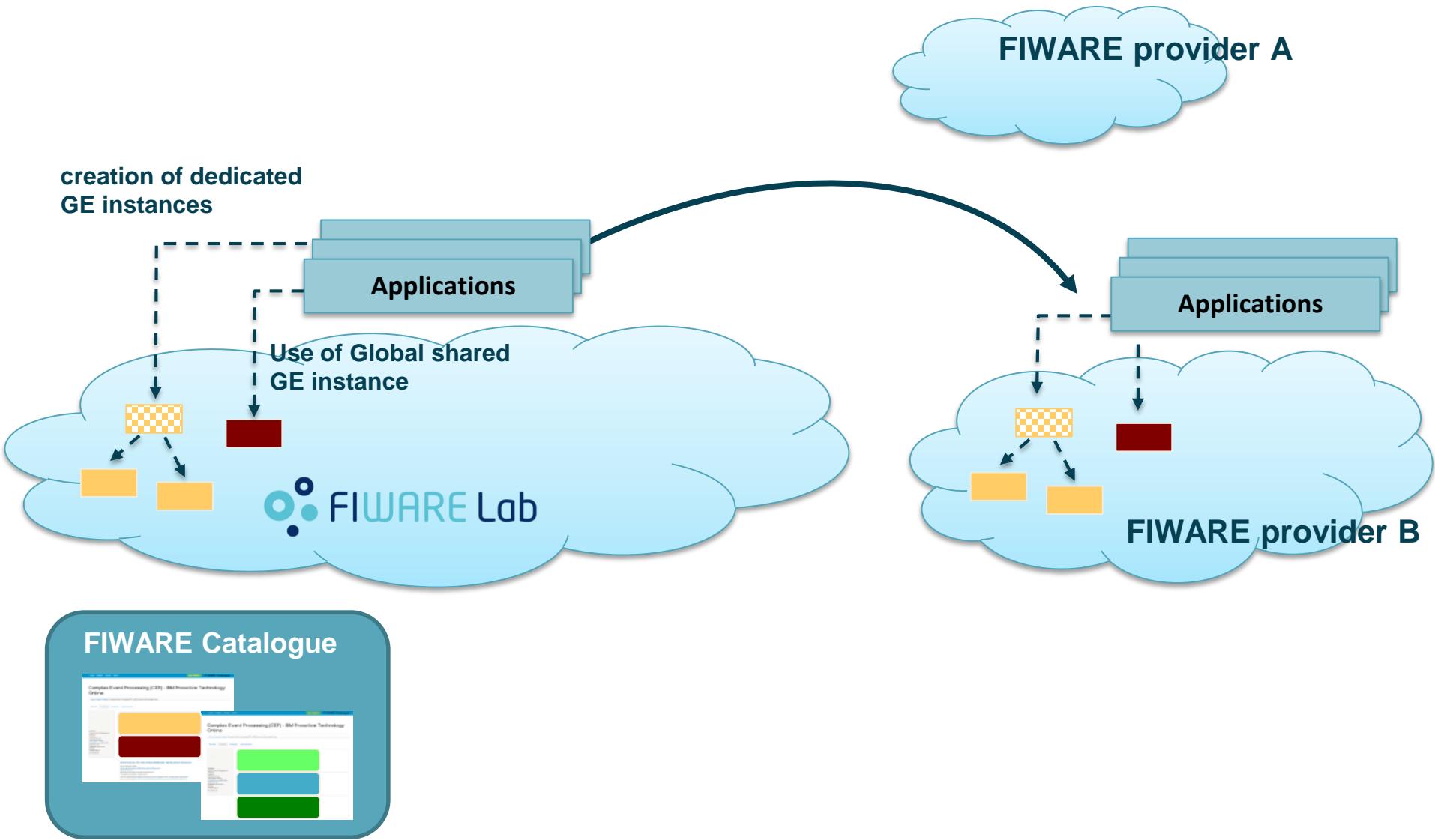
open sustainable global



Technology Providers

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- Connect to entrepreneurs: jointly exploit the opportunities

Building the FIWARE ecosystem: the vision



How the ecosystem is actually emerging: the case of Smart Cities

- Some cities already connecting to FIWARE Lab:

- Italy: Trento, Torino, Veneto
 - Spain: Valencia, Sevilla, Málaga, Santander, Logroño, Vigo, Lleida, Sabadell, ...
 - Finland: Helsinki, Espoo
 - Netherlands: Amsterdam
 - Portugal: Lisbon
 - Discussion with cities in other countries ongoing

- FIWARE Challenge on Smart Cities:

- Launched end of October
 - 300+ teams (individuals, startups, SMEs – few researchers) applied to the challenge ([ES](#), [EN](#))
 - 20 final teams run the final in CPBR 14
 - quite amazing results!



Why FIWARE

Driver	What is needed?	What does FIWARE bring?
Technology	<p>Open, driven by implementation, specs (open source reference implemenation)</p> <p>Sustainable investment over time</p>	<p>Open specifications backed by open source reference implementations (see [1], [2])</p> <p>100+ M€ of investment (2011-2016)</p>
Experimental environment	<p>Ability to experiment with real data coming from cities (not just open historic datasets but real-time dat).</p> <p>Free Cloud capacity enabling entrepreneurs to test and host a permanent showcase of their applications.</p>	<p>15 cities (7 in Spain) already working on setting up a connection to FIWARE Lab [3]</p> <p>3000+ cores, 16Tb RAM and 750+ Tb HD will be the free computing capacity provided by the FIWARE Lab Cloud across 16 nodes distributed in Europe</p>
Incentives for creating the ecosystem	<p>Engagement of technology providers, entrepreneurs, data providers, customers</p> <p>Funding for first entrepreneurs joining the ecosystem.</p> <p>Invesment in promotion and dissemination activities</p>	<p>52 partners, 13 countries (just FIWARE)</p> <p>100 M€ devoted to fund entrepreneurs in 2014-2016.</p> <p>Additional opportunities in Horizon 2020.</p> <p>6,2+ M€ devoted to dissemination</p>
Global footprint	<p>Helping entrepreneurs and technology providers to create opportunities not just in Europe but other regions (Latam, Asia and, why not, USA)</p>	<p>FIWARE Lab nodes in Mexico and Brazil.</p> <p>Conversations between EC and public authorities in Mexico and Brazil to explore collaboration opportunities</p>

[1] – http://wiki.fi-ware.org/Summary_of_FIWARE_Open_Specifications

[2] – <http://catalogue.fi-ware.org>

[3] – <http://lab.fi-ware.org>

Extending the FIWARE Lab offering for service providers and developers

