



Federico M. Facca – Martel Innovate

FIWARE TSC Member and Cloud Architect

federico.facca@martel-innovate.com

[@chicco785](https://twitter.com/chicco785) (twitter)

Open APIs for Open Cities

www.fiware.org



OPEN APIs FOR OPEN MINDS

SMEs & ENTREPRENEURS

FIWARE ACCELERATOR PROGRAMME

80
MILLION
FUNDING



FIWARE DEVELOPERS



FIWARE PROVIDERS



DOMAIN STAKEHOLDERS

PUBLIC ADMINISTRATION AND COMPANIES

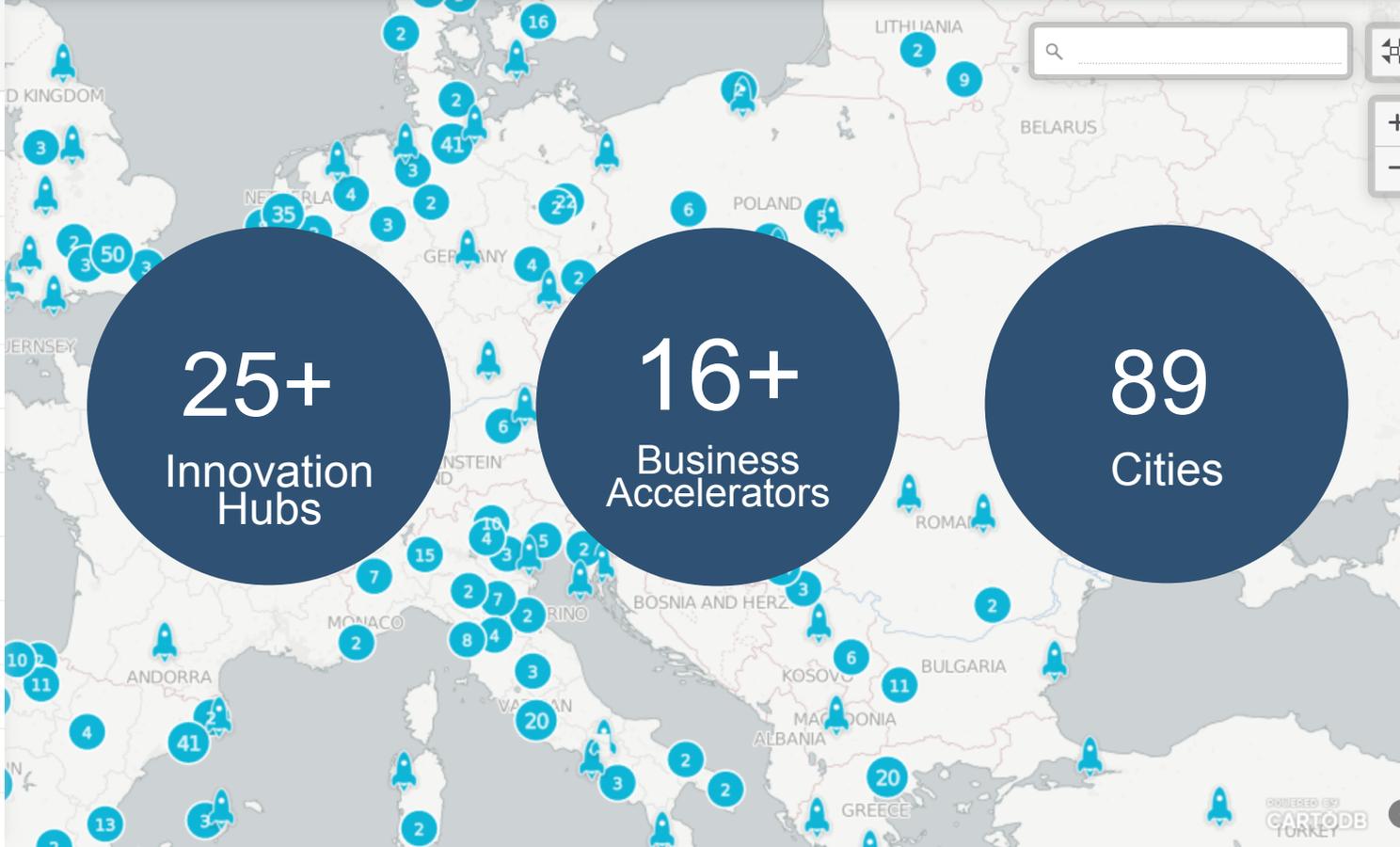


What is FIWARE ?

More than yet another platform!

An OPEN, SUSTAINABLE & GLOBAL ECOSYSTEM

- SMES 992
- 3DCityPlanner
- 3D CLICK
- 3D
- 3D
- 3D
- 3DM
- 3D Print for ... Paint
- 3D Print Health Product Customiz...
- 3D Printing Modelling Platform fo...
- 3D-REVOPRINT
- 3D ROB0tics 1Ntegration LABs



1000+
Startups

25+
Innovation
Hubs

16+
Business
Accelerators

89
Cities

FIWARE Mundus: Mobilizing world

FIWARE: International

- FIWARE Re...
- all around E...



FIWARE Mundus: Peru and Colombia

Peru and Colombia

- Initiated con Peruvian ch...
- commerce ar...
- Colombian ur...

Uruguay

- FIWARE present at computer science s...
- promoting connect...
- Mexican and Chile...

Chile

- A new R&D cer...
- Future Interne...
- has been set u...
- Smart Cities, Si...
- and precision c...



FIWARE Mundus: International Engagement (2/2): Other Countries

Canada: work in progress with the Canadian SAVi platform as potential foundations for Smart City Platforms, first prototype under development

USA: FIWARE "Partner" of NIST's Global City Teams Challenge, also interacting with US Ignite and GENI

Korea: agreement on FIWARE between Telefonica and SK Telekom

Japan: some initial experimentation

China: some initial contacts

Africa: contacts with **Senegal and Mauritius**, FIWARE nodes should be hosted at Sonatel and Mauritius Telecom by end of 2015. FIWARE Mundus has been presented at IST-Africa 2015 triggering interest from **Ghana and Tunisia** as well

- **Rest of the World:** preliminary contacts with **Singapore, India**
- **Interaction with some international cooperation projects:** JEUISTE, FESTIVAL (Japan); CONECTA2020 (Latin America), CHOICE (China)



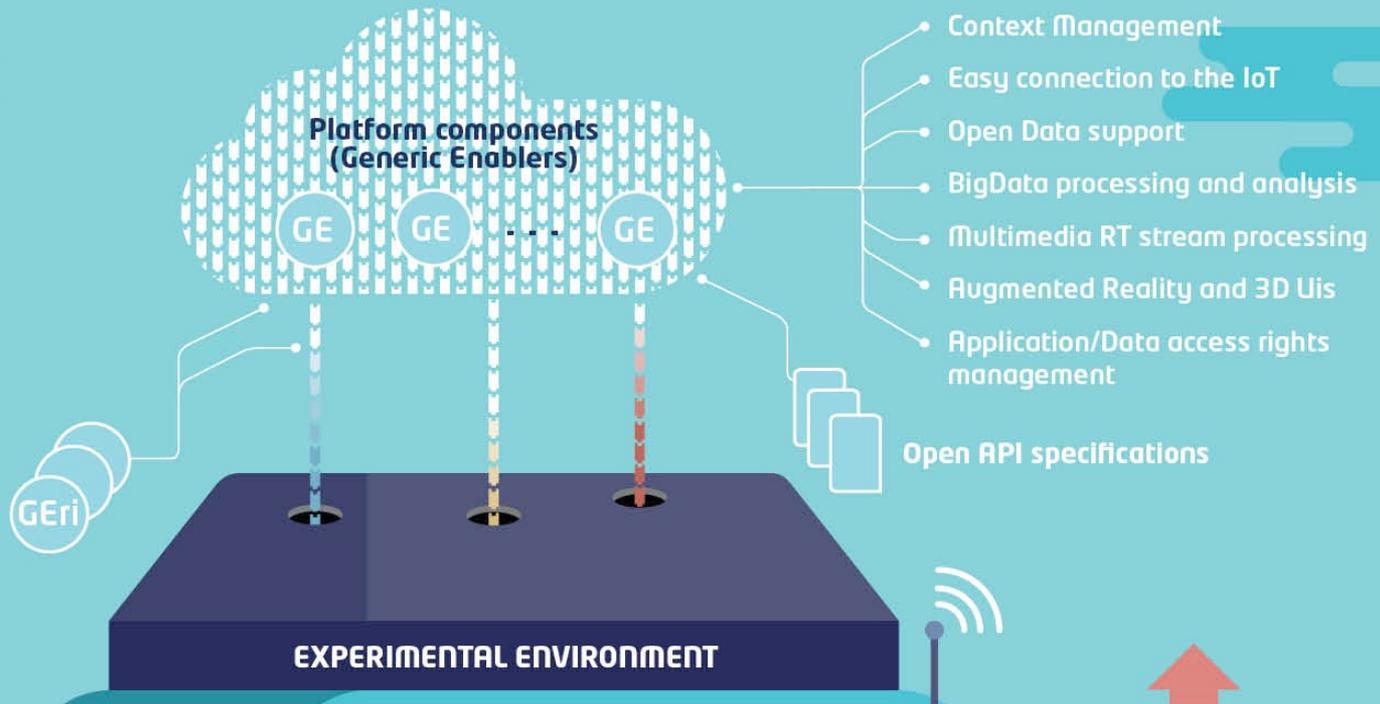
FIWARE

The offer in short



FIWARE is a software platform providing Enhanced OpenStack-based cloud hosting capabilities + a rich library of components implementing a number of added-value functions offered "as a Service"

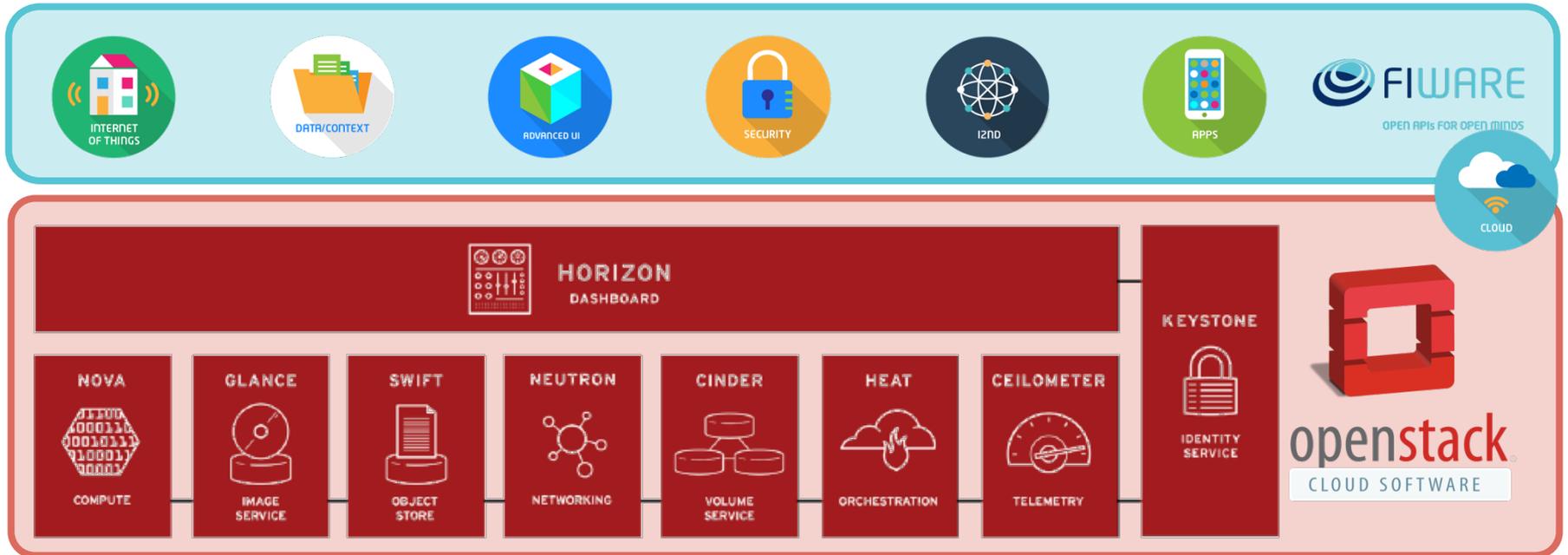
Open Source reference implementations of GEs



FIWARE Platform

A collection of Open APIs

- An OpenStack-based cloud platform that allows the easy deployment and composition of FIWARE services to create new applications

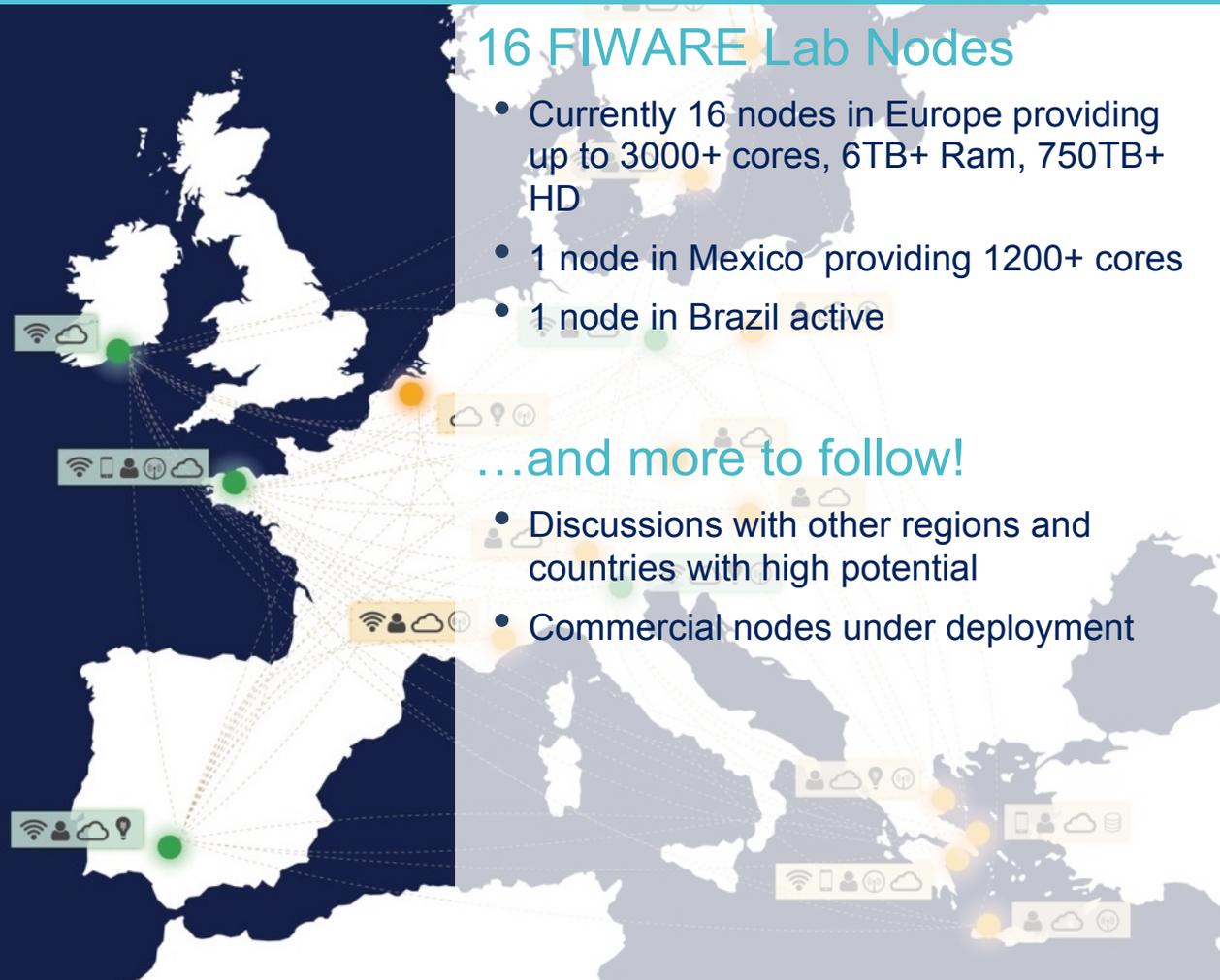


FIWARE Lab

The Cloud lab for FIWARE developers

- Initial FIWARE nodes
- 2nd phase FIWARE nodes

- 📶 Wireless access
- 📱 Customer devices
- 👤 User community
- ☁️ Cloud
- 💡 Energy measure
- 📡 Sensor network
- 🗄️ Open data
- ▶️ Media services





FIWARE for Smart Cities

Why FIWARE?

What really matters to build a Smart City

1

- brings the right standards for developing “Smart” apps/services

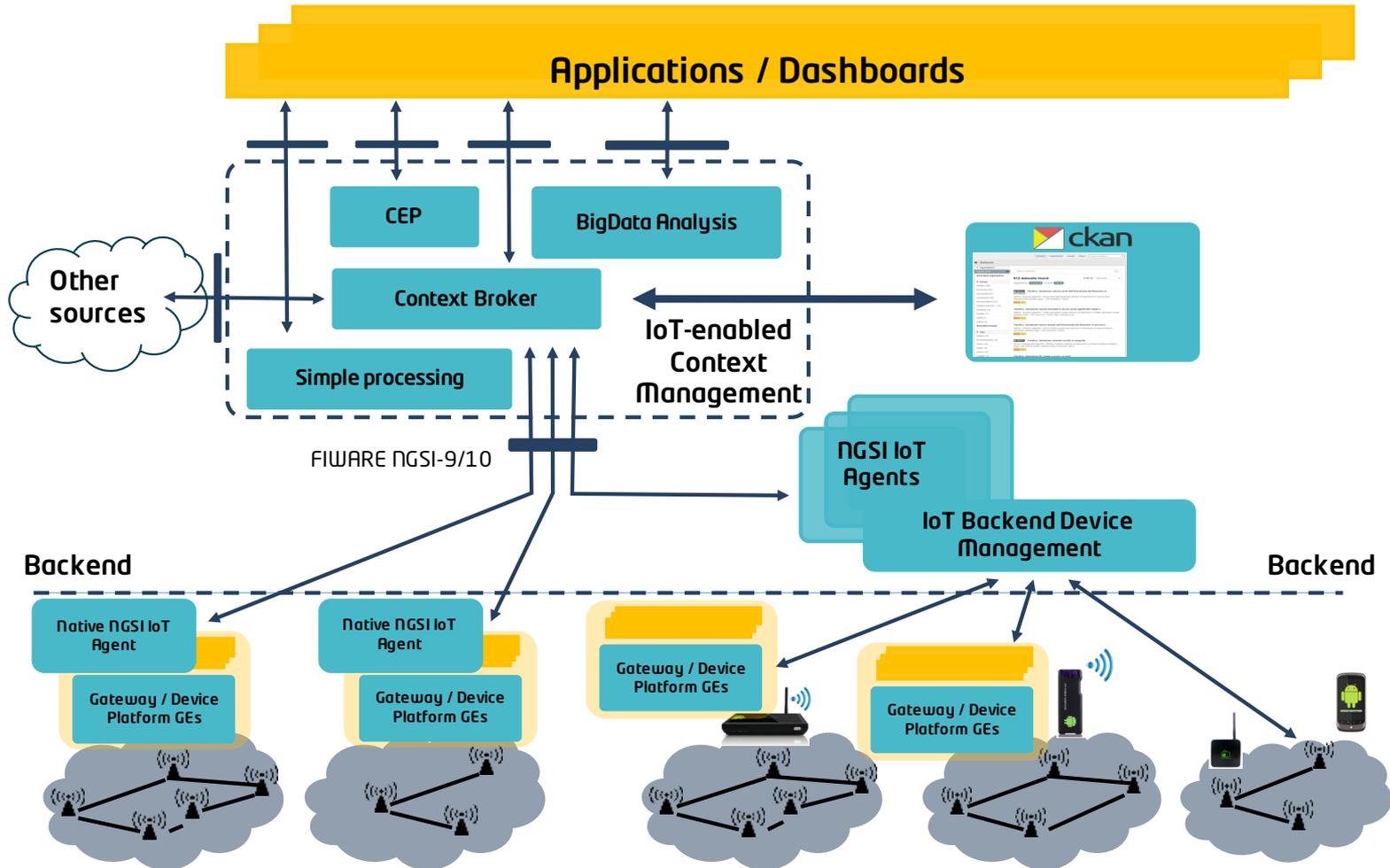
2

- allows your city to join forces with others to build a sustainable market

3

- it's not just about technology

1 - Brings the right standards for developing “Smart” apps/services



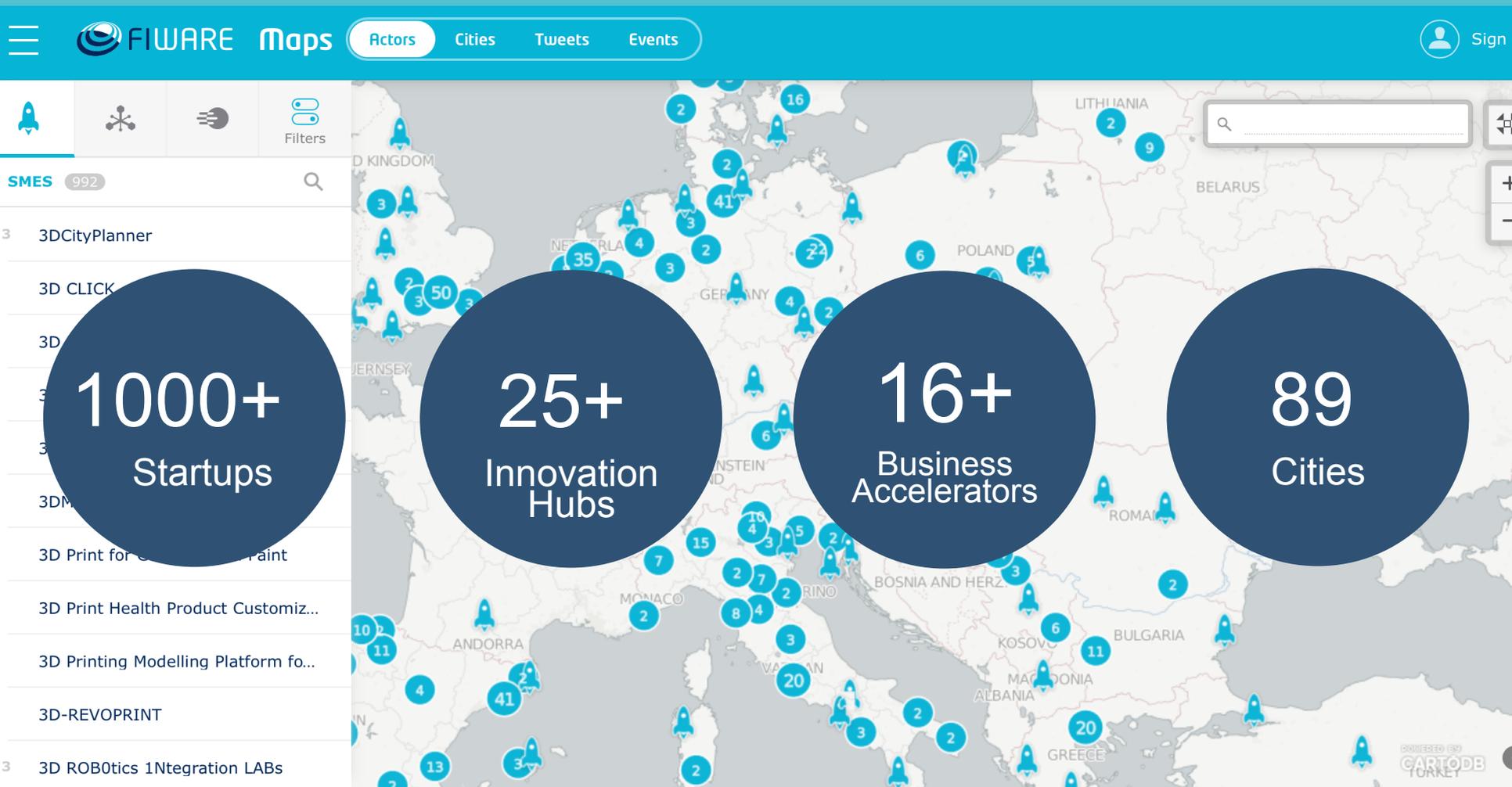
2 - Allows your city to join forces with others to build a sustainable market

Building Smart Cities together

OPEN APIs
FOR OPEN
MINDS



3 - It's not just about technology



Open Agile Smart Cities



*The vision of
Smart Cities
create an open smart city
market based
cities and*



**Implementation
on Driven**

FROM THE OASC VISION

(CKAN)

**City
Models**
(CitySDK
, etc)

How can standard Smart City data models easing common solutions be defined?

- Smart City apps can be ported from one Smart City to another once their platforms provide the same set of APIs, that's why FIWARE brings a rather high value
- Without standard data models, Smart City apps would need to come with adapters that transform data made available by the city so that it complies with the data model handled by the app but that has proven to be easy with OMA NGSI (overall if NGSI is at both ends)
- Creation of standard Smart City data models would allow to avoid performing this kind of adaptation and make portability of Smart City apps across Smart City platforms a pretty straightforward task

Existing models

<https://github.com/Fiware/dataModels>

- Point of interest (entity type `PointOfInterest`). It models different points of interest such as public parking lots, weather or air quality stations, and others.
- Weather
 - forecast (entity type `WeatherForecast`). It models a weather forecast, including all the expected values for the different variables (temperature, humidity, wind speed, maximum, minimum, etc.).
 - observed (entity type `WeatherObserved`). It represents weather observations offered by the automated weather stations owned by AEMET.
 - alarms (entity type `WeatherAlarm`). They correspond to weather alarms provided by the European Meteoalarm service.
- Ambient observed (entity type `AmbientObserved`). This entity type corresponds to the observations of the air quality in a city.
- Parking (`StreetParking` or `ParkingLot`). Smart parking data models capture information that is needed to optimize car mobility in cities.



Smart City services

Success Stories based on FIWARE

Cities in FIWARE Lab

City (Country)	IoT	Open Data	NGSI	Prototype or details
Amsterdam (NL)		x	x	CitySDK-LD
Barcelona (Spain)		X		API implementation to municipal portal
Espoo (Finland)			x	Energy consumption dashboard
Helsinki (Finland)			x	Participation dashboard (CitySDK-Open311)
Las Palmas (Spain)		x	x	Port management dashboard
Lisbon (Portugal)		x		Mobility and social networks
Lleida (Spain)		x	x	Public transport and accessibility
Logroño (Spain)		x	x	Smart watering, City App
Malaga (Spain)	x	x	x	Citizen as a sensor
Rome (Italy)		x		Data dashboard
Santander (Spain)	x		x	Big Data / Open Data publication of IoT
Sevilla (Spain)	x	x	x	Fountains water management, Crowds detection
Torino (Italy)		x		Security & participation
Trento (Italy)		x		SmartCampus" Open Service platform
Valencia (Spain)		x	x	Smart Taxi
Vigo (Spain)		x	x	City dashboard

IoT infrastructure from Smart Santander

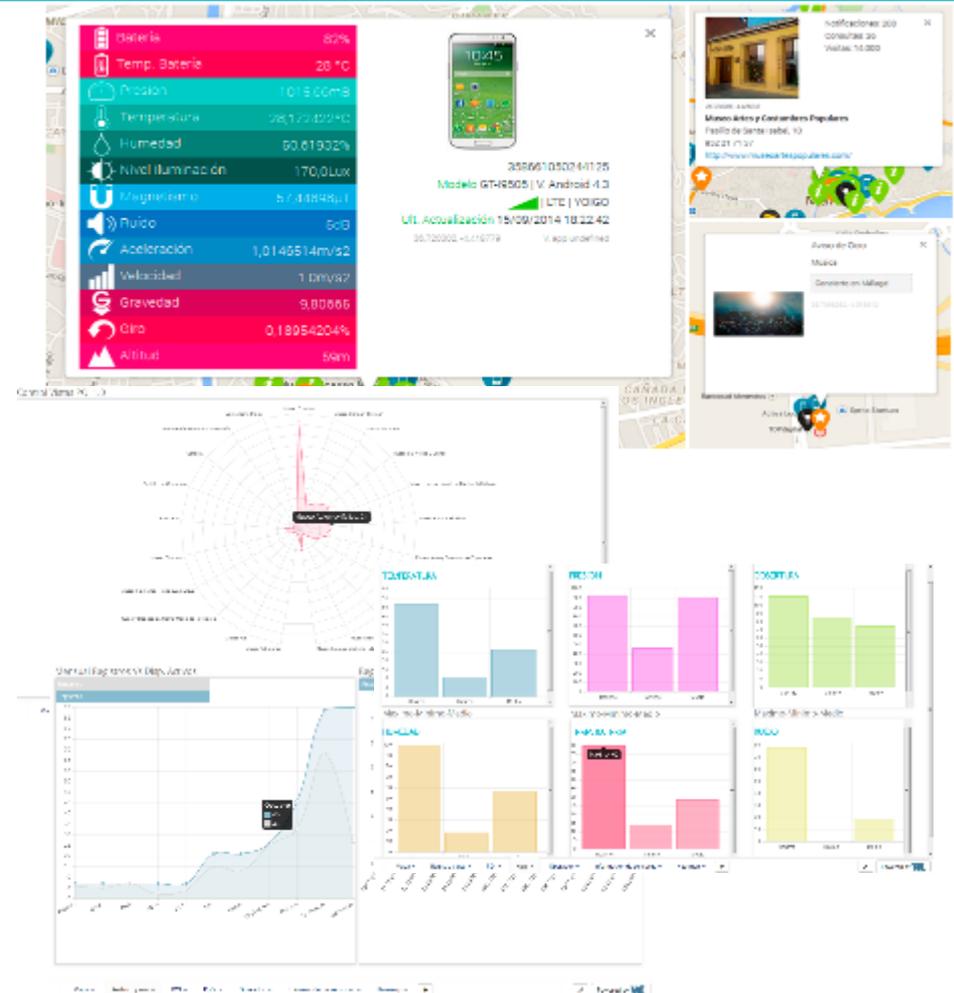
- Integration of the IoT SmartSantander facility with FIWARE
 - Devices registration
 - Observations generation
 - Definition of new dictionaries to support sensor measurements as well as citizens observations
 - Access SmartSantander data (both historical and live data)
- Used GEs: Backend Device Management, Cosmos, IdM, Context Broker, CKAN
- Partners: University of Cantabria

```
Organizations / Santander / FIXED SENSORS / FIXED SENSORS (page 1)
FIXED SENSORS (page 1)
CB QUERY: http://orion.lab.fiware.org:1026/ngsi10/queryContext?limit=200
From the dataset abstract
List of entities which are deployed at static locations of Santander. Each entity provides a sound level measurement and also information about its geolocation, battery charge and...
Source: FIXED SENSORS
{
  "contextResponses": [
    {
      "contextElement": {
        "type": "santander:device",
        "isPattern": "false",
        "id": "urn:x-ogc:smartsantander:s7jcf:fixed:t91",
        "attributes": [
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            "name": "TimeInstant",
            "type": "urn:x-ogc:def:trs:ID45:1.0:ISO6881",
            "value": "2015-02-11T11:51:34.000000Z"
          },
          {
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            "type": "urn:x-ogc:def:phenomenon:ID45:1.0:latitude",
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            "metadatas": [
              {
                "name": "code",
                "type": "",
                "value": "deg"
              }
            ]
          },
          {
            "name": "Longitude",
            "type": "urn:x-ogc:def:phenomenon:ID45:1.0:longitude",
            "value": "-3.80134",
            "metadatas": [
              {
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                "type": "",
                "value": "deg"
              }
            ]
          }
        ]
      }
    }
  ]
}
```



Malaga Citizen as a Sensor

- Crowdsense city data using citizen Smartphones and their sensors
 - App that generates data (temperature, light, humidity, pressure, etc.), shows relevant open data from the city, detects iBeacons deployed to track tourism visits
 - Web application shows data and statistics
- Used GEs: Context Broker, Wirecloud, CKAN
- Partners: Soidemer/TopDigital



Helsinki Open311 (issue reporting)

- Integrate Helsinki Open311 issue reporting API to FIWARE
- Used GEs: Context Broker, Wirecloud
- Partners: Forum Virium

Open311Map

Open311Info

Core Open311

status closed
status_notes Kiitos palautteestanne. Viestinne on välitetty ko. alueen katujen kunnossapitoon.TerveisinRakennusviraston asiakaspalvelu
description Raappujen yläpään kiveys ja kaide rikkoutuneet.
updated_datetime 2014-06-23T14:05:02+03:00
requested_datetime 2014-06-23T15:05:14+03:00
service_request_id 20ukpr949i8qk03s42uq
address Linnankuja 3, 00160 Helsinki, Suomi
lat 60.1661448
lon 24.9700828
service_code 171
service_name Potholes
agency_responsible Rakennusvirasto

Extended Open311

Open311Image

Tab +

Powered by FIWARE

Global City Teams Challenge

<https://www.us-ignite.org/globalcityteams>

FIWARE and OASC - Enabling smar...

GCTC2016

Brief Description: Car navigation experience on route is enriched by providing real time environmental information about the city and its facilities. Drivers are guided to a suitable parking spot (indoors or outdoors), depending on different parameters. A data marketplace is enabled. Additional data providers can

[VIEW DETAILS](#)

FIWARE MyCity (Eindhoven)

GCTC2016

Brief Description: Eindhoven is one of the six Dutch cities that signed the Open and Agile Smart Cities (OASC) letter of intent to join an initiative that will create smart cities based on the needs of cities and communities. Eindhoven wants to accelerate the smart city wave by adapting the FIWARE platform. In

[VIEW DETAILS](#)

EnvyPorto (Porto)

GCTC2016

Description: Through small and low cost sensing stations that can be installed in the urban infrastructure, it is possible to create a dynamic high-level map of indicators on air quality, noise pollution levels, temperature, atmospheric pressure, humidity and luminosity. Using this high level map in

[VIEW DETAILS](#)

 GLOBAL CITY
TEAMS CHALLENGE

Start-ups using FIWARE



FLOUD, by Magenta srl

FLOUD is an innovative, flexible and low-cost platform for road-traffic data collection and analysis. Based on sensors equipped with advanced video analysis software, FLOUD is the answer to our smart cities' need for minimally invasive systems to improve transport management.



Mejora Tu Ciudad

The platform provides different channels and communication tools, both for citizens and for city councils. Citizens can send service requests, suggestions and ask questions via a mobile application, and so turning themselves into the sensors of the city.



OpenMove

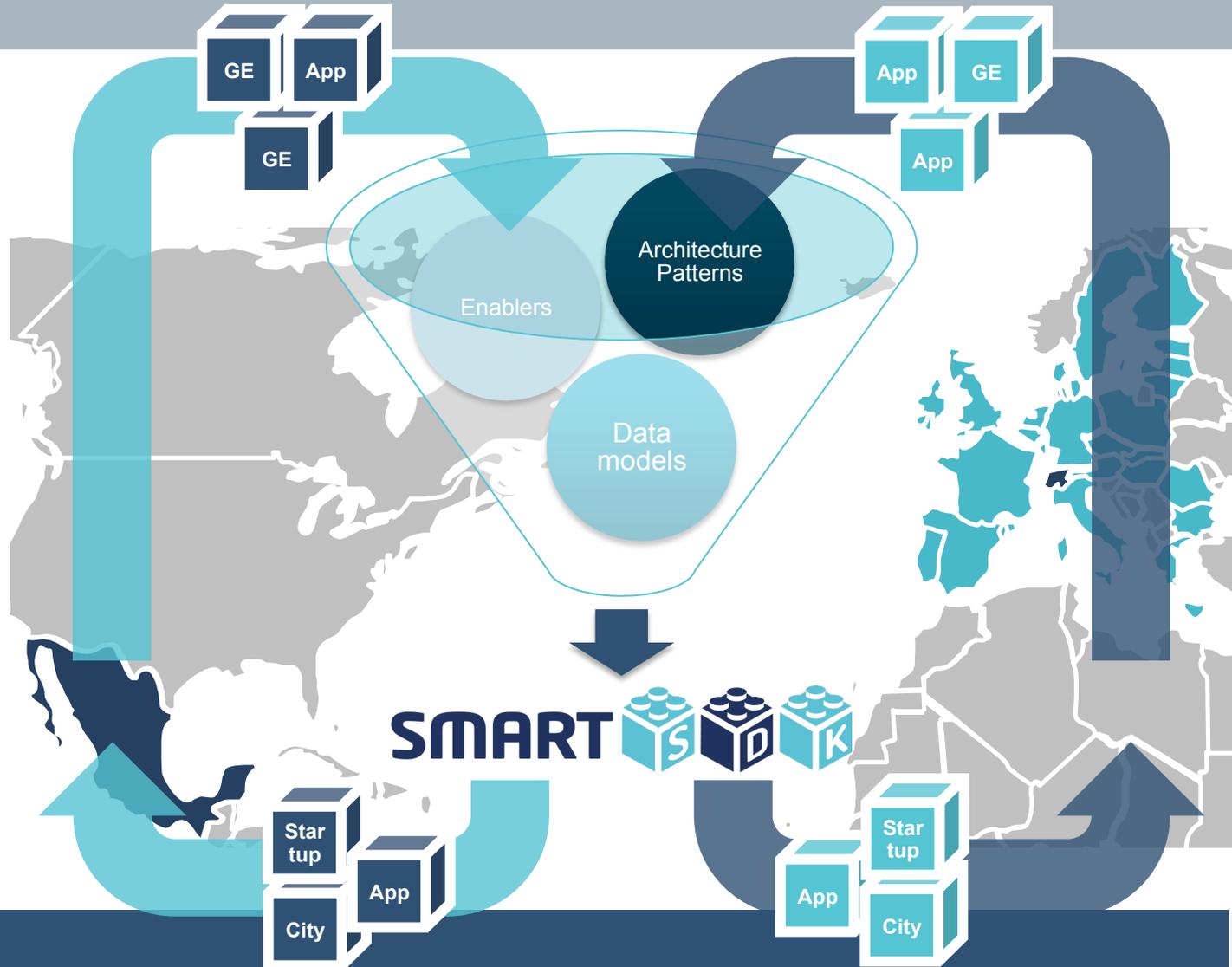
The OpenMove team moved very quickly from the product design phase to the offer on the market. After an analysis of data about the current market trends and potential, they moved to the phase of prototype design.



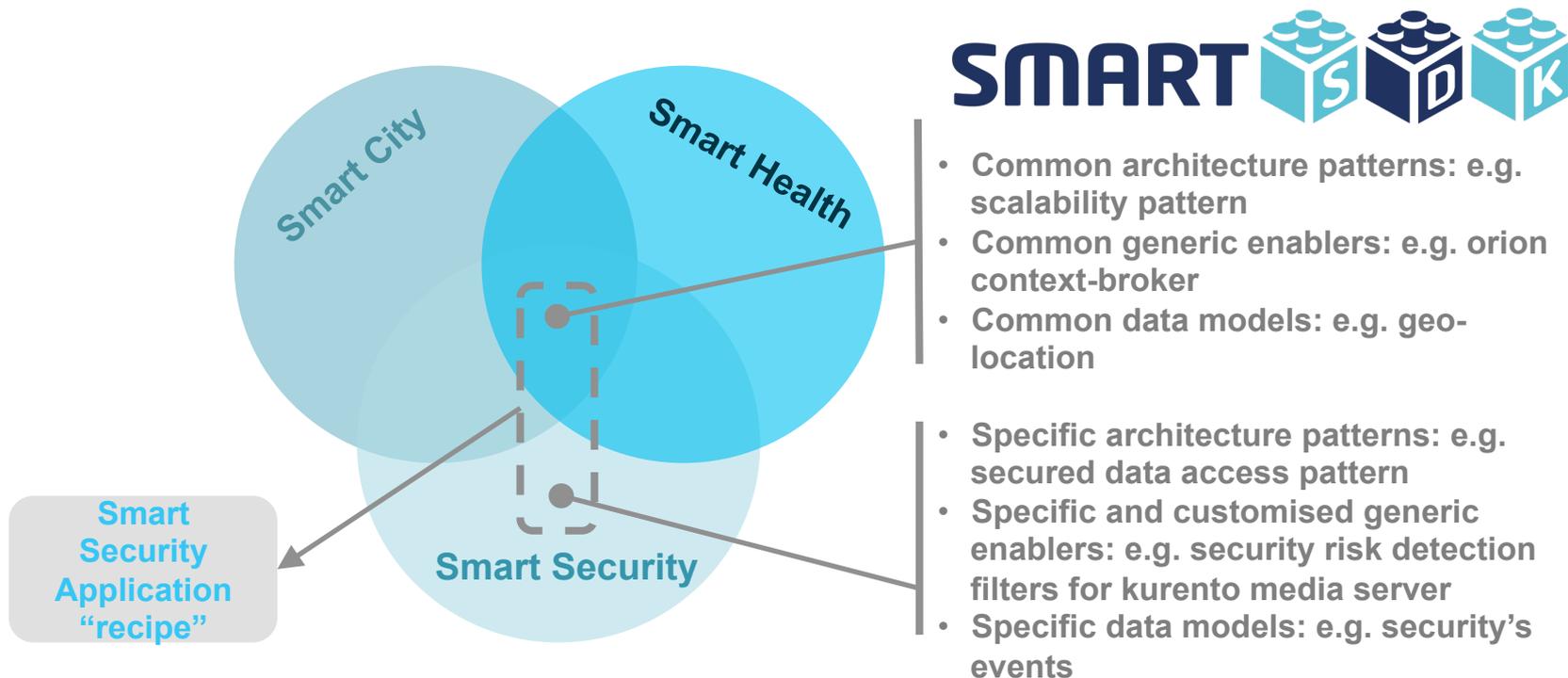
Upcoming activities

<http://smartsdk.eu>

SMART The Concept



SMART The Scenarios



Wanna collaborate with us?



Contact us!

www.martel-innovate.com

Federico M. Facca

Head of Martel Lab

federico.facca@martel-consulting.ch

Dorfstrasse 73 - 3073 Gümligen (Switzerland)

0041 78 807 58 38



Find out more

Where to start from?

Quick FIWARE Tour Guide!

QUICK FIWARE TOUR GUIDE FOR DEVELOPERS.

The FIWARE Catalogue is the central repository for implementations of Generic Enablers (GE) that are part of the FIWARE platform. Apart from the Generic Enablers, you will also find tools and best practices which will help you develop the applications of the Future Internet.

GUIDE CONTENT



Development of Context-Aware Applications using FIWARE



Connection to the Internet of Things



Real-time processing of Context Events



Handling Authorization and access Control to APIs



Publication of Context Information as Open Data



Big Data Analysis of Historic Context Information



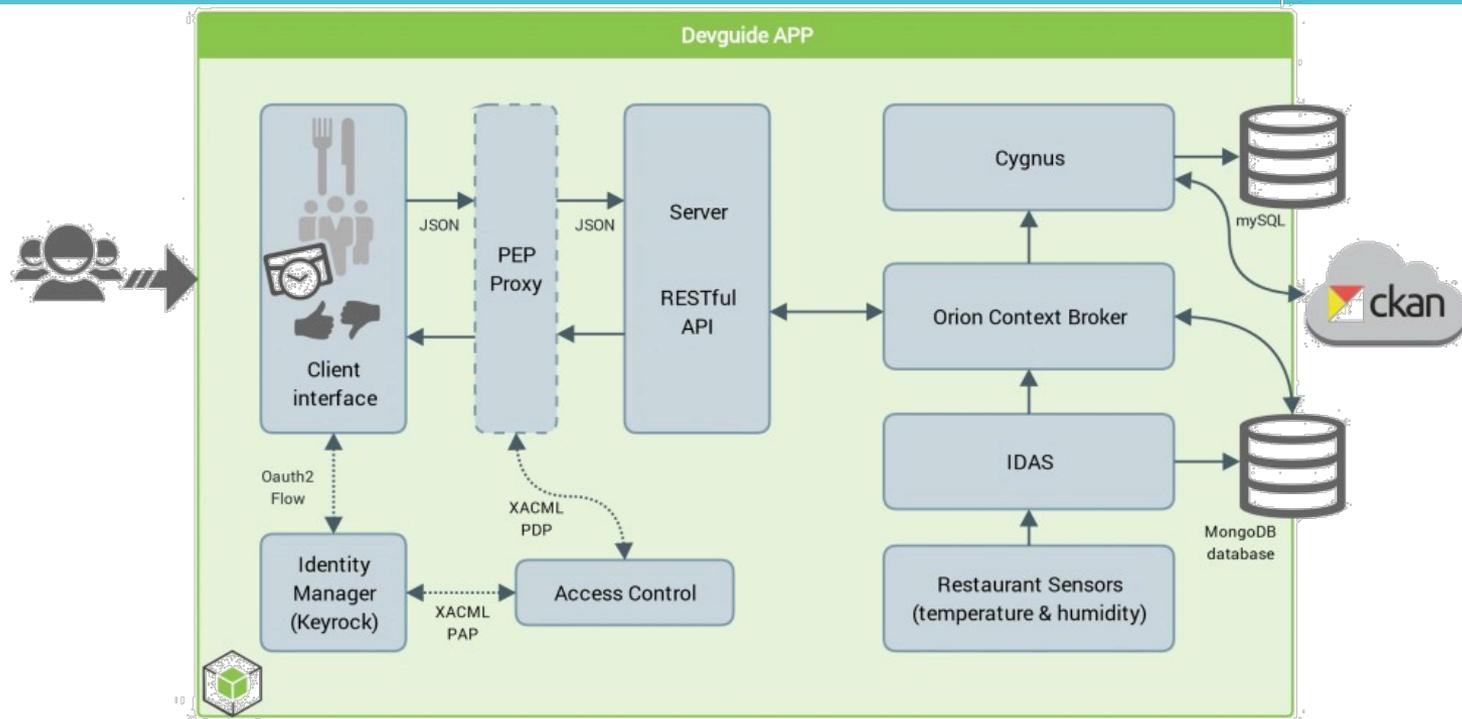
Creating Application Dashboards



Real-time processing of Media Streams



FIWARE Tour Guide App Smart Restaurant



Download the code here



Live information on FIWARE Lab <http://infographic.lab.fiware.org>



FIWARE FOUNDATION <https://www.fiware.org/fiware-community/>

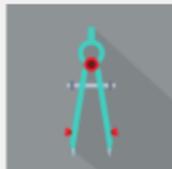
Join the Community

To make FIWARE fully accessible for the inquiring minds of worldwide developers and thus, make a solid headway towards the evolution of FIWARE. Together, we can make the most of it.

Join now this global network and be part of the common effort that will take us to the next level. Join the Community debate at ask.fiware.org

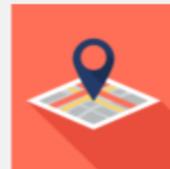
GOVERNANCE MODEL

Q&A PLATFORM



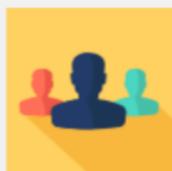
Technical commite

The Technical Committee (TC) is tasked with providing the coordination of technical activities in the FIWARE Community and generally has oversight over all the FIWARE technical tasks.



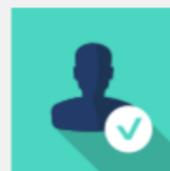
Domain Technical Commitees

The Domain Technical Committee (DTC) takes decisions about the Specific Enablers and Domain Specific Frameworks of a singular application domain or market sector.



Board of Directors

The Board of Directors (BoD) provides legal management of the FIWARE Community and should define, approve and support the governance model of the FIWARE Community.

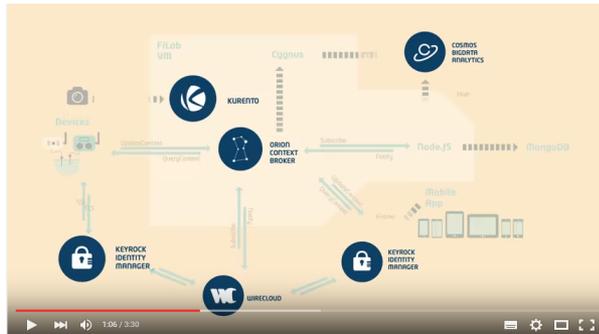


Members

The FIWARE Community is a community made of members who are investing in the success of FIWARE. The FIWARE Community has three types of membership: Individual, Core, and Regular.

Example Apps

■ SmallSignals



■ FoneSense



FIWARE Catalogue

<http://catalogue.fiware.org>



Home Enablers Bundles Tools

Home Enablers Bundles Tools

FIWARE GENERIC ENABLERS

Generic Enablers (GE) offer a number of general-purpose functions, offered through well-defined APIs, easing development of smart applications in multiple sectors. They will set the foundations of the architecture associated to your application.

Specifications of FIWARE GE APIs are public and royalty-free. You can search for the open source reference implementation, as well as alternative implementations, of each FIWARE GE in the FIWARE Reference Architecture.



WHAT'S NEW

What's New
Last updated Generic Enablers.



DATA/CONTEXT

Data/Context Management
Easing access, gathering, processing, publication and analysis of context information at large scale.



INTERNET OF THINGS

Internet of Things (IoT) Services Enablement
Make connected things available, searchable, accessible, and usable.



ADVANCED UI

Advanced Web-based User Interface
3D & AR capabilities for web-based UI.



SECURITY

Security
Make delivery and usage of services trustworthy by meeting security and privacy requirements.



I2ND

Interface to Networks and Devices (I2ND)
Build communication-efficient distributed applications, exploit advanced network capabilities and easily manage robotic devices.

DOMAIN SPECIFIC ENABLERS (DSEs)

The FIWARE Catalogue includes links to other catalogues bringing information about domain-specific enablers (DSEs) to be combined with those serving general purposes (Generic Enablers - GE). They may be helpful for those who plan to develop applications in the domains of energy, creative media, smart manufacturing, health and wellbeing and the agrifood sector.

The perfect solution to make your app focus on a specific vertical.



Manufacturing



Media



eHealth



Energy



Agrifood

Please note that Domain Specific Enablers (DSEs) are different from FIWARE Generic Enablers (GEs). Some of them have been developed as part of the Future Internet PPP large scale trials as domain specific extensions which are now available to you. Their development may not have followed the FIWARE Developers' guidelines, and subsequently no quality assurance and support can be given. There may also be different regimes regarding availability of source code under well-known open source licenses, level of support and sustainability in the long term.

Some DSEs may demonstrate they are not only applicable to the specific domain for which they were originally designed but to many other application domains. Those DSEs may eventually become a FIWARE GE by going through the incubation process defined within the FIWARE Open Source Community.

Note that support of DSE catalogues as well as DSEs is outside the control of FIWARE.

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Welcome

Welcome to the FIWARE Academy, where you can find training courses, lessons and many other contents regarding FIWARE technology.

Feel free to start browsing our offering from the [categories](#) listed below, or from the *Available Courses* section (main menu bar), click on them and access the lessons.

Few quick steps and you can easily get access to all the public courses published in this platform.

1 Select a Category

Cloud Hosting (2)
Data/Context Management
Internet of Things (IoT) Services Enablement (1)
Applications and Services Ecosystem and Delivery

2 Select a Course

FI Application Project Management
This course introduces the creation and usage of the FI Application Framework (FI-CoDE), to create and manage FI-based application projects, with...

3 Log in as Guest (if necessary)

Some courses may allow guest access
[Login as guest](#)

4 Select the Course Topic

1. Data Collection
Data Collection
This tutorial explain how to set Eclipse and Trace Analyzer in order to collect the SAR and TCPdump data used by Trac...

5 Confirm the Course Topic

Mode: Preview Normal

6 Start the Course

START

FIWARE ASK

http://ask.fiware.org


[Hi there! Please sign in](#)
[help](#)

[tags](#)
[users](#)
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45 questions

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 1 vote | 1 answer | 21 views
 38 hours ago [jmcantera](#)

[Scalability of Orion](#)

 1 vote | 1 answer | 43 views
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 Oct 21 '15 [jmcantera](#)

[cosmos node is in safe mode, cannot execute query on hive](#)

 no votes | 1 answer | 167 views
 Oct 21 '15 [frb](#)

[cosmos: password reset](#)

 no votes | 1 answer | 339 views
 Oct 1 '15 [frb](#)

[POI Data Provider installation issue](#)

 no votes | 1 answer | 50 views
 Sep 29 '15 [flegall](#)

[Is there a FIWARE implementation to the open source platform](#)

 1 vote | 1 answer | 70 views

Contributors

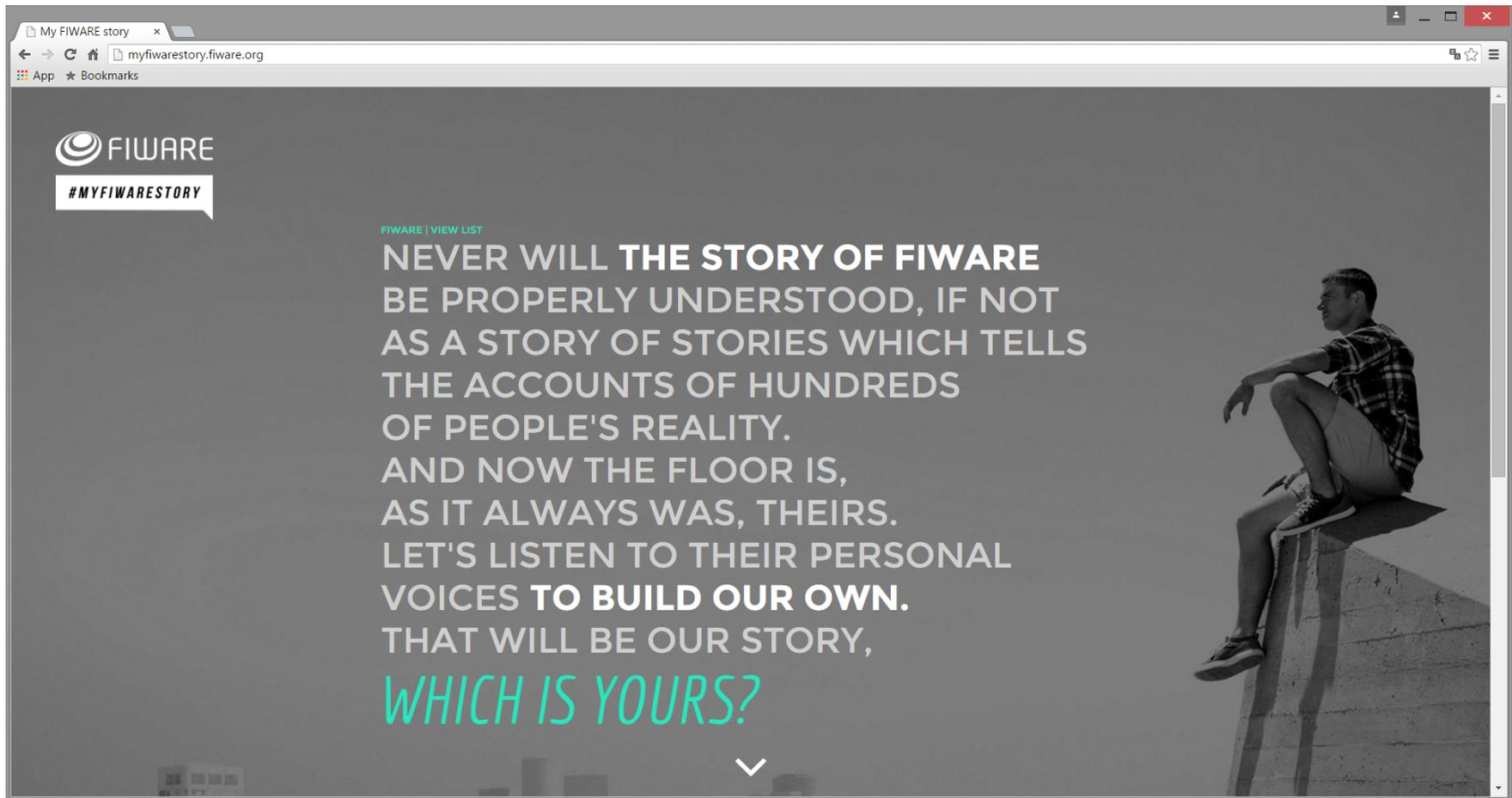


Tags

- fiware | x11
- fiware-lab | x7
- KeyRock | x6
- fiware-general | x5
- GE | x5
- orion | x4
- community | x2
- cosmos | x2
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- faq | x1
- hive | x1
- Horizon | x1
- Keystone | x1
- licenses | x1
- mobile | x1
- POI | x1
- Provider | x1
- scale | x1
- stories | x1
- students | x1

#MYFIWARESTORY

Which is yours?



My FIWARE story x
myfiwarestory.fiware.org

App ★ Bookmarks

FIWARE
#MYFIWARESTORY

FIWARE | VIEW LIST

NEVER WILL THE STORY OF FIWARE
BE PROPERLY UNDERSTOOD, IF NOT
AS A STORY OF STORIES WHICH TELLS
THE ACCOUNTS OF HUNDREDS
OF PEOPLE'S REALITY.
AND NOW THE FLOOR IS,
AS IT ALWAYS WAS, THEIRS.
LET'S LISTEN TO THEIR PERSONAL
VOICES TO BUILD OUR OWN.
THAT WILL BE OUR STORY,
WHICH IS YOURS?

↓

A person is sitting on a ledge, looking out over a cityscape.

Success stories

What FIWARE start-ups are building!

[ABOUT](#)[BLOG](#)[NEWS](#)[EVENTS](#)[DEVELOPERS](#)[COMMUNITY](#)[SUCCESS STORIES](#)[HELP](#)

Success Stories

View all | [SMES](#) | [Smart cities](#) | [Accelerators/Investors](#) | [Infrastructures](#)



ADAMO

ADAMO introduces innovative technologies for geographically enhanced touristic information, which



Adminotech OY

Adminotech Oy has expertise in developing 3D software projects with the realXtend SDK. They have released a



Agrostis

Agrostis is a Greek SME that develops and markets Information Technology and Automation solutions exclusively for

Open APIs for Open Minds



Join us!

www.fiware.org



OPEN APIs FOR OPEN MINDS