FIWARE Platform

FIWARE Mexico

INFOTEC CONACYT

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Generic Enablers

https://catalogue.fiware.org/enablers

Data/Context Management
Facilitan el acceso, almacenamiento, procesamiento, publicación y análisis de datos a gran escala.

Internet of Things (IoT) Services Enablement
Permiten que las “cosas” conectadas estén disponibles y puedan ser buscadas y usadas.

Advanced Web-based User Interface
Facilitan la incorporación de capacidades 3D y de realidad aumentada en las interfaces de usuario web.

Security
Brindan los mecanismos para garantizar la confiabilidad, seguridad y privacidad en la entrega y uso de servicios.

Interface to Networks and Devices (I2ND)
Permiten la comunicación eficiente entre aplicaciones distribuidas, explota capacidades de red avanzadas y facilitan la gestión de dispositivos robóticos.

Architecture of Applications / Services Ecosystem and Delivery Framework
Permiten la co-creación, publicación, venta cruzada y consumo de aplicaciones y servicios con un enfoque de negocios.

Cloud Hosting
Brindan recursos de cómputo, almacenamiento y red para gestionar servicios.

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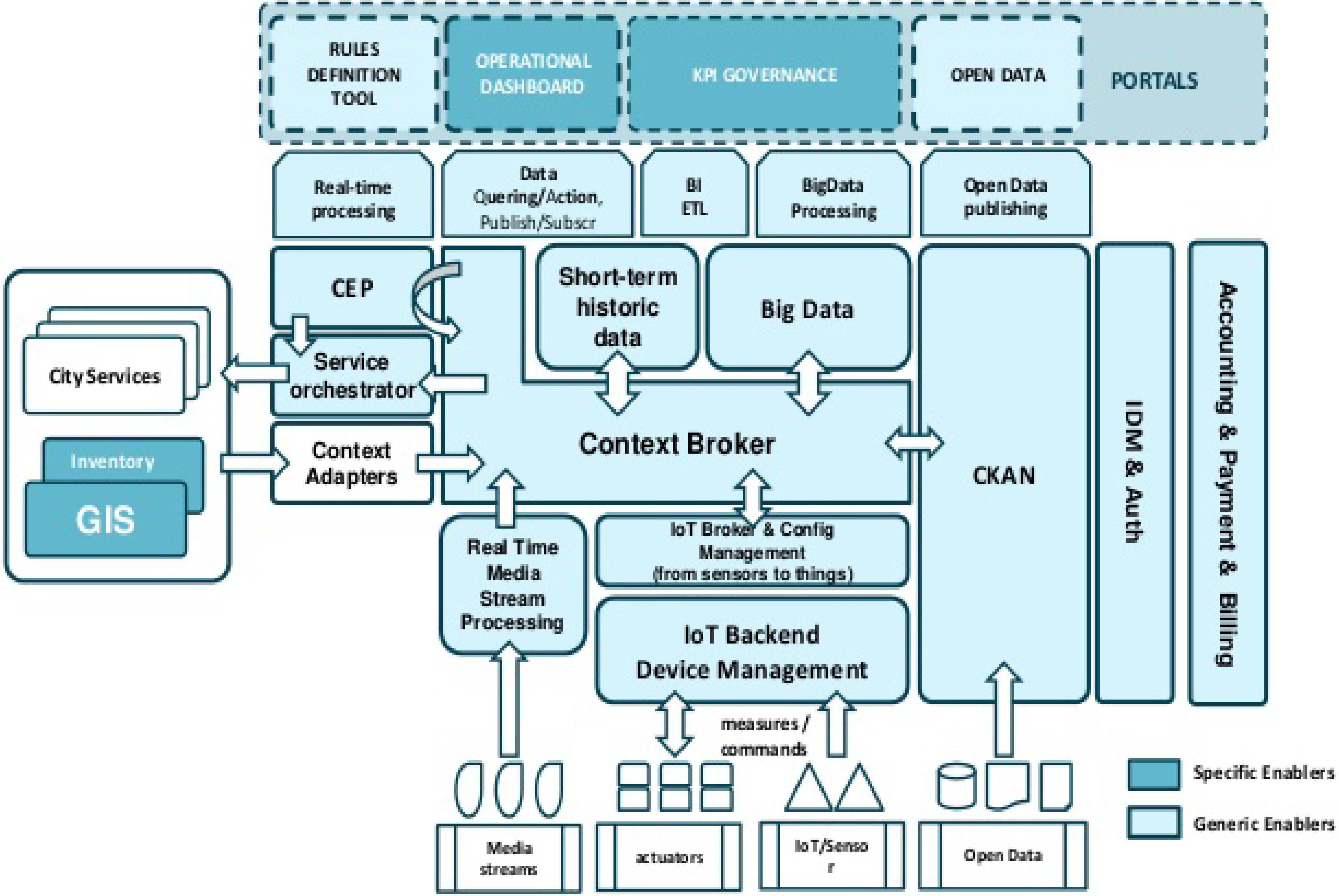
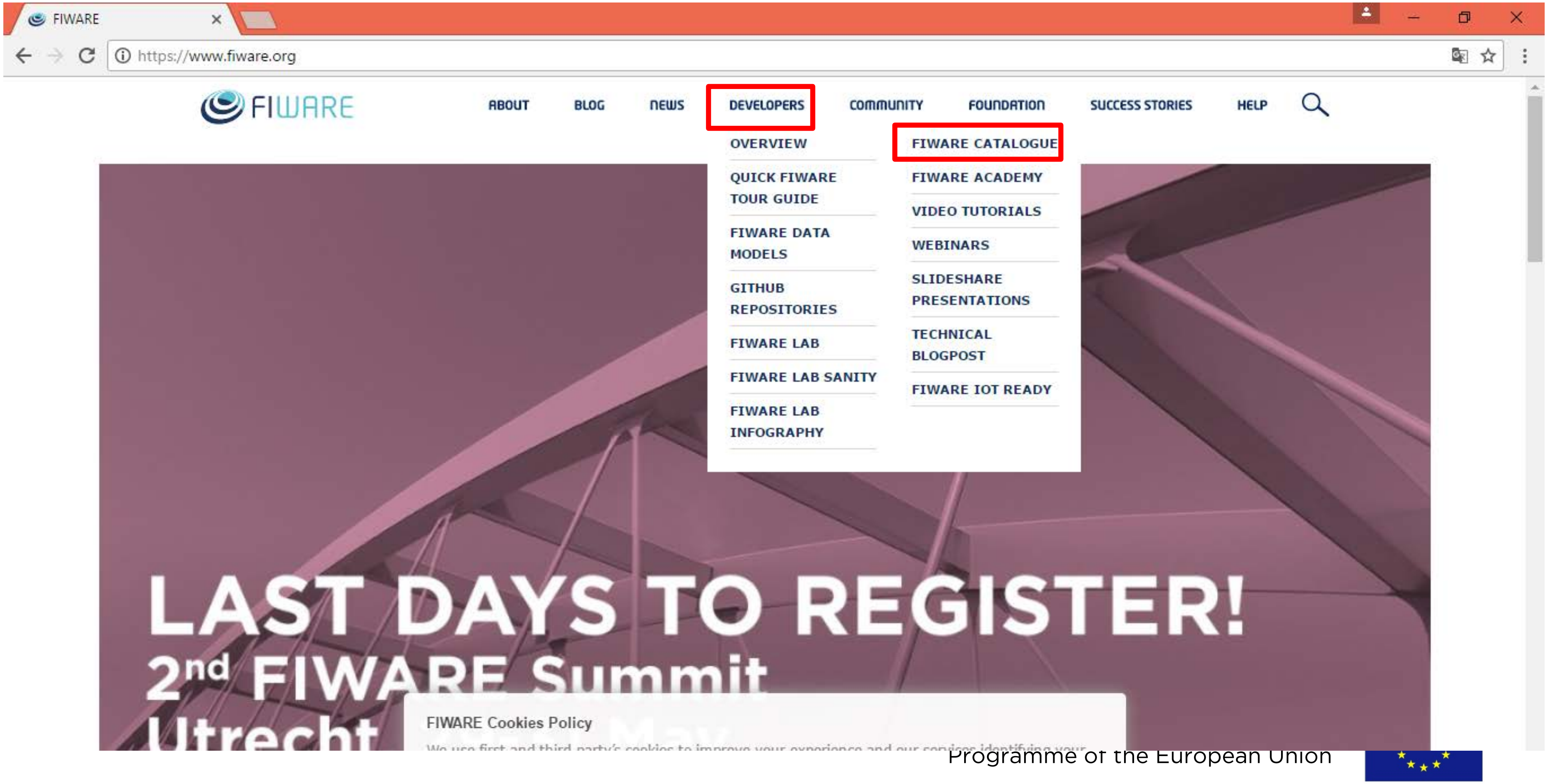
FIWARE Architecture



Access to FIWARE Generic Enablers

FIWARE Lab https://account.lab.fiware.org/

Download it from: https://www.fiware.org/



LAST DAYS TO REGISTER!

2^{nd} FIWARE Summit

Utrecht

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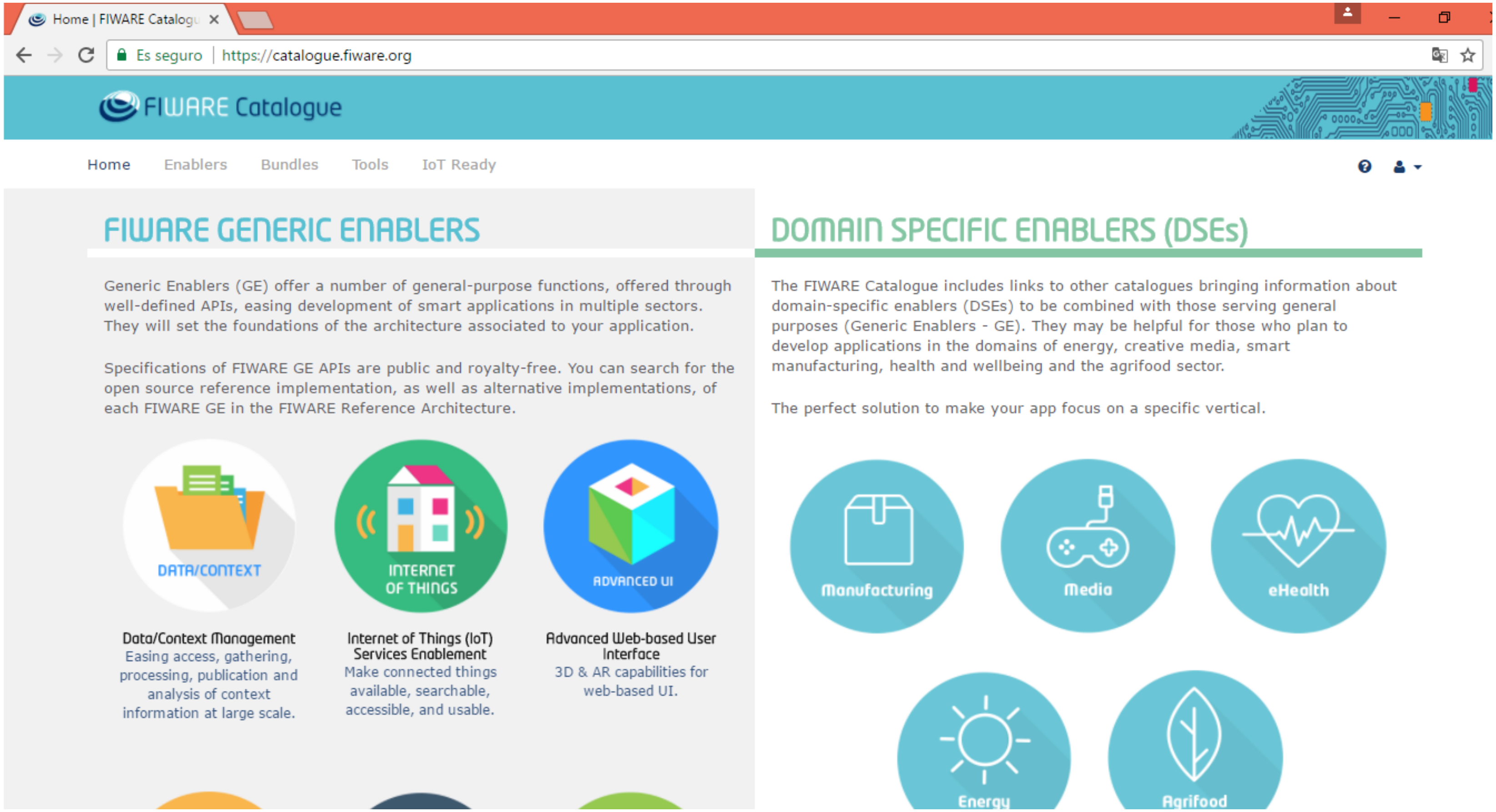

FIWARE GENERIC ENABLERS

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.

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

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

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

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.

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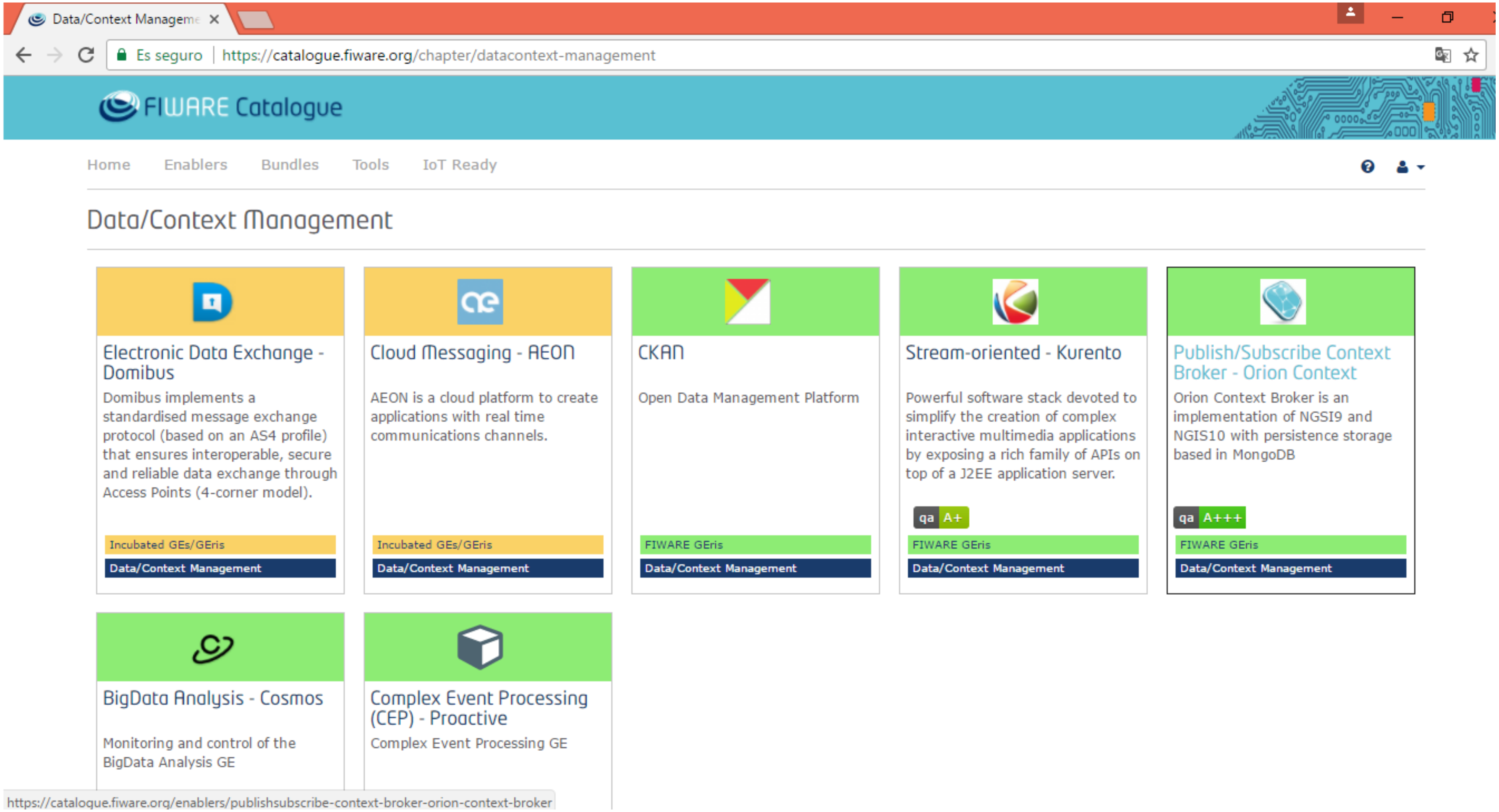

Data/Context Management

Electronic Data Exchange - Domibus

Domibus implements a standardised message exchange protocol (based on an AS4 profile) that ensures interoperable, secure and reliable data exchange through Access Points (4-corner model).

Incubated GEs/GEris

Data/Context Management

Cloud Messaging - AEON

AEON is a cloud platform to create applications with real time communications channels.

Incubated GEs/GEris

Data/Context Management

CKAN

Open Data Management Platform

FIWARE GEris

Data/Context Management

Stream-oriented - Kurento

Powerful software stack devoted to simplify the creation of complex interactive multimedia applications by exposing a rich family of APIs on top of a J2EE application server.

qa A+

FIWARE GEris

Data/Context Management

Publish/Subscribe Context Broker - Orion Context

Orion Context Broker is an implementation of NGSI9 and NGIS10 with persistence storage based in MongoDB

qa A+++

FIWARE GEris

Data/Context Management

BigData Analysis - Cosmos

Monitoring and control of the BigData Analysis GE

Complex Event Processing (CEP) - Proactive

Complex Event Processing GE

https://catalogue.fiware.org/enablers/publishsubscribe-context-broker-orion-context-broker

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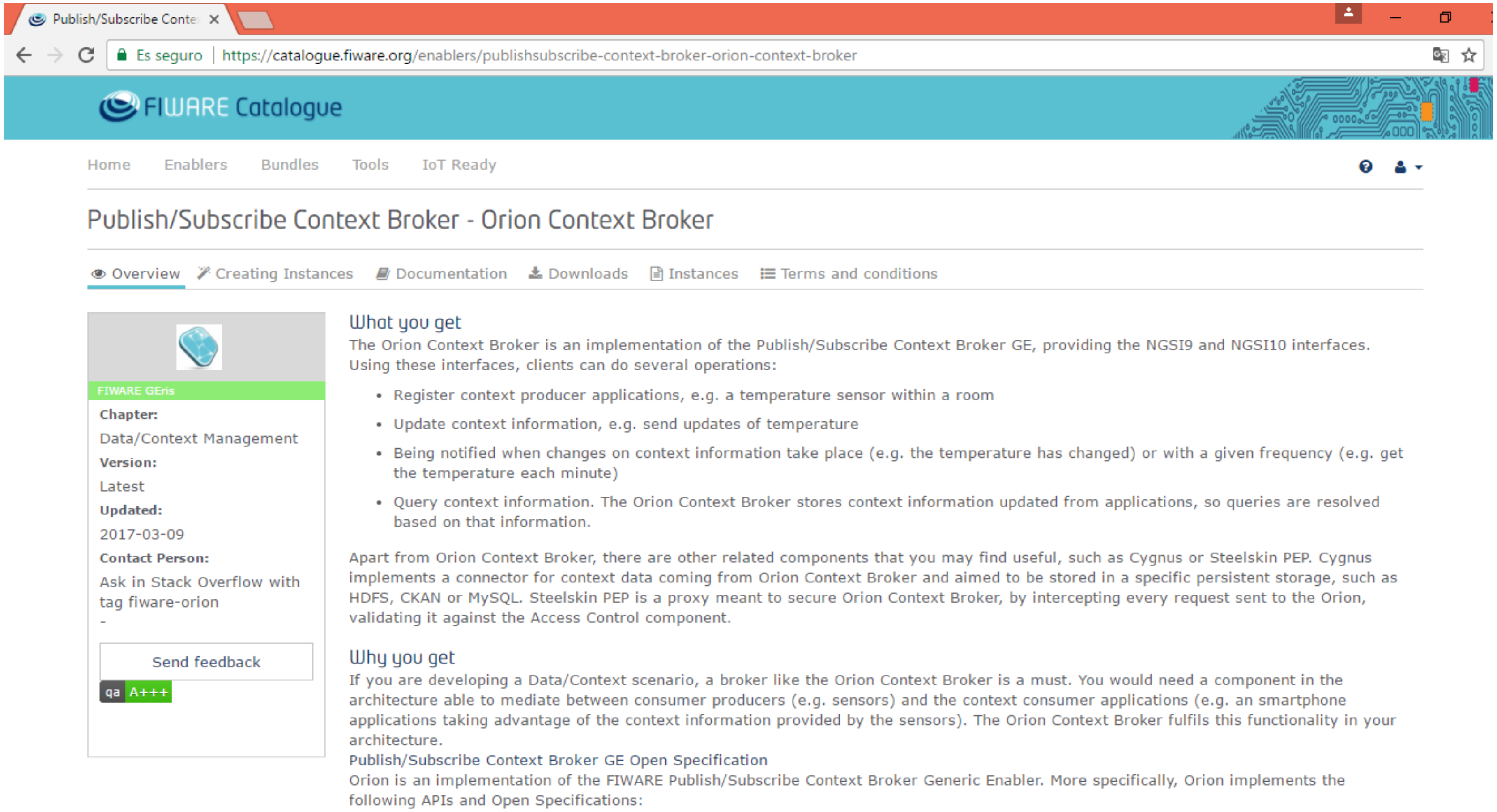

Publish/Subscribe Context Broker - Orion Context Broker

Chapter:
Data/Context Management
Version:
Latest
Updated:
2017-03-09
Contact Person:
Ask in Stack Overflow with tag fiware-orion
-

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.

Apart from Orion Context Broker, there are other related components that you may find useful, such as Cygnus or Steelskin PEP. Cygnus implements a connector for context data coming from Orion Context Broker and aimed to be stored in a specific persistent storage, such as HDFS, CKAN or MySQL. Steelskin PEP is a proxy meant to secure Orion Context Broker, by intercepting every request sent to the Orion, validating it against the Access Control component.

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 fulfils this functionality in your architecture.
Publish/Subscribe Context Broker GE Open Specification
Orion is an implementation of the FIWARE Publish/Subscribe Context Broker Generic Enabler. More specifically, Orion implements the following APIs and Open Specifications:

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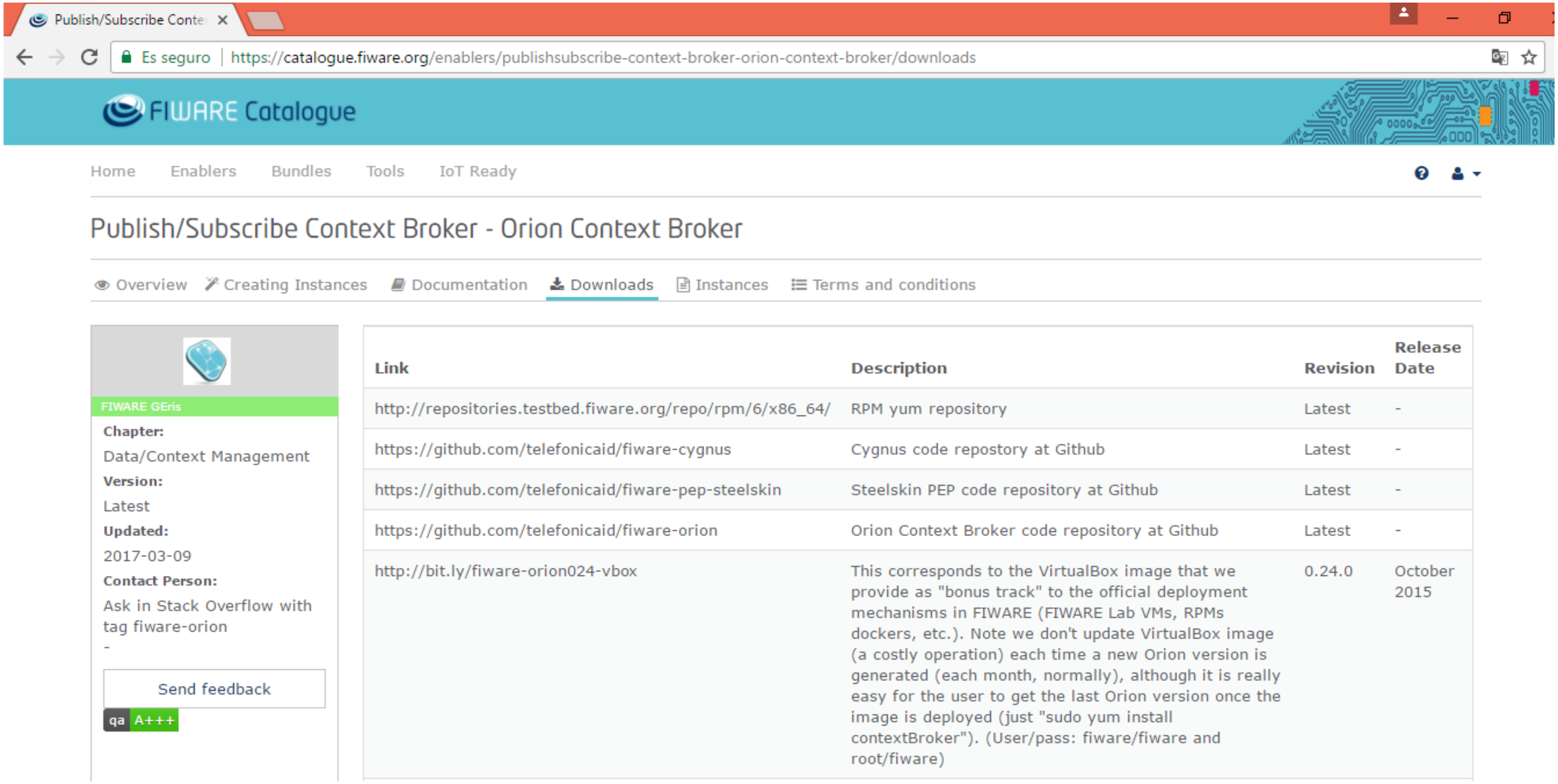

Publish/Subscribe Conte ×
Es seguro
https://catalogue.fiware.org/enablers/publishsubscribe-context-broker-orion-context-broker/downloads
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Publish/Subscribe Context Broker - Orion Context Broker

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-

Link	Description	Revision	Release Date
http://repositories.testbed.fiware.org/repo/rpm/6/x86_64/	RPM yum repository	Latest	-
https://github.com/telefonicaid/fiware-cygnus	Cygnus code repostory at Github	Latest	-
https://github.com/telefonicaid/fiware-pep-steelskin	Steelskin PEP code repository at Github	Latest	-
https://github.com/telefonicaid/fiware-orion	Orion Context Broker code repository at Github	Latest	-
http://bit.ly/fiware-orion024-vbox	This corresponds to the VirtualBox image that we provide as "bonus track" to the official deployment mechanisms in FIWARE (FIWARE Lab VMs, RPMs dockers, etc.). Note we don't update VirtualBox image (a costly operation) each time a new Orion version is generated (each month, normally), although it is really easy for the user to get the last Orion version once the image is deployed (just "sudo yum install contextBroker"). (User/pass: fiware/fiware and root/fiware)	0.24.0	October 2015

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Context Information Management

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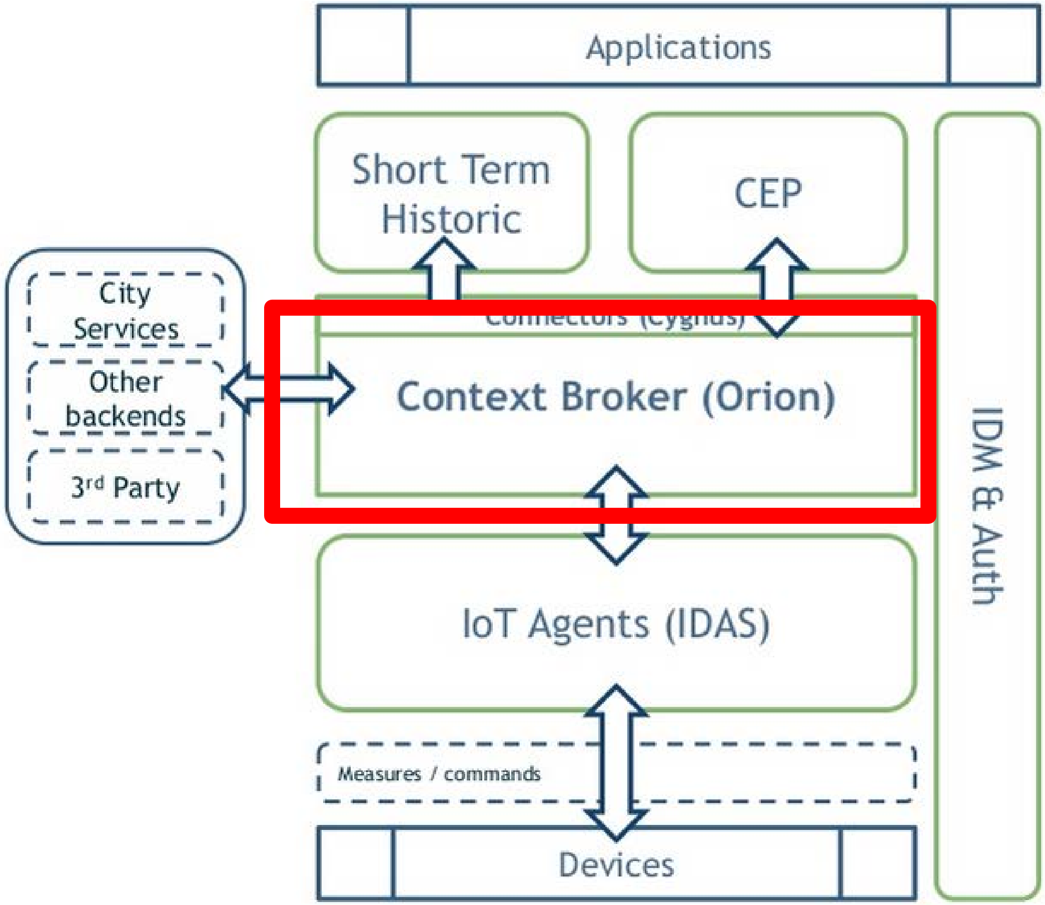
Context information management with FIWARE



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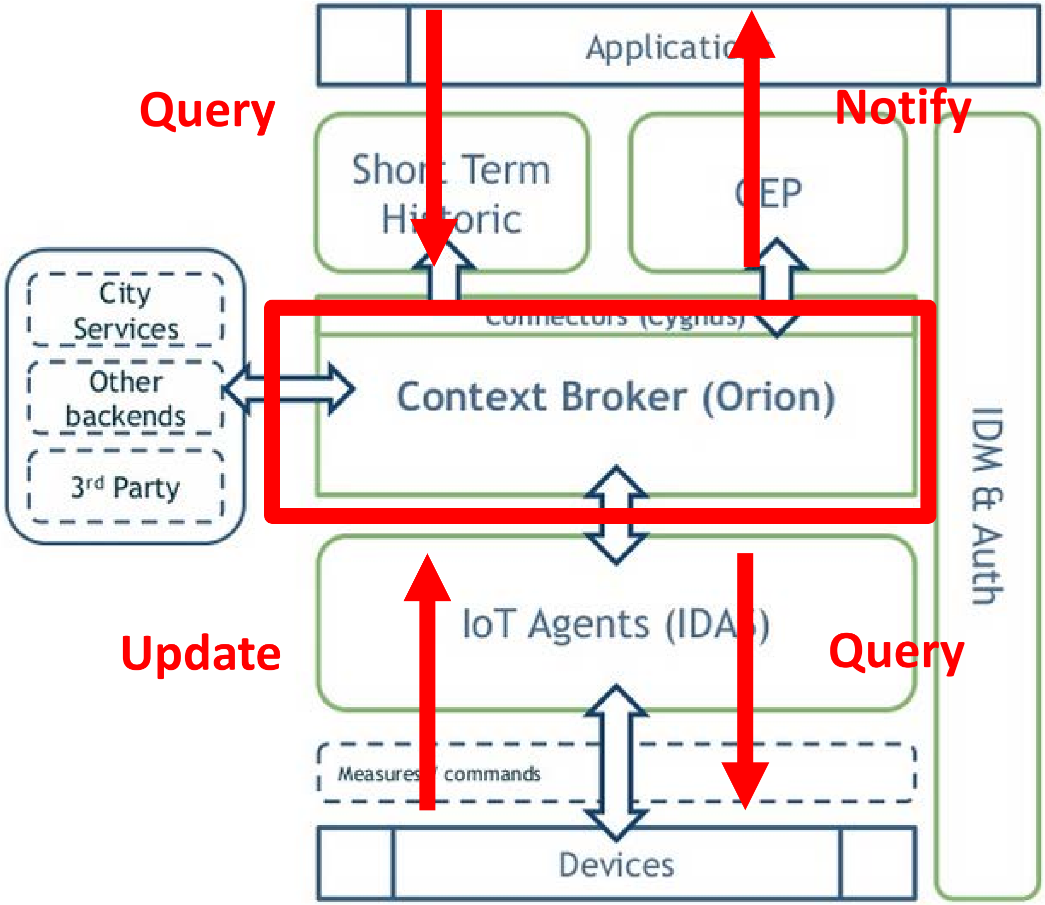
Context information management with FIWARE



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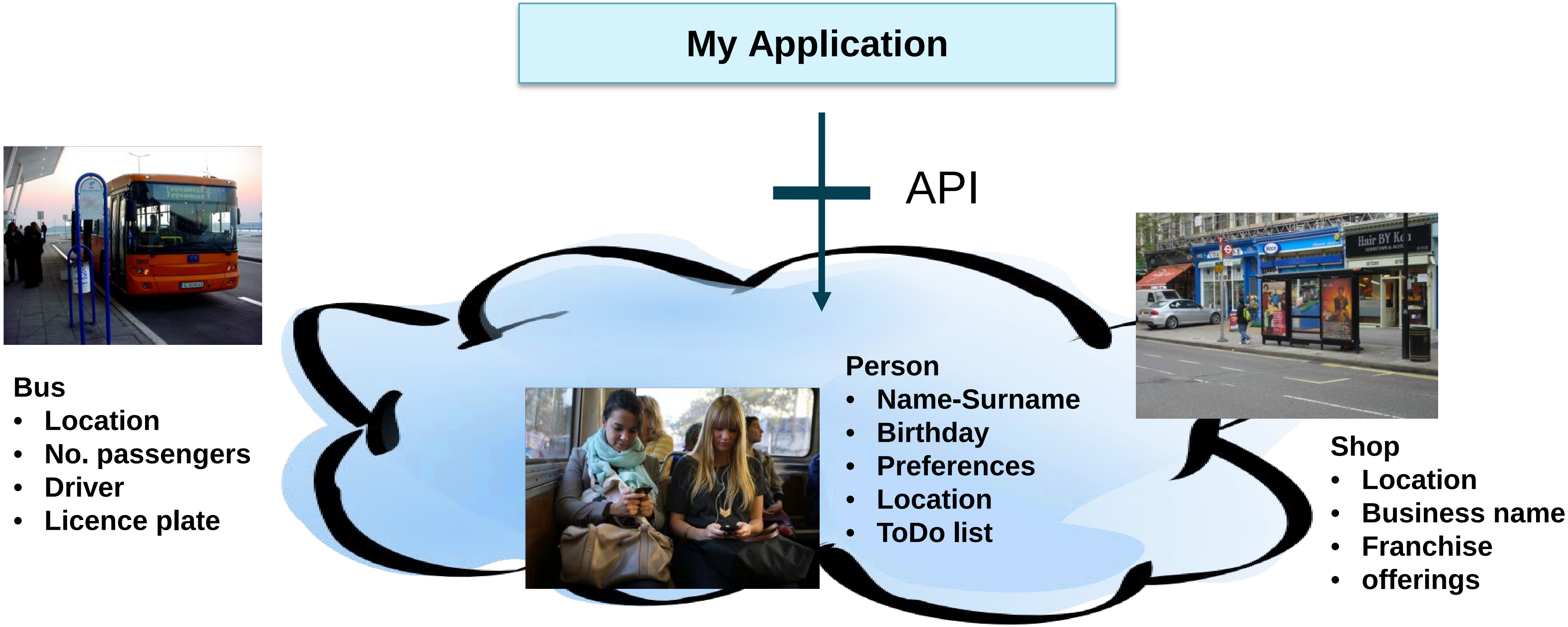
Context information management with FIWARE

Context Information The value of the attributes that characterize entities in the world relevant to applications



My Application

API

Bus
- **Location**
- **No. passengers**
- **Driver**
- **Licence plate**

Person
- **Name-Surname**
- **Birthday**
- **Preferences**
- **Location**
- **ToDo list**

Shop
- **Location**
- **Business name**
- **Franchise**
- **offerings**

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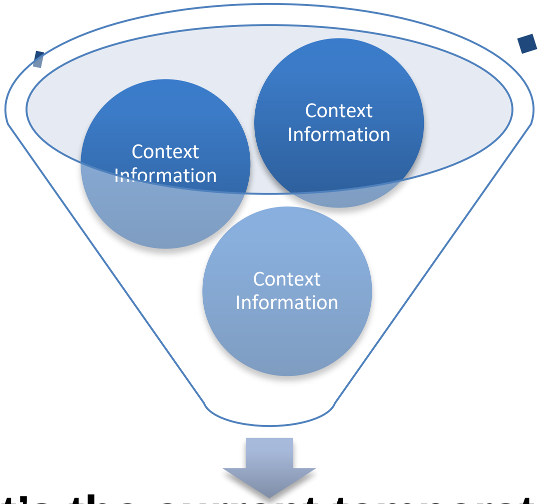
Context information management with FIWARE

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

A sensor in a pedestrian street

A person from his smartphone

The Public Bus Transport Management system



What’s the current temperature?

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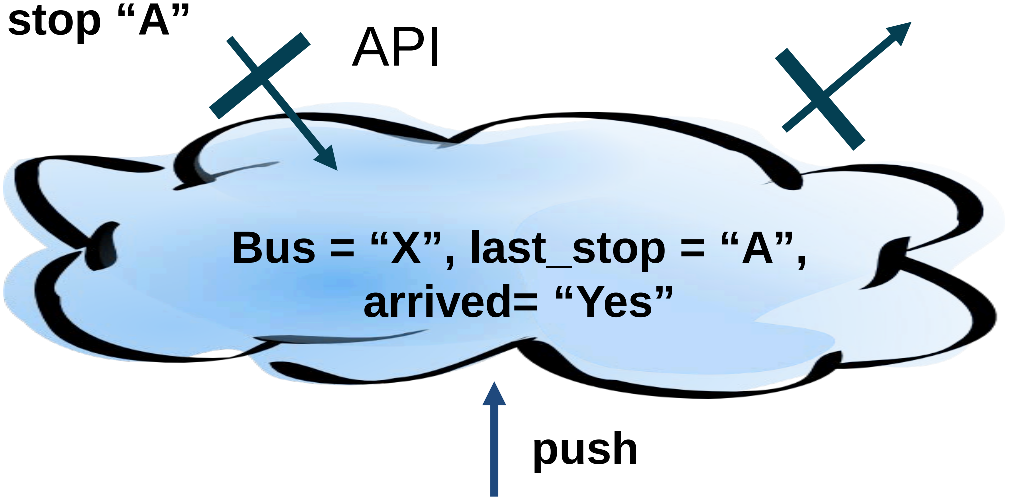
Context information management with FIWARE

Example of things we can do with context information

Get notified when an update on context information takes place

Notify me when bus "X" arrives at the bus stop "A"



API

Bus = "X", last_stop = "A", arrived= "Yes"

push

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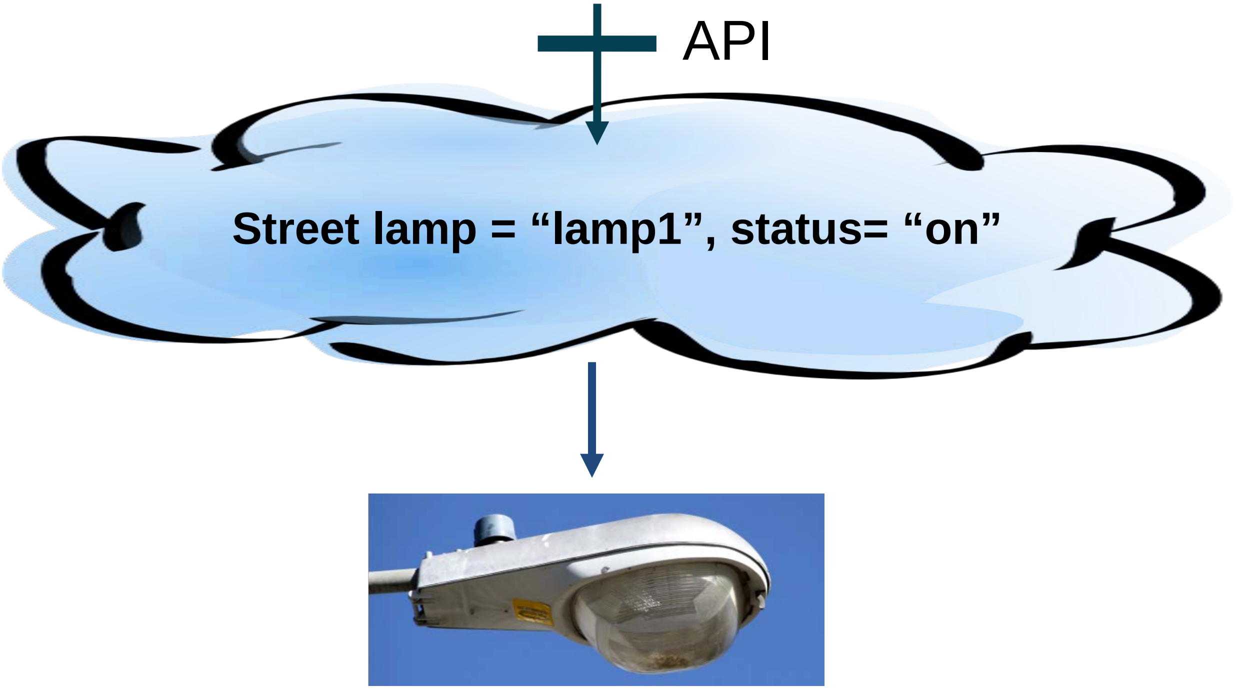
Context information management with FIWARE

Example of things we can do with context information

Acting on devices can be as easy as changing the value of attributes linked to its corresponding entity

Street Lamp lamp1.status ← "on"



API

Street lamp = "lamp1", status= "on"

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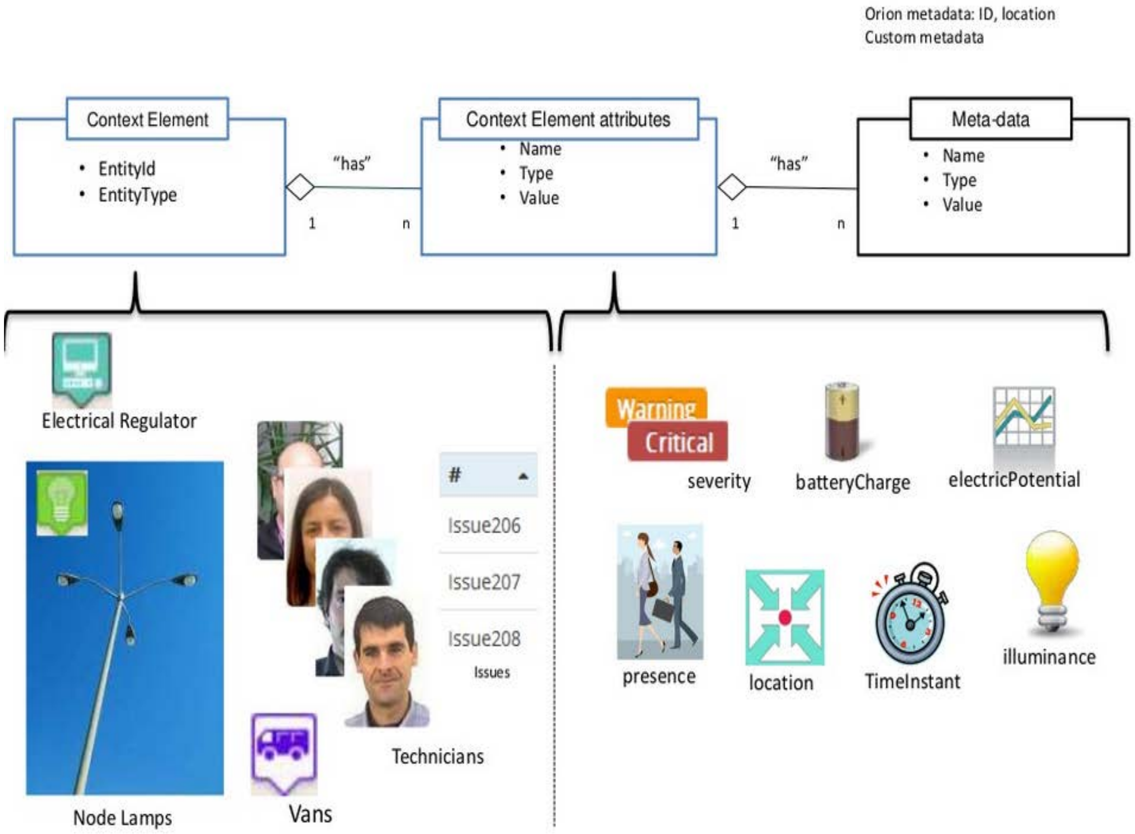
Context information management with FIWARE

The NGSI information model

NGSI is based on the definition of entities and attributes.



Entity: virtual representation of all kind of physical objects in the real world (lamps, rooms, people). Each entity has an ID and a type.

Attributes: any available information on physical entities are expressed as attributes of virtual entities. The attributes also have a name and a type.

For example: the temperature of the body of Jonh would be represented as an attribute named "body_temperature" and type: Temperature.

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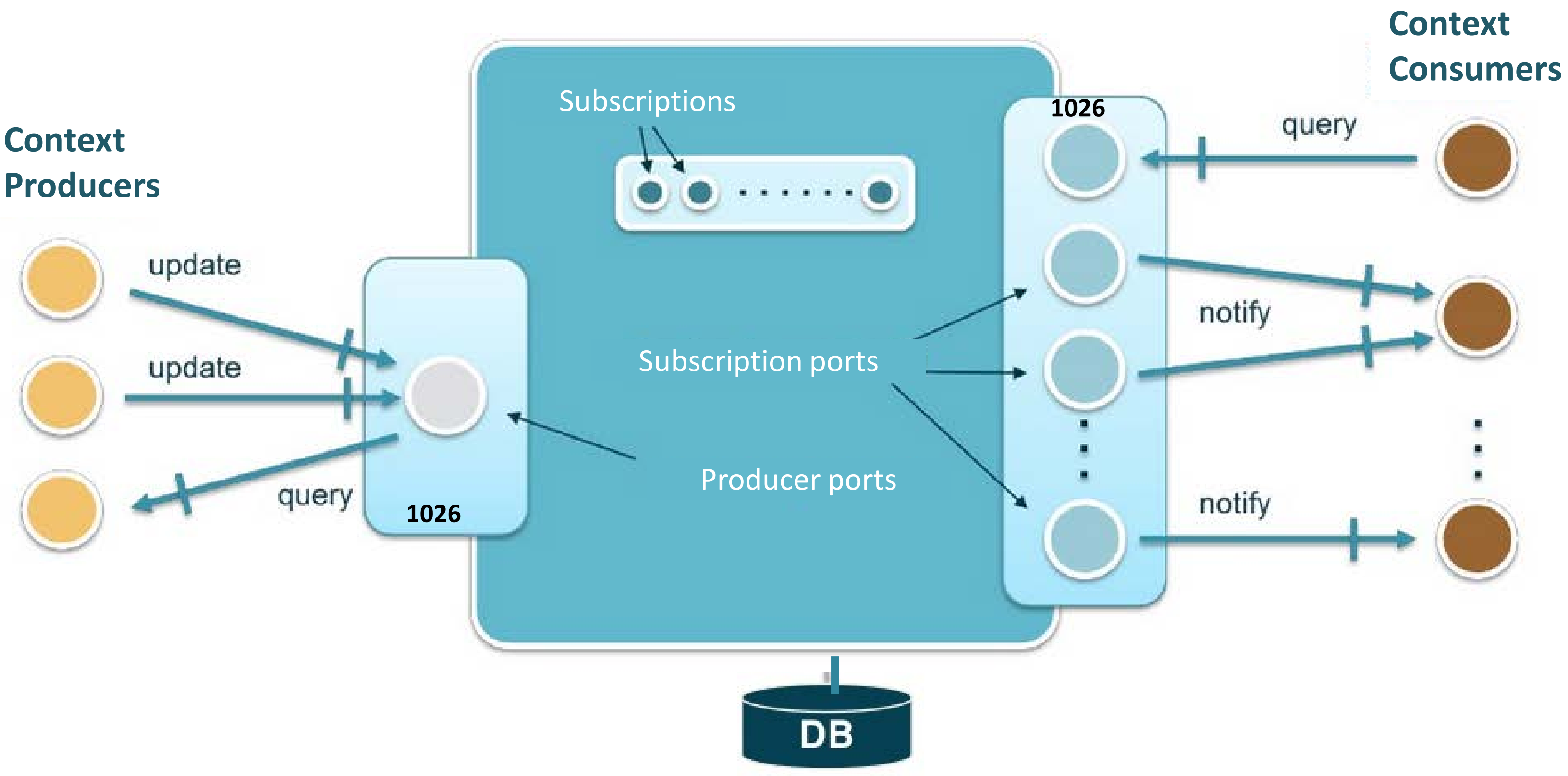
Context information management with FIWARE

Context Broker (API FIWARE NGSI 10)

REST API (XML & JSON Rendering)



MongoDB
It does not store historical information

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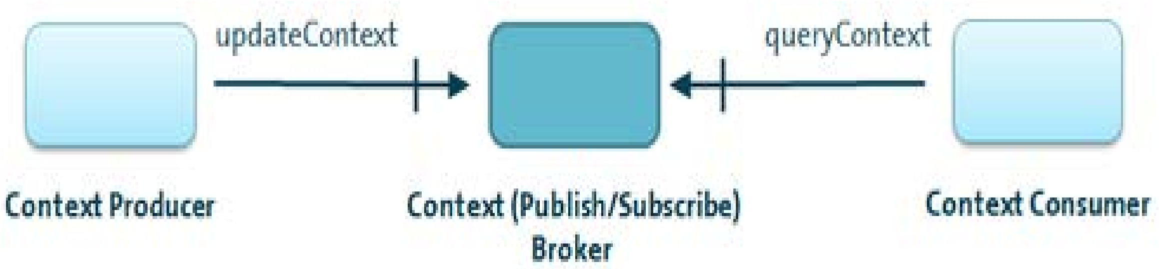
Context information management with FIWARE

Basic interaction



- ✓**Context producers** publish data: **Create a new entity or updating an existing one.**

- ✓Context Data is persisted by the Context Broker

- ✓**Context consumers** can **query context data.**

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Interacting with Orion Context Broker

A REST client can be used to send http requests to Orion CB. It is necessary to specify:

- The **URL**: http://207.249.127.46:1026/v2/...
- HTTP **method** (GET, POST, PUT, DELETE, OPTIONS, HEAD, TRACE, CONNECT)
- **Headers**:
  - ✓ **Content-Type: application/json** – indicating content will be send in json
  - ✓ **Accept: application/json** – indicating that the answer will be received in json
- A **body**

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Create an entity

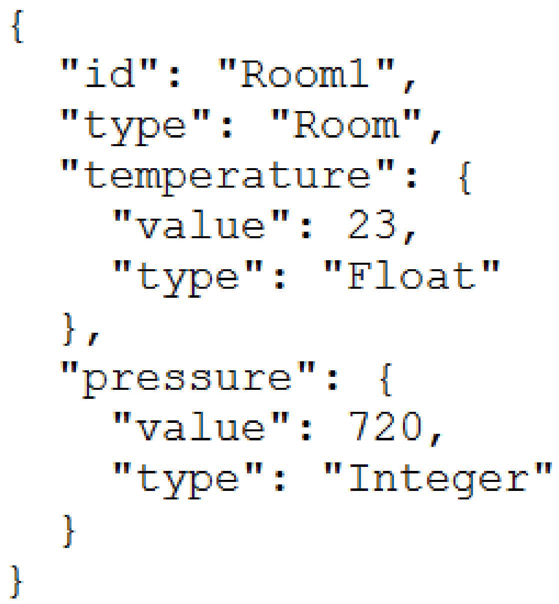
URL: http://207.249.127.46:1026/v2/entities

HTTP **method:** POST

Headers:

- ✓ **Content-Type: application/json**

Body:



```
{
  "id": "Room1",
  "type": "Room",
  "temperature": {
    "value": 23,
    "type": "Float"
  },
  "pressure": {
    "value": 720,
    "type": "Integer"
  }
}
```

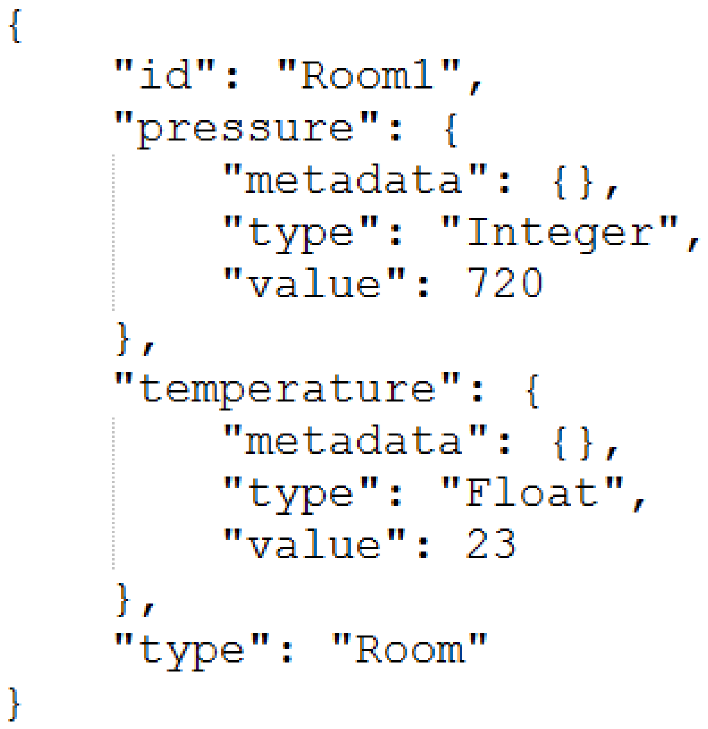
Query all the entities

URL: http://207.249.127.46:1026/v2/entities

HTTP **method:** GET

Headers:

- ✓ **Accept: application/json**



```
{
    "id": "Room1",
    "pressure": {
        "metadata": {},
        "type": "Integer",
        "value": 720
    },
    "temperature": {
        "metadata": {},
        "type": "Float",
        "value": 23
    },
    "type": "Room"
}
```

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Query an entity

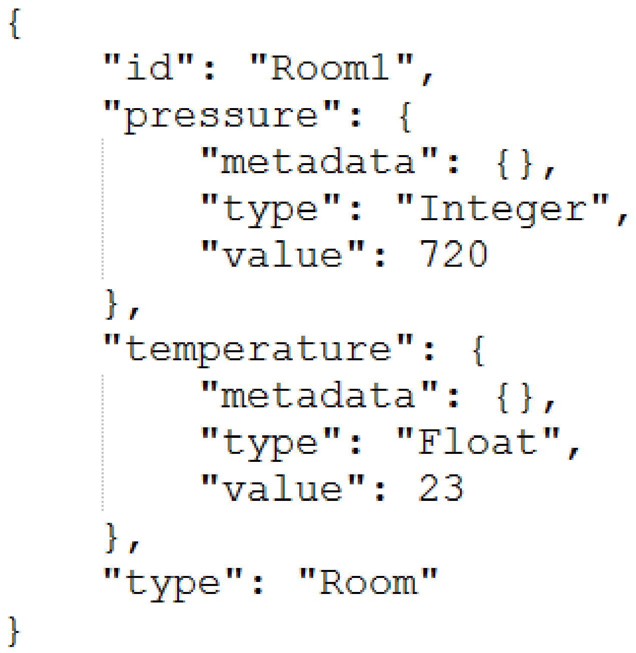
URL: http://207.249.127.46:1026/v2/entities/Room1

http://207.249.127.46:1026/v2/entities/Room1?type=Room

HTTP **method:** GET

Headers:

- ✓ **Accept: application/json**



```
{
    "id": "Room1",
    "pressure": {
        "metadata": {},
        "type": "Integer",
        "value": 720
    },
    "temperature": {
        "metadata": {},
        "type": "Float",
        "value": 23
    },
    "type": "Room"
}
```

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Filters

URL:

http://207.249.127.46:1026/v2/entities?type=Room

http://207.249.127.46:1026/v2/entities?q=temperature>22

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Update an entity

URL: http://207.249.127.46:1026/v2/entities/Room1/attrs

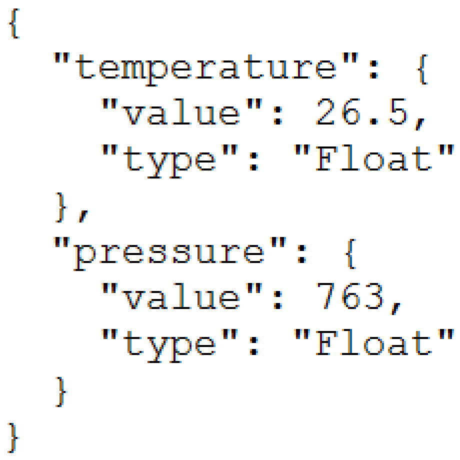
HTTP **method:** PATCH

This assumes that the attribute already exists in the entity.

Headers:

- ✓ **Content-Type: application/json**

Body:



```
{
  "temperature": {
    "value": 26.5,
    "type": "Float"
  },
  "pressure": {
    "value": 763,
    "type": "Float"
  }
}
```

the structure of the request is very similar to the one used by the entity creation operation, except that entity id and type are not included in the payload

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Update an entity

URL:
http://207.249.127.46:1026/v2/entities/Room1/attrs/temperature/value

HTTP **method:** PUT

Headers:

- ✓ **Content-Type: text/plain**

Body:

```
28.5
```

the structure of the request is very similar to the one used by the entity creation operation, except that entity id and type are not included in the payload

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Subscriptions

The operations to create, query and update entities are the basic building blocks for **synchronous** context producer and context consumer applications.

Orion Context Broker supports the ability to subscribe to context information so when **"something“,** the application will get an **asynchronous notification**.

URL: http://207.249.127.46:1026/v2/subscriptions

HTTP **method:** POST

Content-Type: application/json

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Thank you

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