FED4IoT

European Pilot Integration – Smart Parking
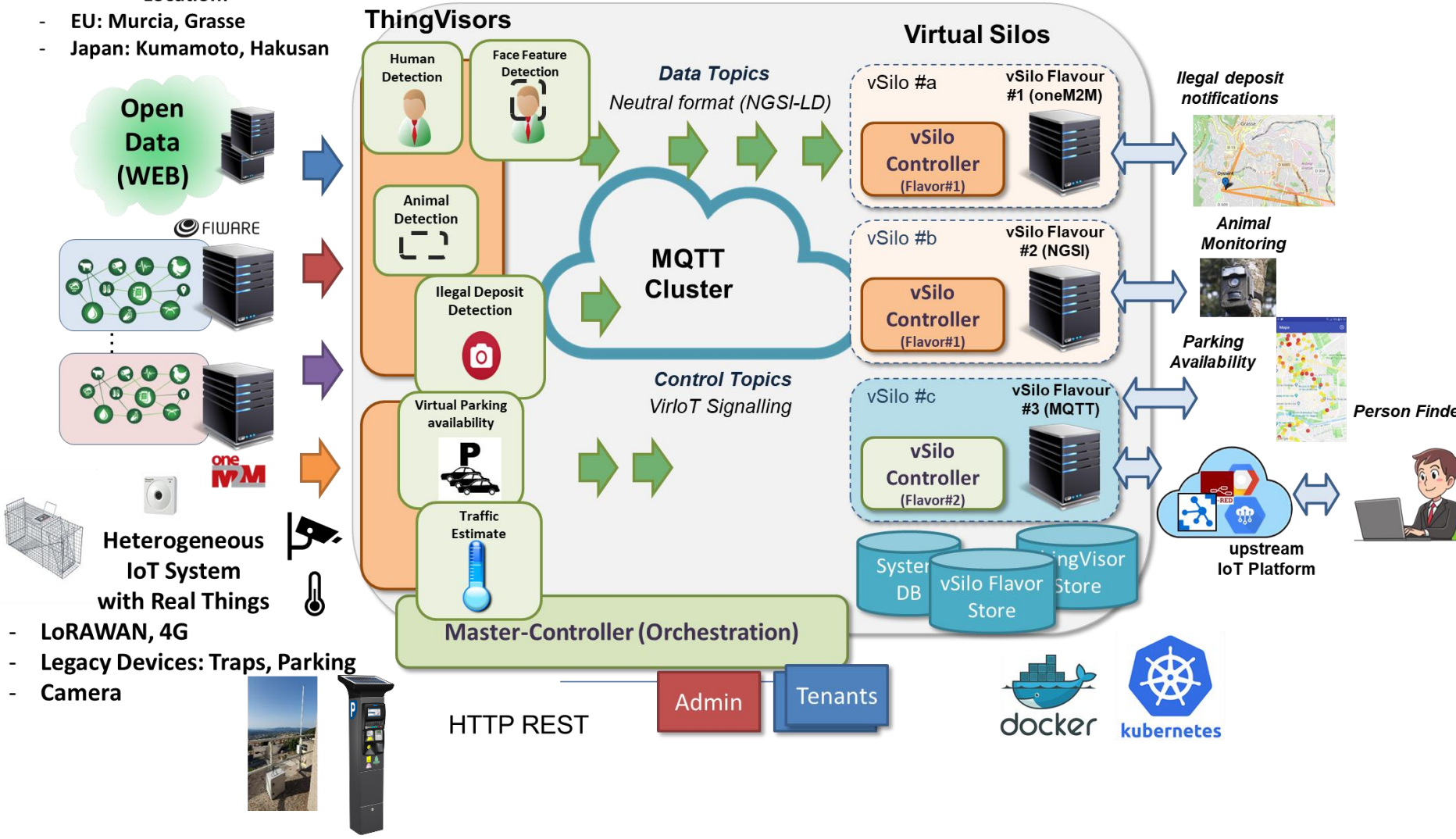
Odin Solutions

Antonio Skarmeta

skarmeta@odins.es

Pilots

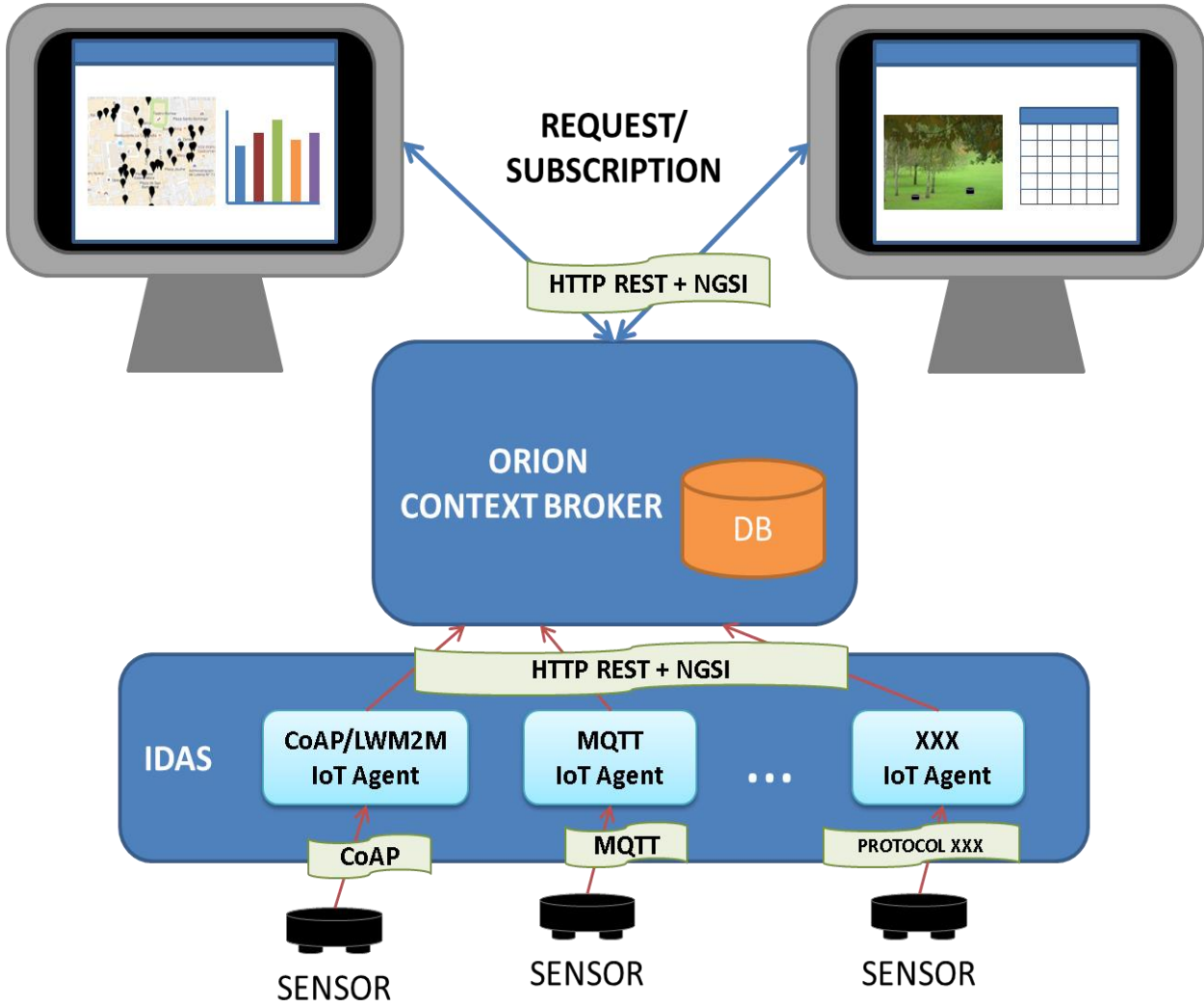# Murcia: MiMurcia Smart City

- Integrate data from sensors, open data sources and internal database by means of common data model (NSGI)

- Provide facilities for orchestrating new services based on connecting different municipality areas of information

- Create new channels of communication with citizens based on social networks contextualized information

- Increase the efficiency of services and reaction time based on the real time information of the city

- Data publishing layer (OpenData)
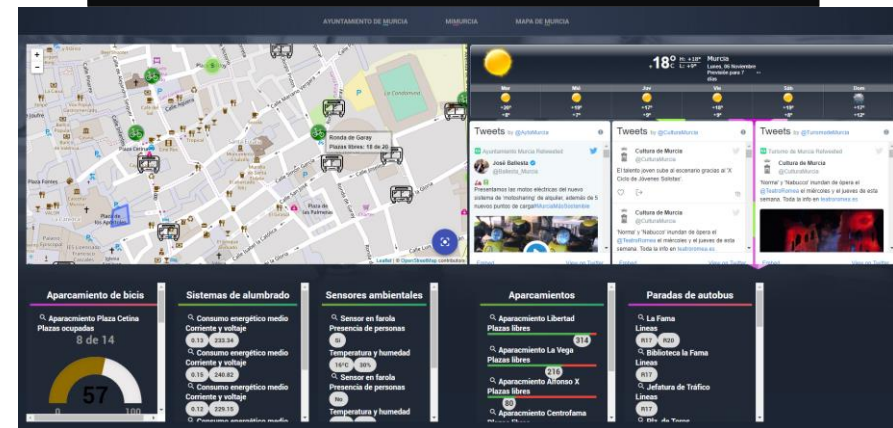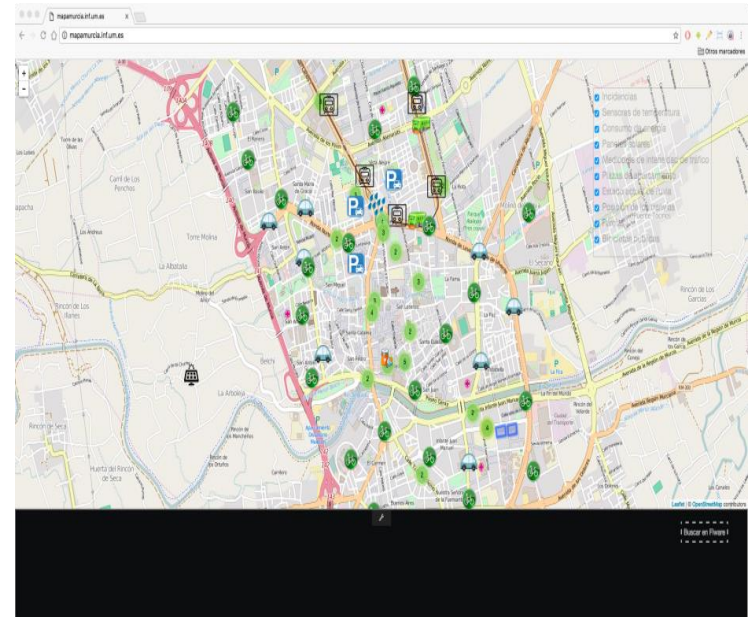
MiMurcia Platform

- Regulated Parking Service and private car parks

- Mix-modal public transport and the use of bicycle

- Traffic management

- Lighting system

- Watering systems for parks and gardens

- Noisy zones detection

- Waste collection

- Incidences of citizens

- Commerce promoting in the centre of the city (iBeacons)

REQUEST/ SUBSCRIPTION

HTTP REST + NGSI

ORION CONTEXT BROKER   DB

HTTP REST + NGSI

IDAS

CoAP/LWM2M IoT Agent

MQTT IoT Agent

· · ·

XXX IoT Agent

CoAP

MQTT

PROTOCOL XXX

SENSOR   SENSOR   SENSOR

Smart Parking

- Motivation
  - Reduction of time consuming task of finding free parking spot in a city

- Requirements
  - Solution which could be easily deployed in any city
  - Backend service with standard API
  - Unified data model
  - Easy integration of information from different sources of information

- Approach:
  - NGSI API and data model
  - Make the most of features and advantages of VirIoT platform
    - Interoperability
    - Application portability

Smart Parking – Murcia

ThingVisor integrates MiMurcia parking availability information and process it generating virtual sensors according to specific requirements of user: SmartParking TV, RPZ TV
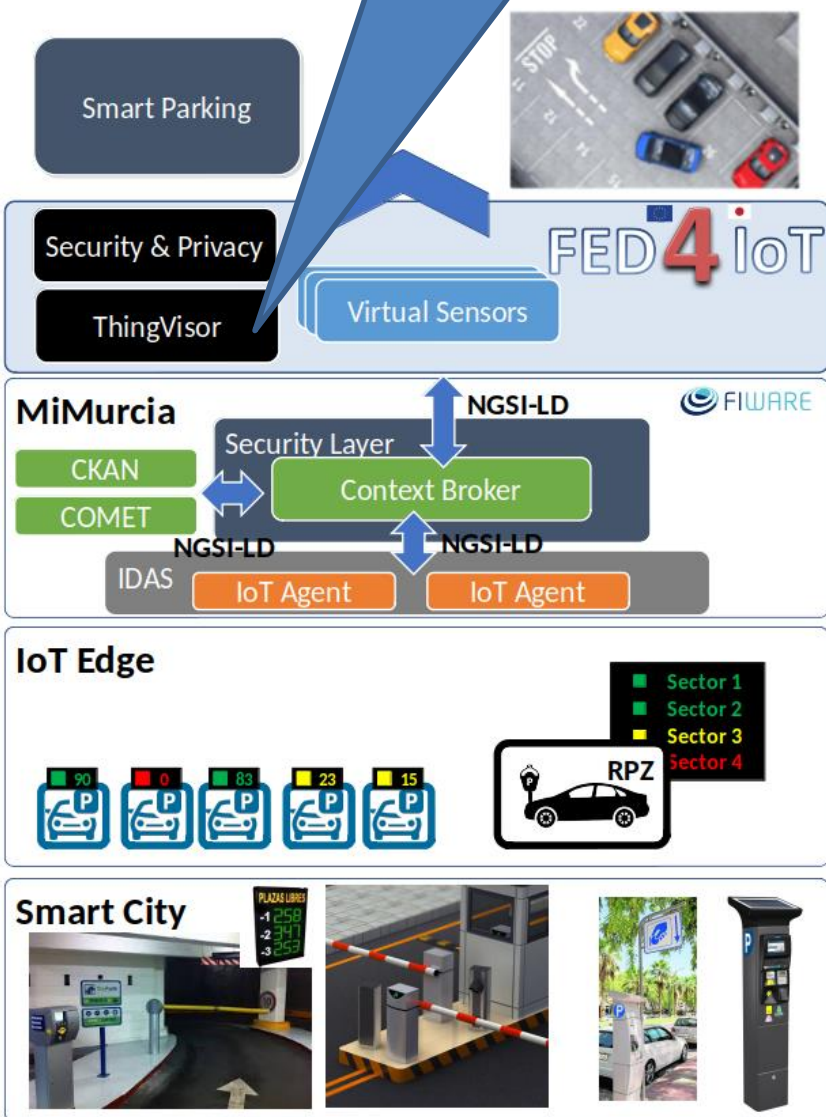
App & Services
- Smart Parking Application
- Map-based web interface/App
- User specifies selection criteria: destination location, estimated arrival time, estimated parking duration, the maximum permissible distance to the destination location, the maximum price of parking, etc.

Virtualisation
- NGSIv2 ThingVisor specific for Smart Parking
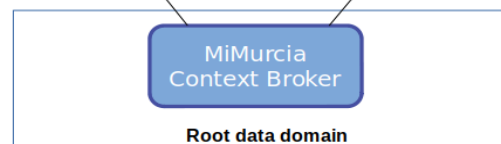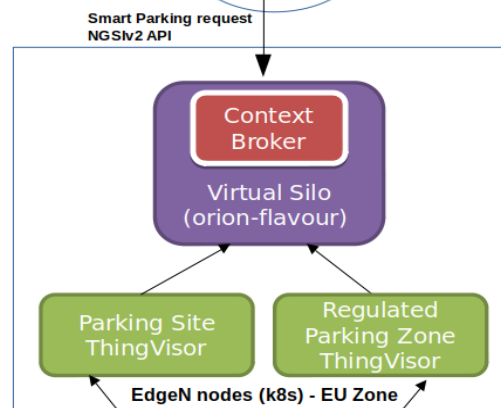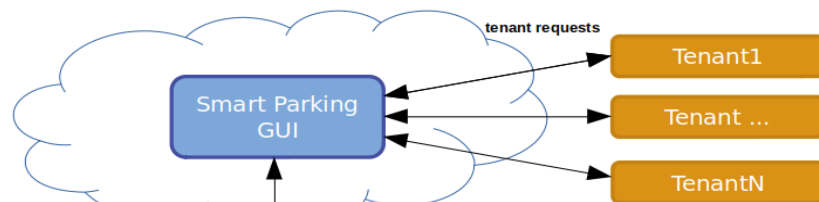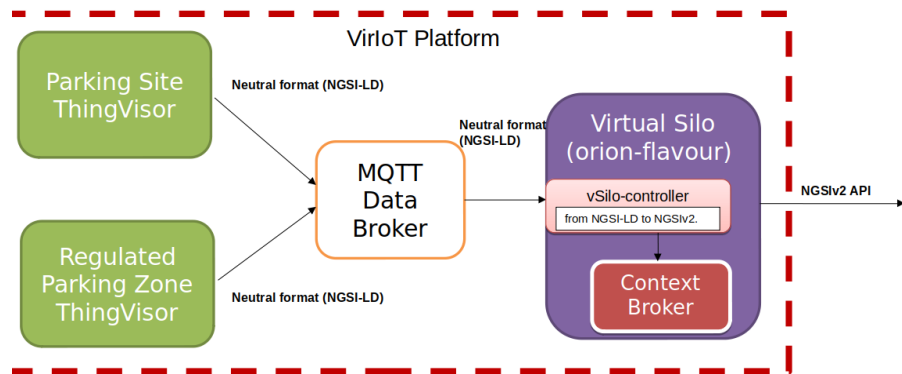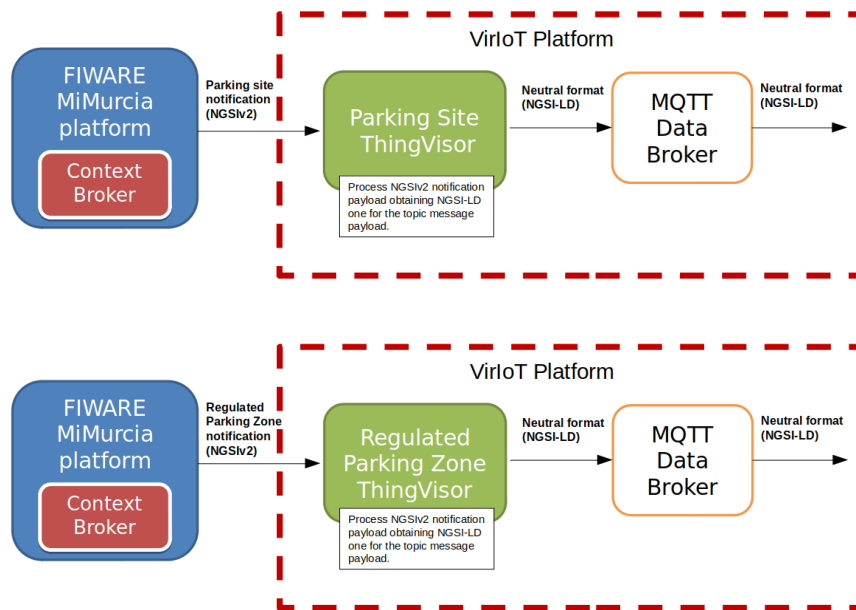- Aggregation of information on vThings

Root Data Domain
- Provides information about:
- Private parking site availability (every 5 min)
- Regulated Parking Zone tickets (at the end of the day)

Infrastructure
- Access control devs for parking site
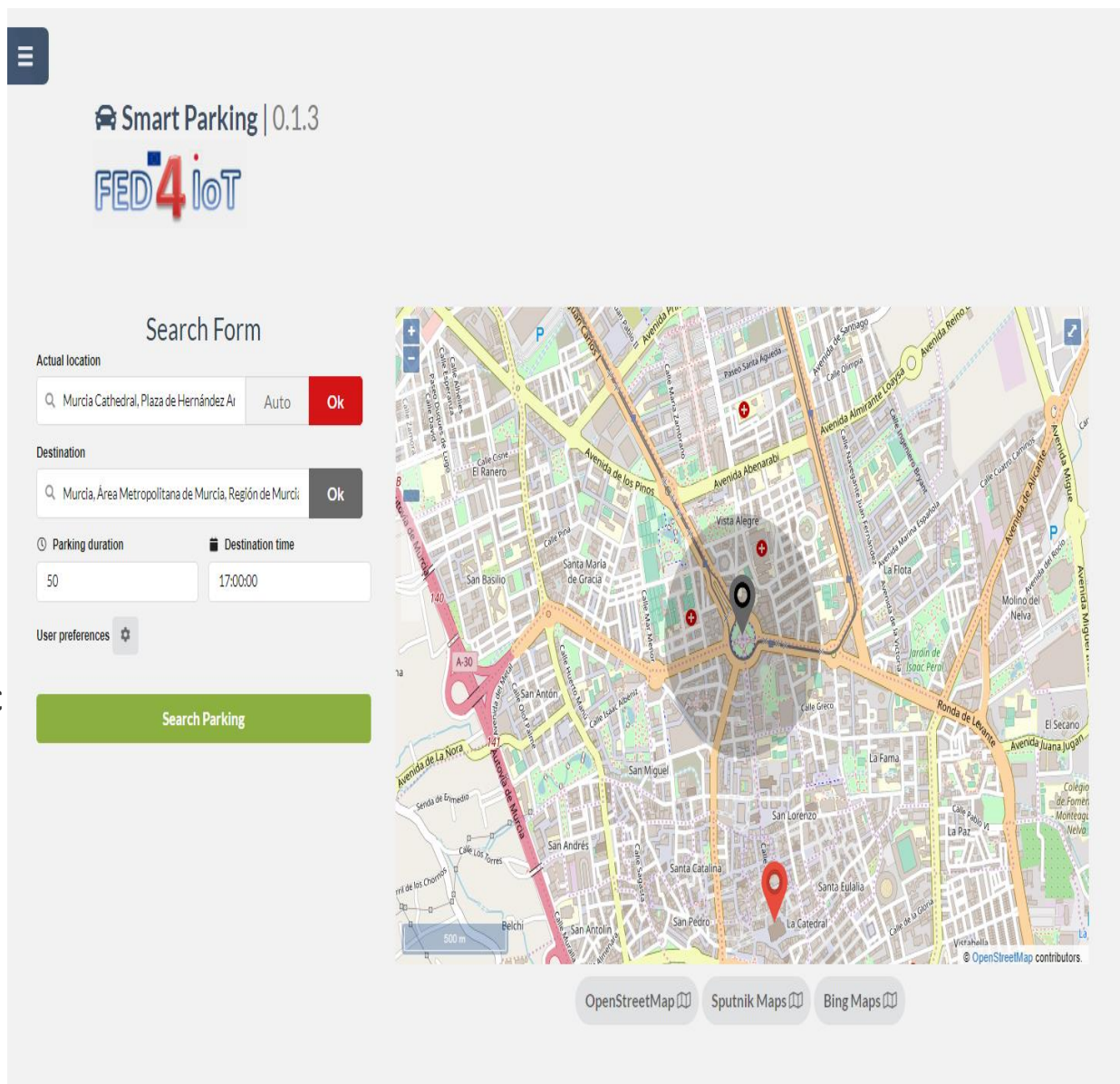- Parking-meters
- Network communication

Smart Parking – Murcia

- Information provided by RootDataDomain (MiMurcia Platform) is integrated into VirIoT thanks to the use of two different ThingVisors:
  - Parking Site TV and Regulated Parking Zone TV.
- A vSilo with a FIWARE flavour is deployed to receive this information.

Smart Parking – Murcia

- Pilot application:
  - Allows user to set:
    - Origin
    - Destination
    - parking duration
    - time of arrival
  - User can also specify other features:
    - max affordable prize
    - the use of electric car
    - mobility restrictions
    - the distance she can go walking

Smart Parking – Murcia

Smart Parking – Murcia - Entities
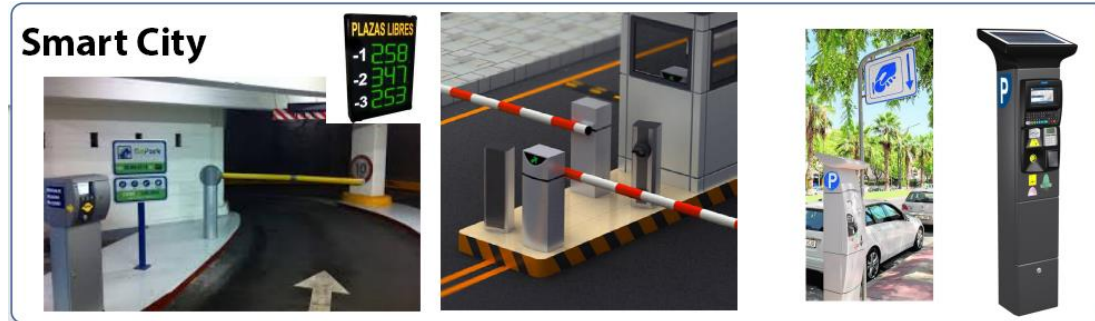
Type	Description
Parkingsite	This entity contains a harmonised description of a parking site.
Policy	This entity contains a harmonised description of a parking site policy.
Sector	This entity contains a harmonised description of a Regulated Parking Zone sector. Geolocation polygon of the sector
Parkingmeter	This entity contains a harmonised description of a Regulated Parking Zone parking meter. Related sector. Geolocation

Conclusion

- Interoperability
  - Enforce the concept of neutral format from the point of view of customers
  - Independent on the Root Data Domain technology
    - APIs and data models

- Reuse/sharing of real things
  - Exploiting different functionality of IoT devices
  - Real thing slicing

- Application portability
  - Independent of the city or country
  - Easy deployment

Thank you Questions?

Antonio Skarmeta

skarmeta@odins.es