Madrid Trial

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David Conde
david.conde.baena@acciona.com

WP2 trial sites: FI for end users of energy ecosystems

Objectives

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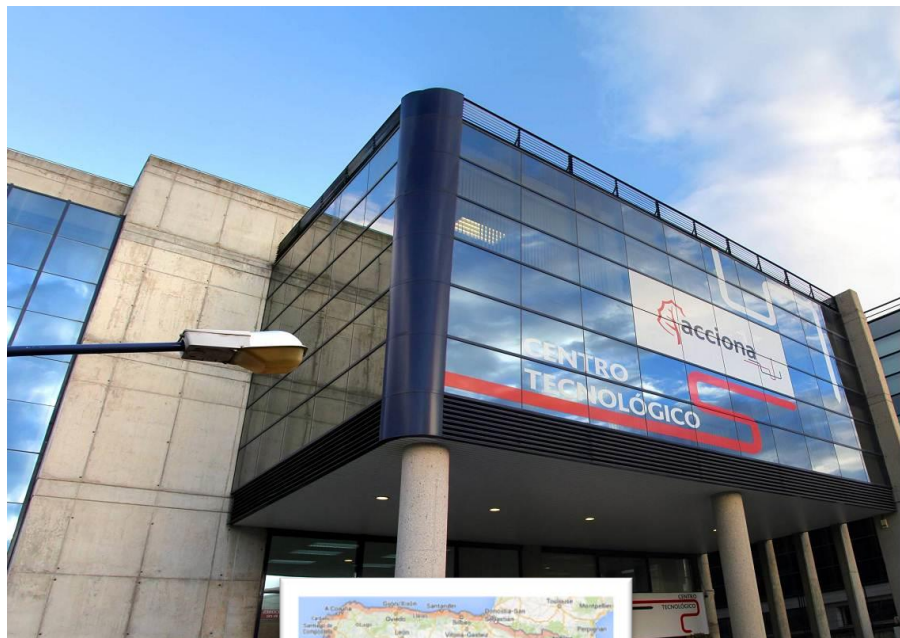
Development of an open IT-infrastructure to be used to develop and offer new Future Internet app-based solutions in the smart energy buildings domain.

Validation of FI Generic Enablers in the Smart Building domain

Enable value added services through an open FI based platform with FINESCE APIs offering rich data on energy needs and consumption patterns.

Derived objectives:
1. Provide access to the trial site data in a FI platform
2. Provide access to the FINESCE API for new applications development
3. Enable efficient energy consumption via FI technologies

Trial site Madrid

- ACCIONA's office building serves as test bed of innovative services based on FI platform

- This trial integrates energy generation and storage assets, as well as a building management system with remote real time monitoring

- This infrastructure is being complemented with the necessary ICT equipment for enabling the provision of new FI services
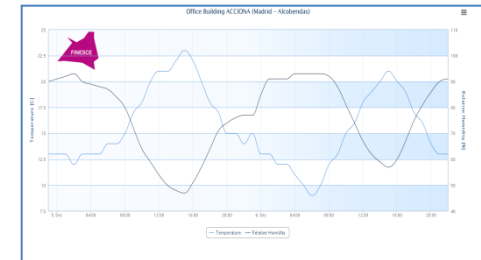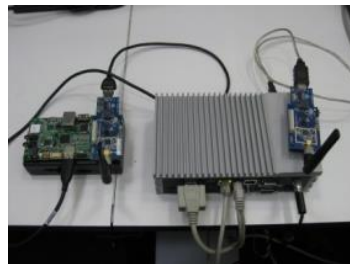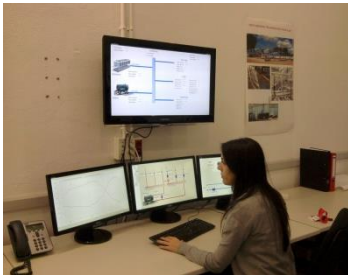
Trial site Madrid

The building is equipped with the next elements which could interact with external FI services:

- **Building Control Service:** This system gather information from different subsystems inside the building such as energy meters, air conditioning systems, comfort measurement devices, etc.
- **Micro-Grid:** This system is comprise by different elements such as PV panels, battery storage system, and
- **Sub-Metering infrastructure:** This system aims to provide granular energy metering inside the building to have more detailed information about the power consumption in different areas at building level.
- **Weather Forecasting module:** This service provides weather forecasting information from different Internet services.

System overview - Madrid
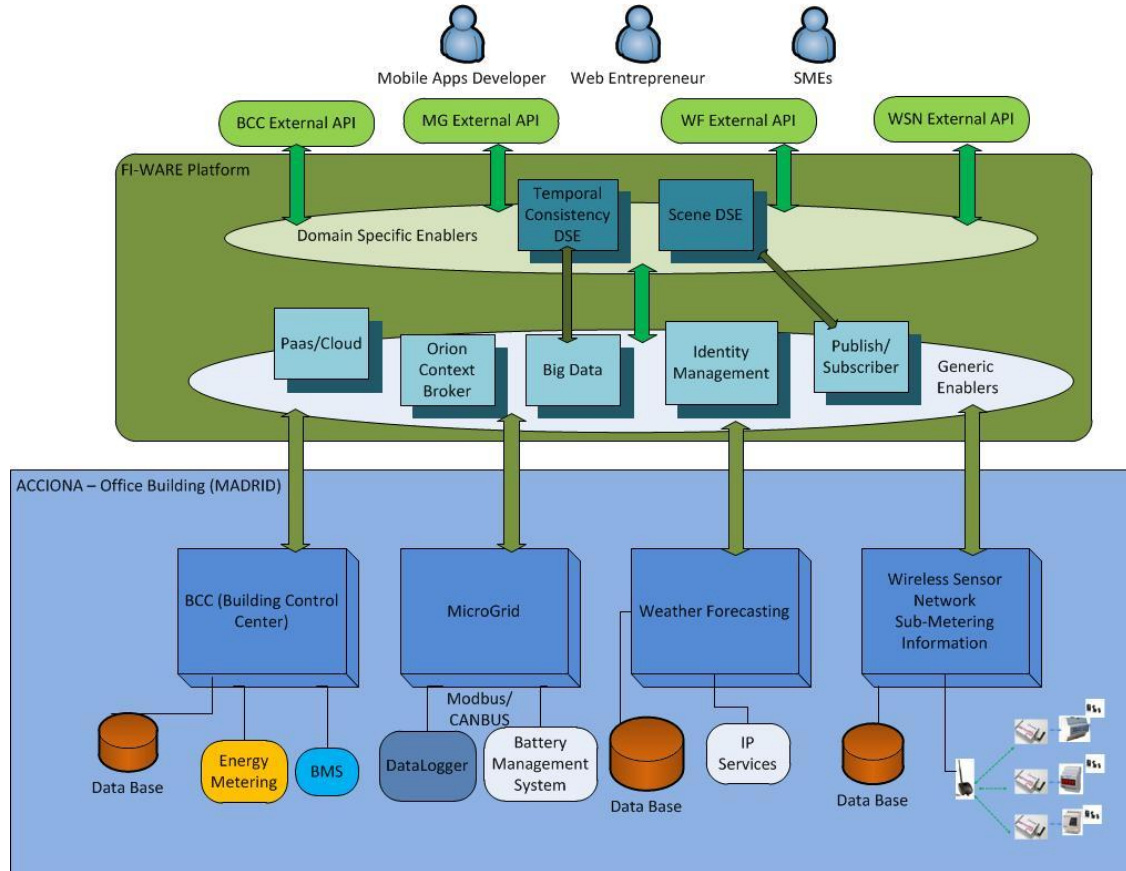
API content (Madrid trial)

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Service	Description
getPowerConsumption	Provides buildings' energy consumption information
getBuildingData	Provides different information about building conditions (temperature,humidity,HVAC)
getWeatherForecastingData	Provides weather forecast for the specific location
getMicroGridConditions	Provides information about the MicroGrid status

Trial Architecture diagrams - Madrid
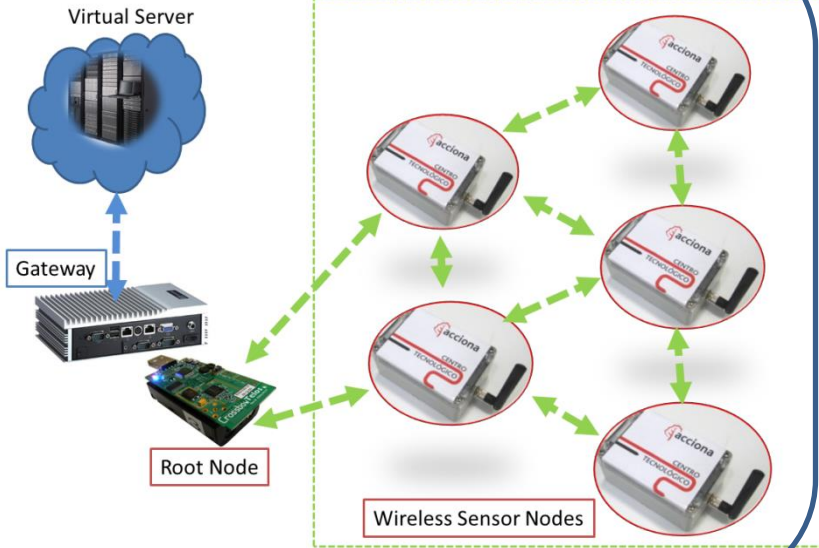
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Wireless Sensor Network Architecture

Previous

FI GEs Integration

Trial Architecture diagrams - Madrid
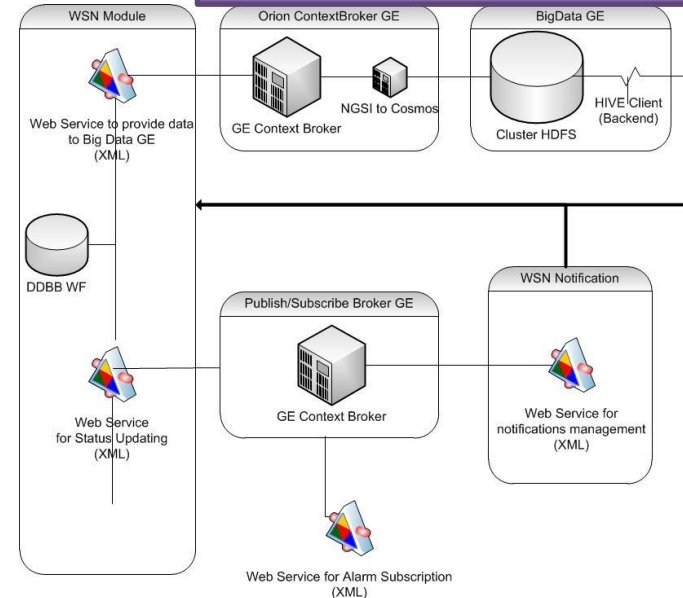
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Wireless Sensor Network Architecture

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Trial Architecture diagrams - Madrid

MicroGrid - Architecture

Previous

FI GEs Integration

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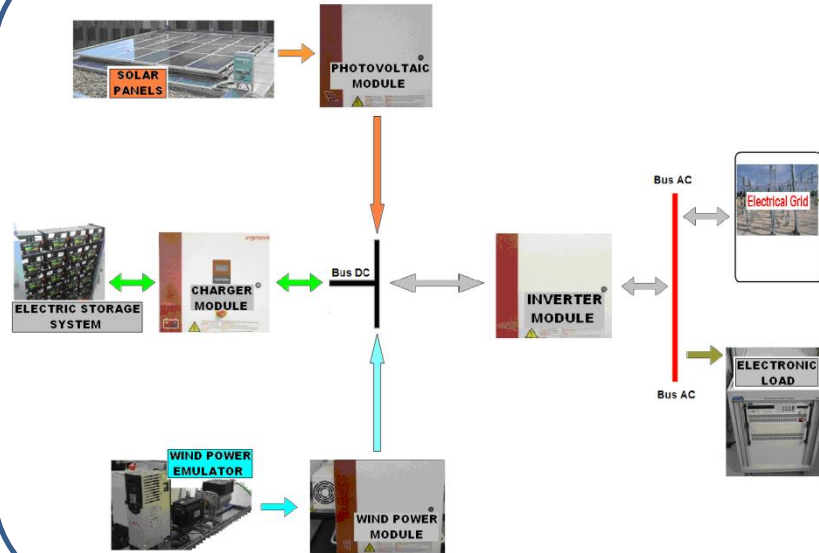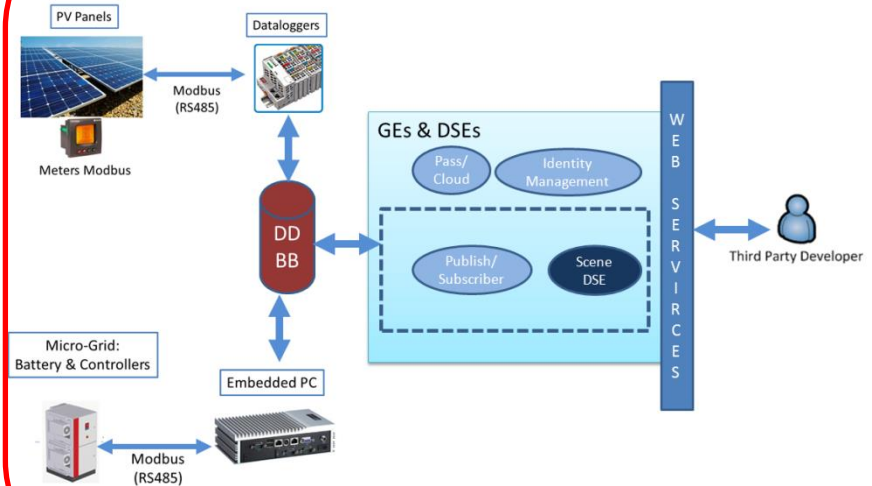
Trial Architecture diagrams - Madrid

MicroGrid - Architecture

FI GEs Integration

Trial Architecture diagrams - Madrid

Weather Forecasting Module Architecture

Previous
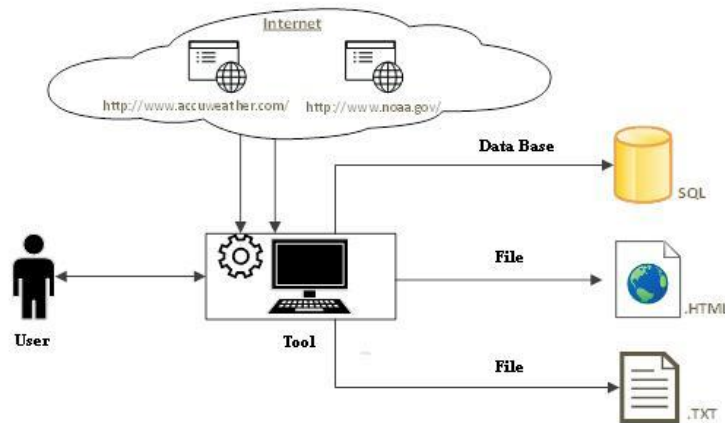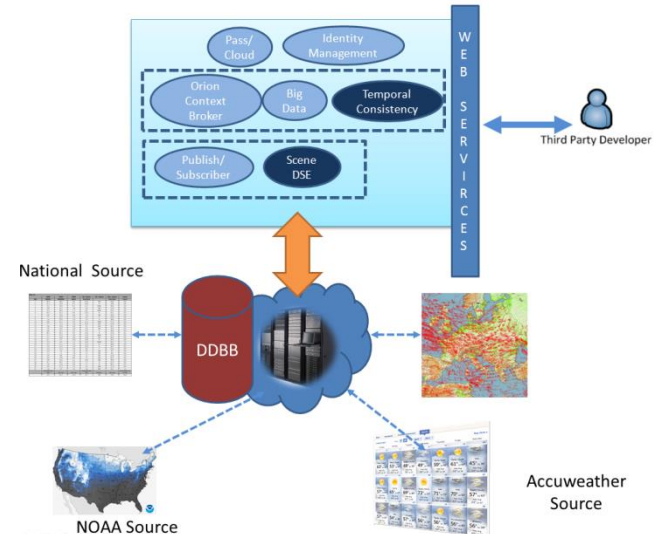
FI GEs Integration

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Trial Architecture diagrams - Madrid

Weather Forecasting Module Architecture

Trial Architecture diagrams - Madrid

Weather Forecasting Module Architecture

Trial Architecture diagrams - Madrid

Building Control Center Architecture

FI GEs Integration
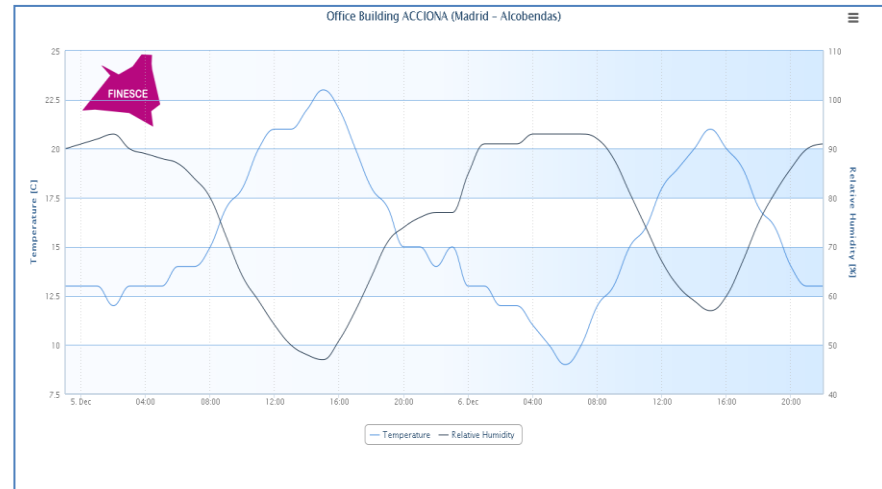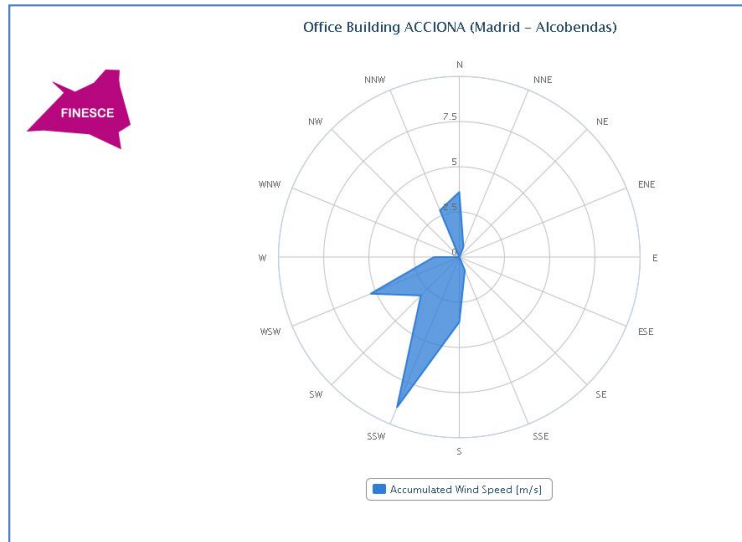
Trial Architecture diagrams - Madrid

Building Control Center Architecture

GEs Integration – Madrid Trial (Big Data)

GEs Integration – Madrid Trial (Big Data)

GEs Integration – (Publish/Subscriber)

Use cases, GEs and APIs for Madrid

Use cases
- Weather forecasting information as BMS input
- Energy sub metering in big buildings
- Multi-building energy management
- Micro-Grid data analysis

GE validated
- Big Data Analysis
- Data Handling – PPL
- Publish/Subscribe
- Orion Context Broker
- PAAS/Cloud

APIs
- **getPowerConsumption**: Provides buildings' energy consumption information
- **getBuildingData**: Provides different information about building conditions (temperature, humidity, HVAC status….)
- **getWeatherForecastingData**: Provides weather forecast for the building specific location
- **getMicroGridConditions**: Provides information about the MicroGrid status

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THANK YOU
FOR YOUR ATTENTION