Exploiting Aggregated Open Data from Smart Cities for the Future Internet Society

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Agenda

- Objectives and outcomes

- SMART-FI Platform - Main Facilities Overview

- SMART-FI Platform - Architecture

- Pilot Use Cases

    - CityGo Application Demo

- Lessons Learned

SMART – FI Project & Consortium

- ⌃ Project Start: April 2016
- ⌃ Project duration: 2016 - 2018
- ⌃ Funded within the ERA-Net Urban Europe Joint Programming Initiative

- ⌃ Project pilot cities

Objectives

⌃ **Homogenization** of heterogeneous **open data** and data services

⌃ **Data analytics services** for predictions & recommendations

⌃ Development of **facilities to orchestrate and interoperate services**

⌃ Alignment with **FIWARE platform**

⌃ Promote FIWARE as FIWARE foundation members

Main Outcomes

- The **SMART-FI open source solution based on a set of facilities** (homogeneous open data, analytics, service interoperability)

- Advance the **smart city** paradigm by providing **useful services to citizens**

- Evaluate the SMART-FI feasibility on **real smart city scenarios** (three pilots)
    - Very positive feedback from City of Malaga

SMART-FI Facilities

⌃ **Data normalization in Smart Cities**

      Functionality: Homogenization of heterogeneous open data and data services

⌃ **Data analytics microservices for Smart Cities**

      Functionality: Aggregation and development of data analytics services for predictions & recommendations.

⌃ **Services orchestration in Smart Cities**

   Functionality: Development of methodologies to deploy and interoperate services

Architecture
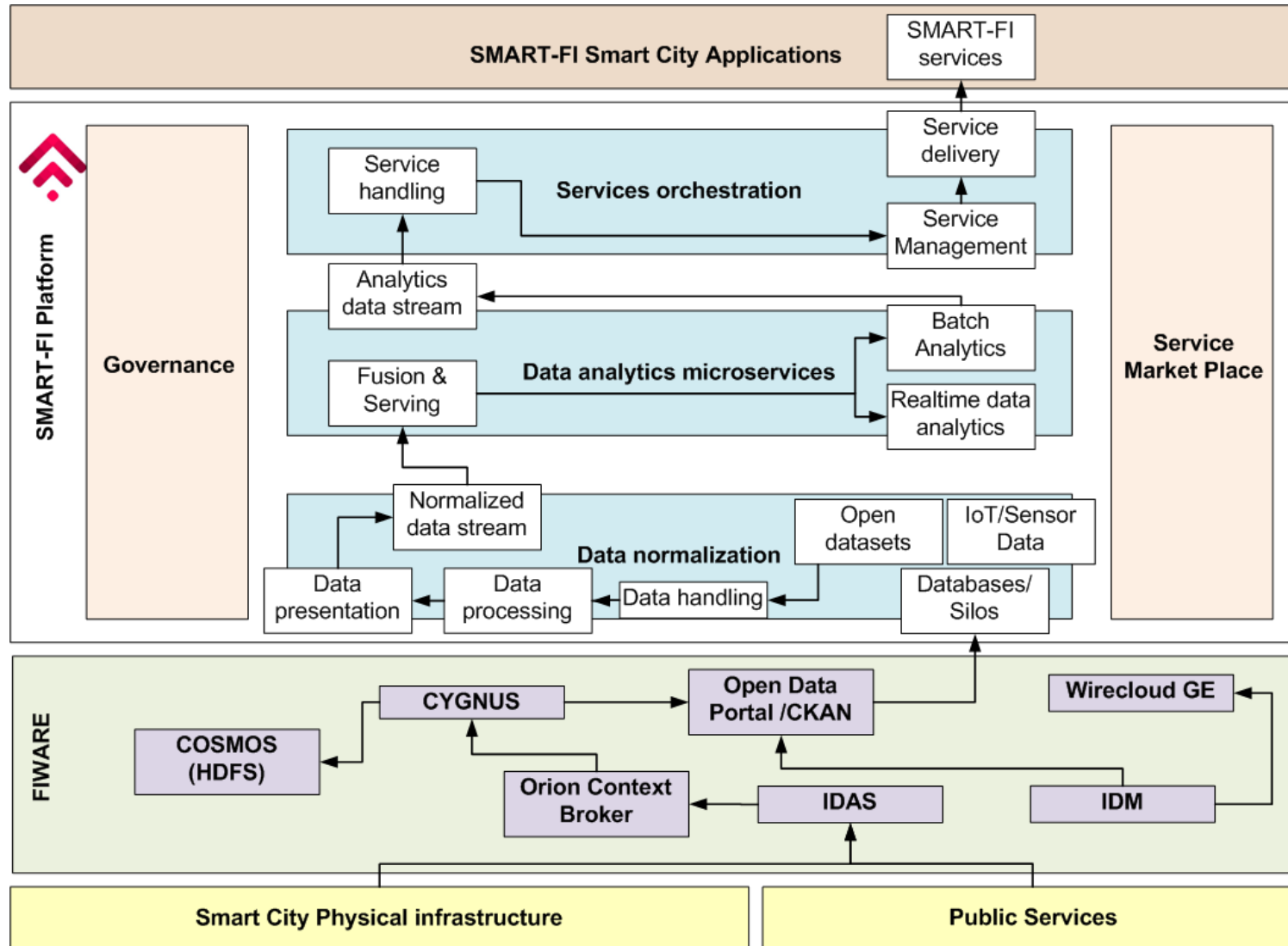
Main technologies and functionalities

- ⌃ Use **smart cities open data** and data services on top of **FIWARE**

  - ⌃ Analysis of **extension/improvement** of **functionalities** from **FIWARE GE**
  - ⌃ Planning of publishing results in **FIWARE Lab Store**
  - ⌃ **Integrate city sensors** with **FIWARE IoT** platform & consumption via NGSI-API

- ⌃ **Linked data** technologies and **semantic data**

  - ⌃ **Ontologies** to describe **urban environment** and **data**
  - ⌃ Generic means for **data semantic homogenization**
  - ⌃ Techniques for **semantic categorization** of data, **metadata** and structure

- ⌃ Exploit **aggregated open data** from smart cities

  - ⌃ Prepare data for **processing, trend analysis, ranking, filtering** & **aggregation**

Main technologies and functionalities

- Big data **analytics techniques** for predictions and recommendations

  - **Big data analytics techniques** following data processing, mining, filtering & aggregation methods
  - Tools to allow **analytics functions** for expected analytics quality of results for **prediction** & **recommendations**
  - Create **elastic micro services** acting as **data analytics services consumed by citizens**

- **Orchestration** & **adaptation methods** to deploy & interoperate services

  - **Model-based techniques** for **interoperability among apps** running in an isolated way based on **orchestration** & **adaptation methodologies**
  - **Data** exploitation in **multi-domains** with different purposes
  - **Services** and data **orchestrated** and **adapted** by **solving imcompatibilities**
  - Analise the usage of ESB services using a **mediator between services**

Use Case: Malaga City - Transport

http://www.city-go.eu/
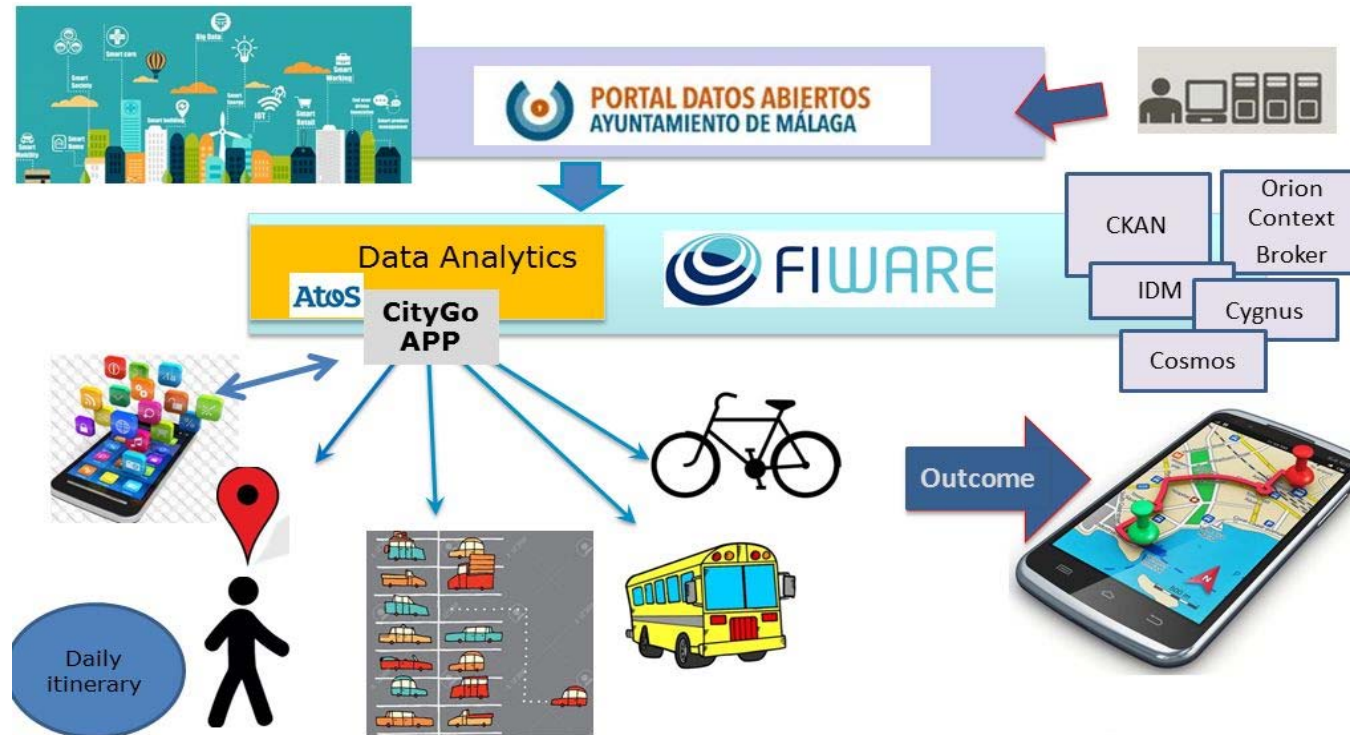
Use Case: Malatya City – Governance
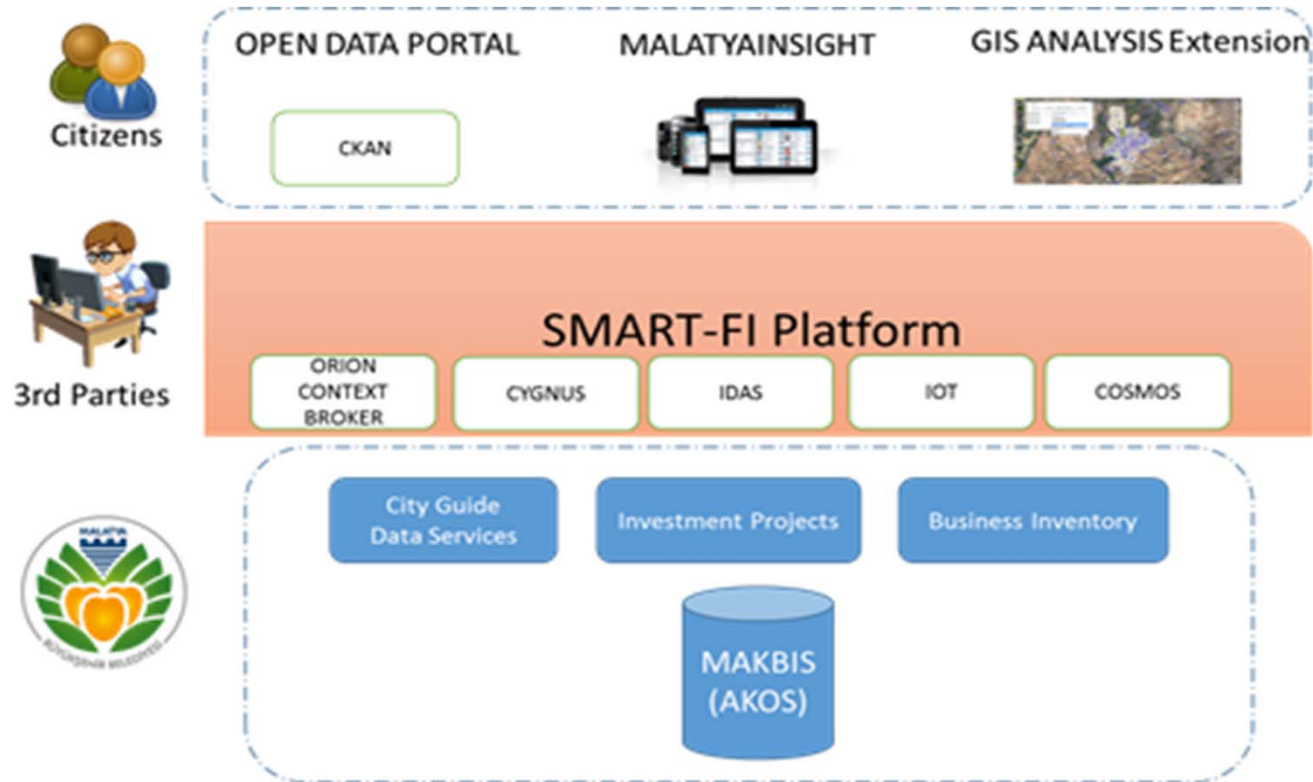
Use Case: Karlshamn City – Transport & Energy

CityGo Demo Video

https://www.youtube.com/watch?v=5F4ZrCRfkFg
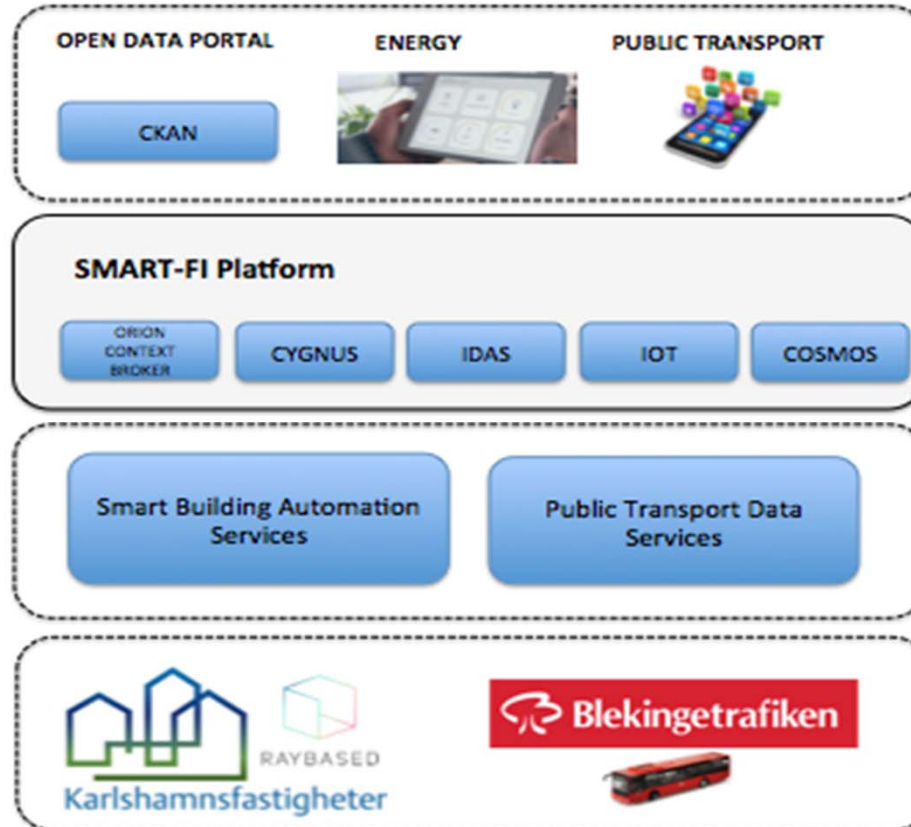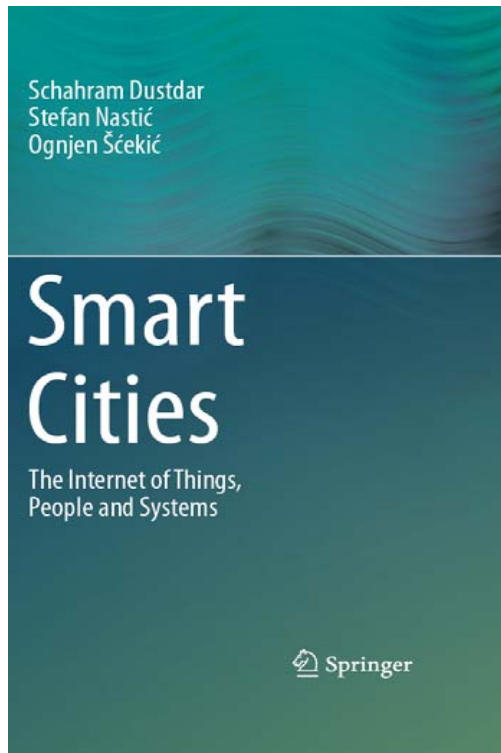
Thanks for your attention

Prof. Schahram Dustdar

Member of Academia Europaea
IBM Faculty award

IEEE TCSC Award for Excellence in Scalable Computing

IEEE TCSVC Outstanding Leadership Award in Services Computing

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IEEE Fellow

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