An European urban transition project towards more sustainable cities through innovative solutions, in the fields of mobility, energy and digital.

Smart City

Global project

Coordination: Cartif
European grant: 18 M€
30 partners, 6 countries

Period: Dec. 2016 - Sept. 2022
Demonstrators:
Hamburg, Helsinki, Nantes

@mySMARTLife_EU
https://mysmartlife.eu/

Helsinki demonstrator site

Coordination:
The City of Helsinki
European grant: 5,6 M€
7 partners

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City Infrastructure
IoT

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ACTION OVERVIEW

Helsinki

Urban Platform (A47+A48)

This action was implemented by Forum Virium Helsinki in collaboration with project partners. Report D2.16, dealing with different aspects of the Urban Platform was written in English and is available at https://mysmartlife.eu/publications-media/public-deliverables/

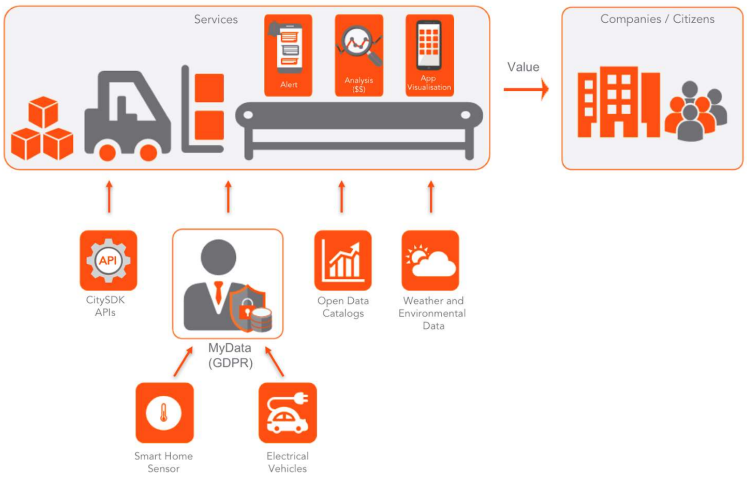
OBJECTIVES

› To extend the Helsinki Urban Data Platform to support the monitoring phase in collecting the metrics for the KPIs

› To promote a standardised, open and interoperable data model and API together as a joint effort with Hamburg and Nantes

› To integrate the urban platform with the city's digital twin

IMPLEMENTATION



Urban Platform Concept Vision

CHALLENGE / CONTEXT

The Urban Platforms are expected to form a core building block with which cities can better manage the current explosion in volumes of urban data. Using data platforms, cities can also share data between city services in order to improve residents' services and overall outcomes for society. Oftentimes, the urban platforms have focused on a limited number of datasets while the needs of the cities as organisations are much larger. In mySMARTLife, we were able to link live data with the city's 3D model, creating a digital twin to demonstrate situational awareness.

PROGRESS

mySMARTLife project set a new ambitious goal of defining the urban platform as a supportive element of the city's digital twin. For the IoT data acquisition, this approach meant more focus on the geospatial nature of the context. In practice, improved expression of the geographical context of the data was accomplished by utilising the SensorThings API. This API is produced by the Open Geospatial Consortium, an organisation for the standardisation of geospatial information. By ensuring the compatibility of IoT data with the SensorThings API, cities can also achieve better interoperability with the CityGML city information models. In addition, this helps cities to meet the requirements of the INSPIRE directive.

With the cities of Nantes and Hamburg, the goal was set to build a platform concept that would go beyond a typical IoT platform. The ICT specialists of the cities met several times to work on common specifications. New requirements were set in relation to how the platform handles geospatial data in an interoperable way to better meet the needs of digital twins and 3D city models, including the Helsinki Climate Atlas (see Infosheet). It was expected that the sensor observations would provide up to date insights as dynamic attributes of digital twins.

In Helsinki, the Urban Platform evolved through several versions during the mySMARTLife project. The first iteration of the platform was an IoT platform for data acquisition from IoT sensors. At the end of the project, it had become a data platform capable of processing and handling real-time data streams. The variety of actions in the project have helped to define the data models of the platform so that they are applicable to several domains. They are suitable for data from buildings, mobility and environmental monitoring, among others.

The need for enterprise-grade performance and usability of an urban data platform became evident. For this reason, the implementation of the Helsinki Urban Platform is currently based on well-known and mature products such as Apache Camel, Apache Kafka and Snowflake data lake. The key components are mainly open source and ready to be scaled up to support the needs of the city. The components defined in mySMARTLife were used when the city created the first open data pipelines that were used to monitor the usage of outdoor exercising equipment and the water temperatures of swimming places with IoT sensors.

The platform vision was presented at the IEEE Intelligent Systems 2018 seminar. The seminar paper has so far received 40 citations and over 2.500 reads.

LESSONS LEARNT

- While the needs of the project could have been met with many existing data acquisition platforms, special innovative solutions were developed in the project to improve data interoperability and quality for the urban context, especially the geospatial dimension of the smart city data.
- Modern data systems are developed in an iterative way: an agile, iterative process creates more innovative and up to date solutions than the traditional waterfall approach. A 5-year project left room for new ideas and revisiting and updating concepts that turned out to bring limitations.
- During the project, the role of a digital twin in the smart city context has become clearer. It is essential to understand the spatial nature of data in order to be able to link the geospatial features with the attributes created with sensors or other live data sources.

FURTHER DEVELOPMENT / NEXT STEPS

The work on the digital transformation is now continuing under the **living-in.eu** initiative with close collaboration with Open & Agile Smart Cities (OASC). In addition, the mySMARTLife Urban Platform was the basis for the Urban Open Platform concept in FinEst Twins cross-border research programme under Horizon 2020.

my SMART Life

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Helsinki HELEN FORUM VIRIUM HELSINKI VTT Metropolia SALUSFIN FOURDEG