

SYNCHRONICITY

Interoperability in practice: results from SynchroniCity project

IOT Week

Aarhus, 19th June, 2019



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SynchroniCity

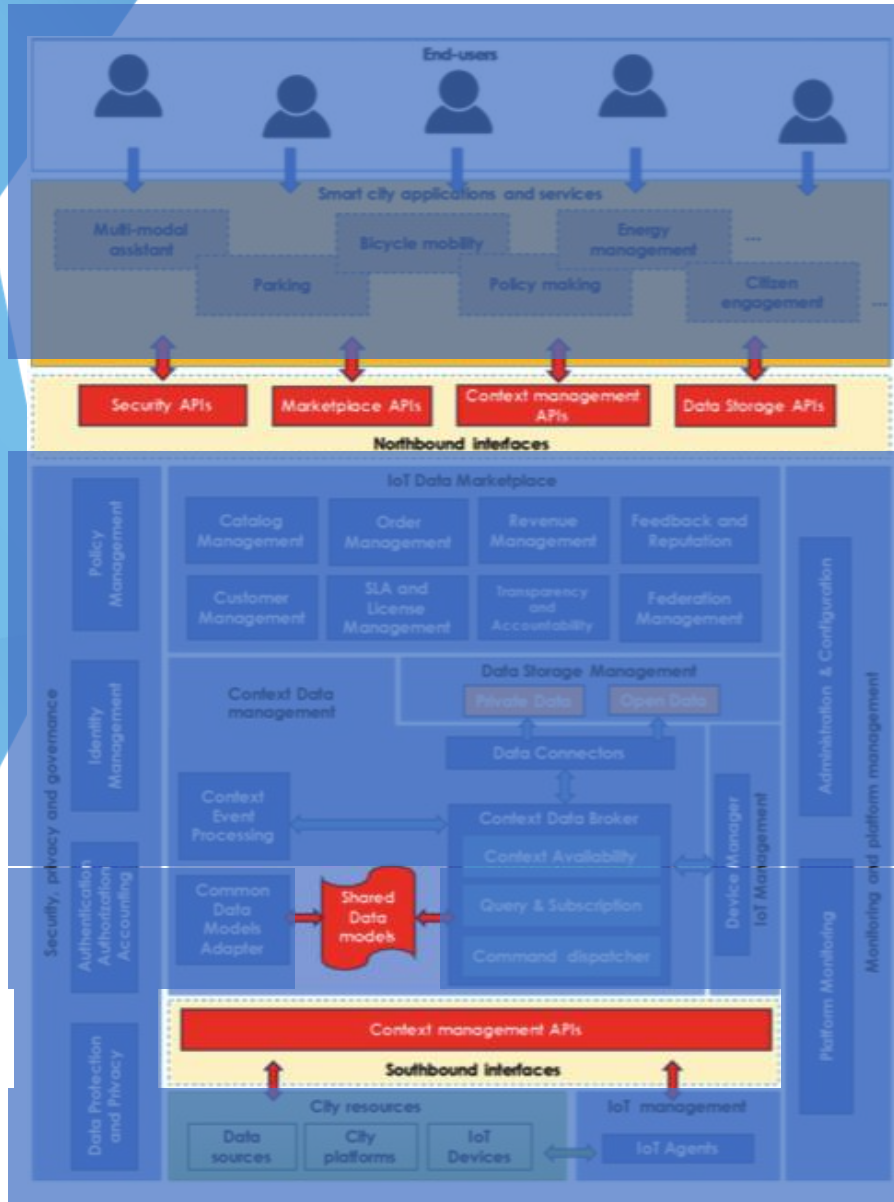
SynchroniCity aims at delivering a **Single Digital City Market** for Europe by piloting its foundations at scale in reference zones across 8 European cities, involving also other cities globally.

It addresses how to **incentivise and build trust** for companies and citizens to actively participate, in finding **common co-created IoT solutions** for cities that meet citizen needs and to create an environment of **evidence-based solutions** that can easily be replicated in other regions.

SynchroniCity Framework principles

- **Open Architecture and Open API** – no vendor lock-in
no city lock-in
- **Interoperability, replicability** and **reusability** across the cities and across sectors.
- **Reuse** of existing and standard approaches
- **Compliance** with existing technologies of the cities
- **OASC principles** and the definitions of Minimal Interoperability Mechanisms (**MIMs**)

SynchroniCity architecture and Interoperability Points



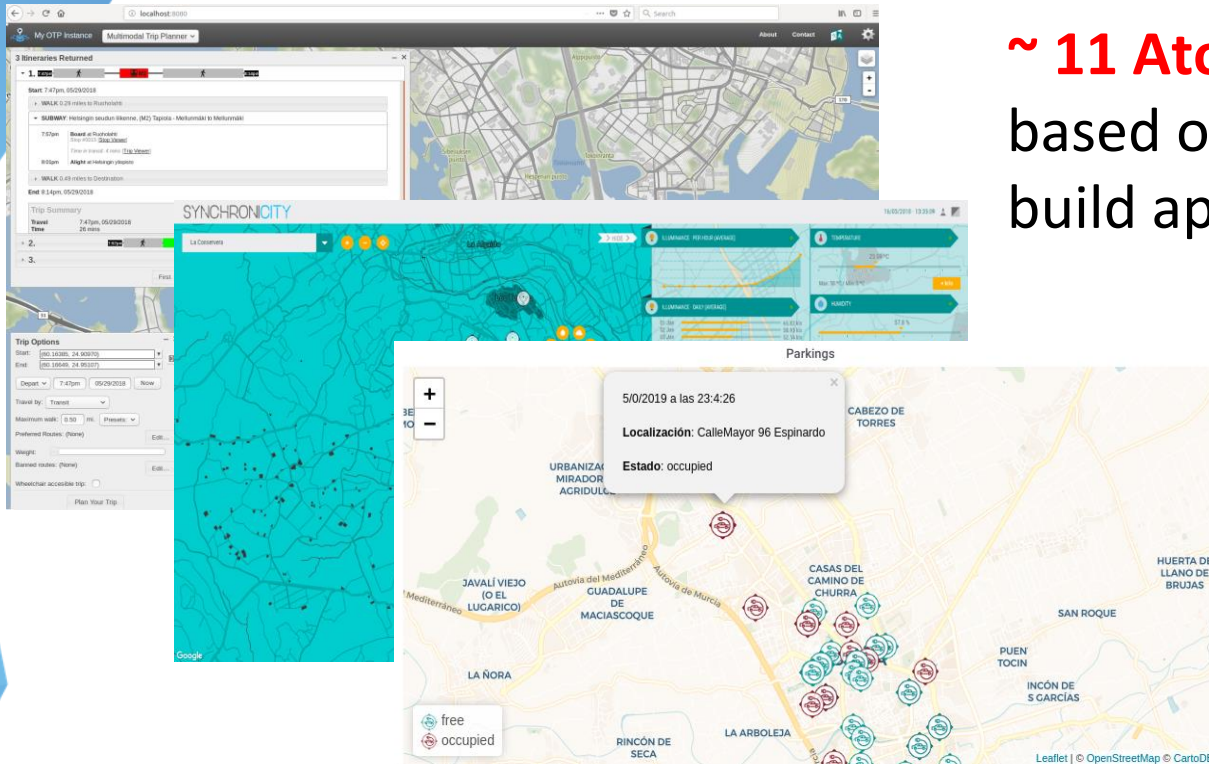
- **Interoperability Points** represent the main interfaces that allow a city (or any Reference Zone, RZ) and applications to interact with SynchroniCity platform
- Interoperability points are independent from the specific software components that realize them and can be implemented by cities in different steps to reach different levels of compliance
- The architecture has been designed following the OASC principles and the definitions of **Minimal Interoperability Mechanisms (MIMs)**. MIMs, are the actual specifications of the interfaces at the Interoperability Points: they are standard API and guidelines that have to be implemented by a city in order to be compliant with the SynchroniCity framework

Interoperability Mechanisms

	Description	Specification document (synchronicity-iot.eu/docs/)	Related Standards [and Baselines]
Context Management API	This API allow to access to real-time context information from the different cities.	Reference Architecture for IoT Enabled Smart Cities (D2.10)	FIWARE NGSIv2, ETSI NGSI-LD API, ITU-T SG20*/FG-DPM*
Shared data models	Guidelines and catalogue of common data models in different verticals to enable interoperability for applications and systems among different cities	Guidelines for the definition of OASC Shared Data Models (D2.2) Catalogue of OASC Shared Data Models for Smart City domains (D2.3)	[FIWARE, GSMA, schema.org, Saref , SynchroniCity RZ + partner data models]
Ecosystem Transaction Management (“Marketplace”)	It exposes functionalities such as catalogue management, ordering management, revenue management, SLA, license management etc. Complemented by marketplace for hardware and services.	Basic Data Marketplace Enablers (D2.4) Guidelines for the integration of IoT devices in OASC compliant platforms (D2.6)	[TM Forum API]
Security API	API to register and authenticate user and applications in order to access to the SynchroniCity-enabled services.	Reference Architecture for IoT Enabled Smart Cities (D2.10)	OAuth2
Data Storage API	This API allows to access to historical data and open data of the reference zones.	Reference Architecture for IoT Enabled Smart Cities (D2.10)	ETSI NGSI-LD, DCAT-AP [CKAN]

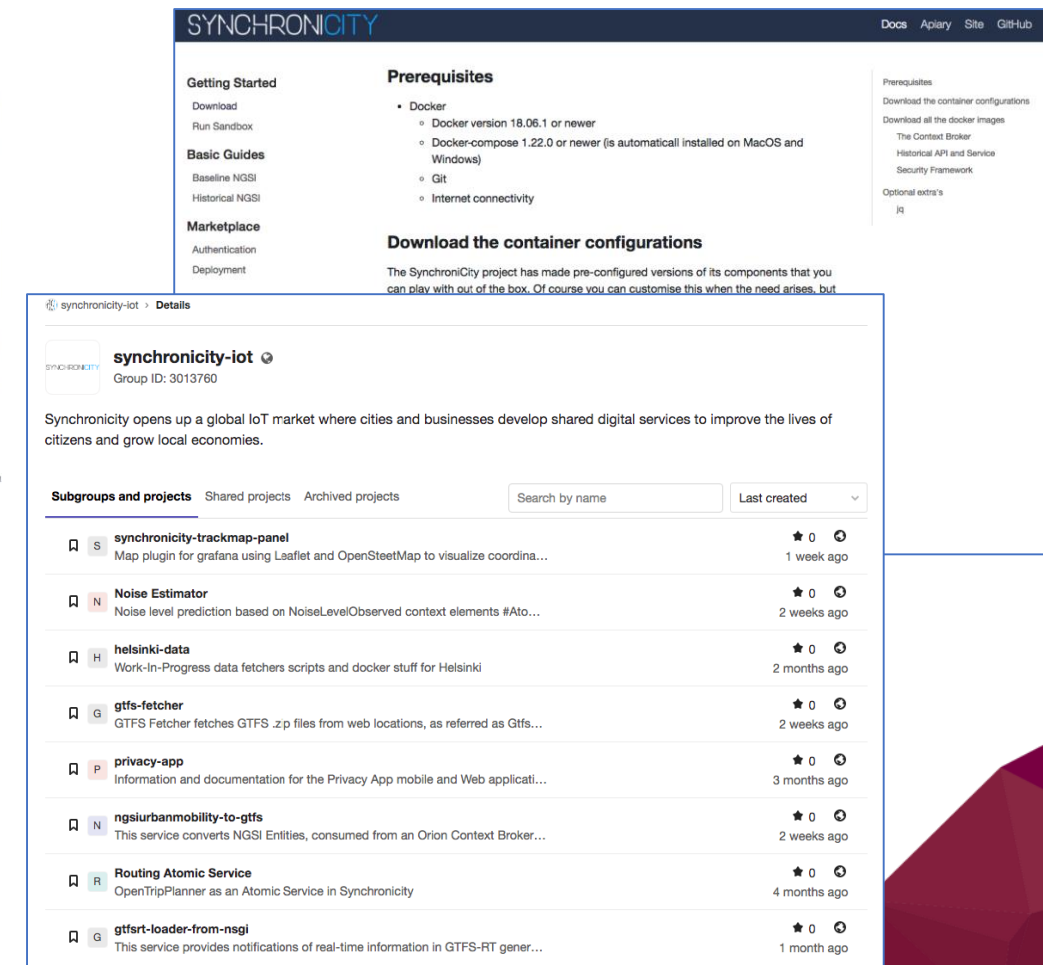
Synchronicity results: software components

~ **11 Atomic services:** generic components based on SynchroniCity specifications useful to build applications and services



Open source components: to simplify the deployment of a **ready-to-use SynchroniCity framework**

<https://gitlab.com/synchronicity-iot>



Synchronicity results: Ecosystem transaction management

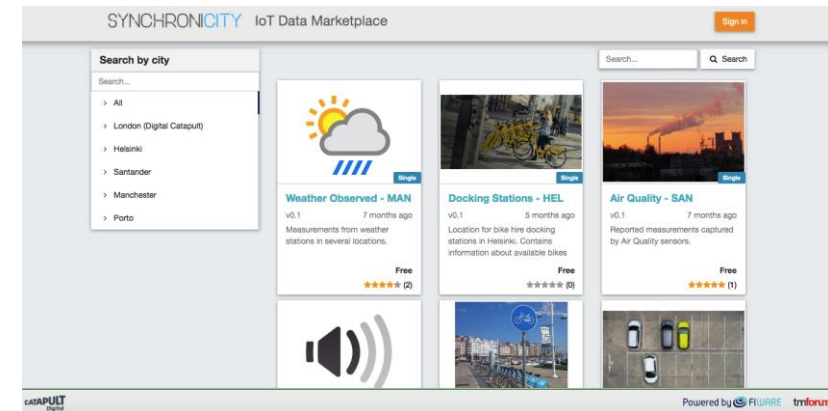
- to deliver a Digital Single Market for IoT-enabled smart cities in Europe and beyond.
- to open innovation ecosystem around the proposed digital single smart city marketplace.



IoT Data

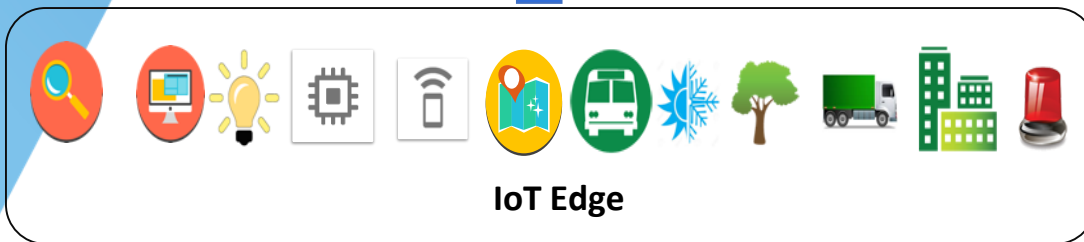
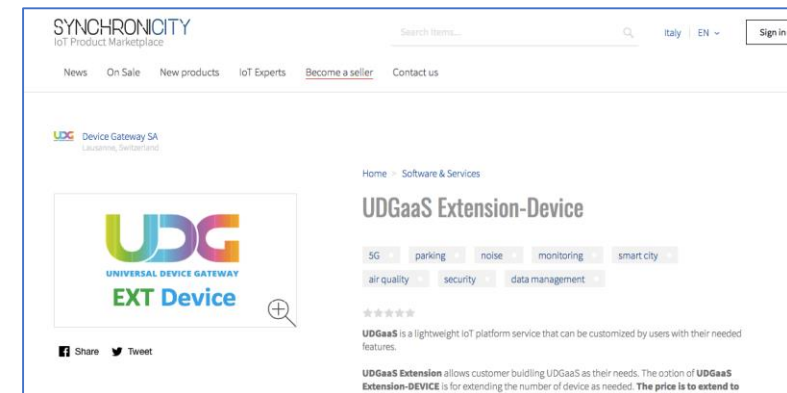
IoT Data Marketplace

Open data trading platform



IoT Product Marketplace

Multi-service e-commerce platform



*IoT Devices
& Solutions*

“

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