



Évora

POCITYF City
Ecosystem



POCITYF - Leading the smart evolution of heritage cities

Deliver a set of **Positive Energy Districts**

Emphasis on **cultural and historical protected areas**: inclusiveness, sustainability and resilience

Improve, in a **sustainable and citizen-driven manner**, citizens' wellbeing



- ❖ 46 partners
- ❖ 13 European countries

Focus on historical cities

- ❖ Legal barriers
- ❖ Replication potential
- ❖ New life to historic centres



- ❖ Budget: 22,5M€
- ❖ Grant: 20M€



❖ **5 years' project**



Lighthouse cities



Évora



Alkmaar

Fellow cities



Bari



Celje



Granada



Hvidovre



Ioannina



Ujpest

POCITYF targets 4 groups of solutions

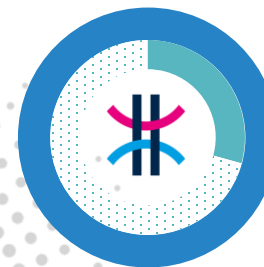
Positive Energy Buildings & Districts

- ❖ Renewables and energy management
- ❖ Retrofitting



Flexible infrastructure

- ❖ Flexible grids & buildings
- ❖ Sustainable district heating and cooling



Citizen-driven social innovation

- ❖ Interoperable and interconnected city
- ❖ Citizen engagement & co-creation



eMobility

- ❖ Smart charging & V2G
- ❖ Mobility-as-a-Service



Évora: City overview



- Historic town in the heart of the Alentejo region
- Well-preserved historical city centre is one of the richest monuments in Portugal, which earned it the title of **City-Museum**
- The monumental complexes, in harmony with the urban fabric, lead to the classification of Évora as **World Heritage Site by UNESCO since 1986 - FIRST CLASSIFIED CITY**
- Évora highly values its environmental component and the promotion of sustainable development: it has heritage, cultural, academic, and services vocation with environmental quality
- This World Heritage City is the first urban area in Portugal to hook up to the **intelligent energy grid**: promoting energy efficiency, micro generation and electrical mobility, is a shining example of sustainability for the whole country

Évora: Demo Ecosystem

15 Partners from 5 countries

34 Different solutions

3 Positive Energy Blocks

62 Buildings/ households involved

Public Administration

SME & Large Companies

Startups & Entrepreneurs

Academia

Citizens

Community Leaders

edp label
CENTRO DE EXCELÊNCIA
TÉCNICA DO GRUPO ED

ÉVORA
Câmara Municipal

UNINOVA

UNIVERSITY
OF ÉVORA

ubiwhere
SUITING THE FUTURE

DECSIS

SONAE MC

onyx

TEGOLA
CANADENSE
INNOVATION IN BUILDING

batteries

imatica

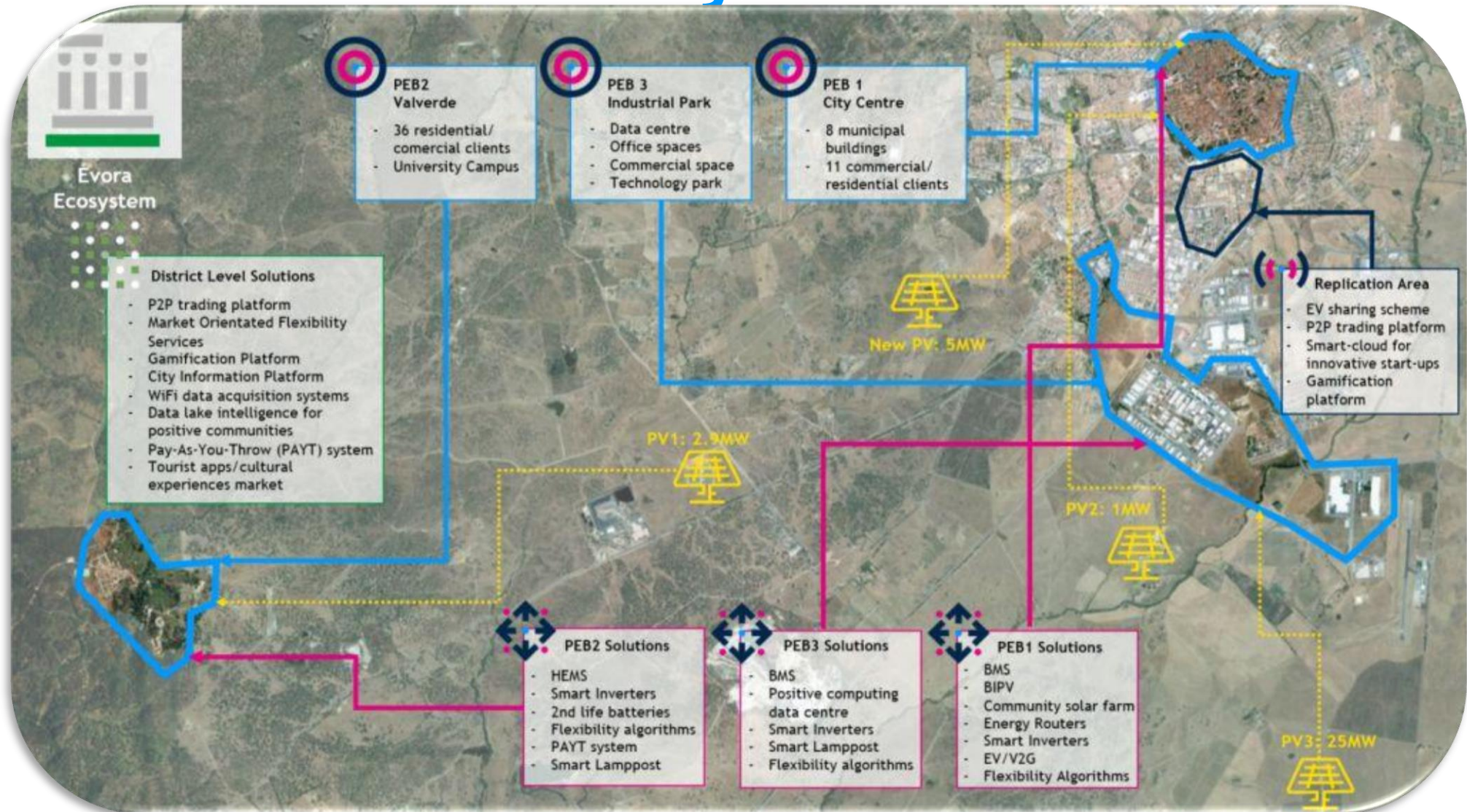
INESCTEC

elergone energia

On | Schneider
Electric

PACT
PARQUE DO MENTOR
DE CIÊNCIA E TECNOLOGIA

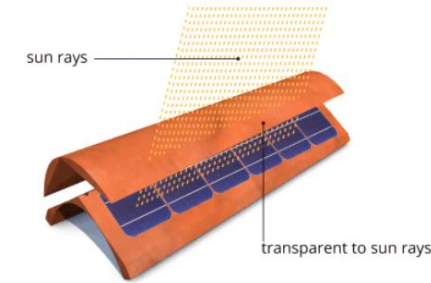
Évora: Demo Ecosystem



Energy Transition - City and Academia

8 Municipal Buildings

- > The municipal buildings will accommodate 5 different solutions of BIPV (Building Integrated Photovoltaics) to comply with the Cultural Heritage guidelines
- > Municipal buildings will establish a Renewable Energy Community based on to the new PT legislation (DL 162/2019), thus optimising municipality resources



2 University Buildings

- > Smart Lamppost + EV charging + 5G
- > Flexible control algorithms for self-consumption ratio
- > 2nd life batteries for mobile energy supply (9 kWh)



Energy Transition - Citizens

11 PEB1 Clients

Citizen's households

- ❖ Mobile apps on energy Consumption providing a smart and interactive user experience
- ❖ New PV inverters, refurbishing clients' installations
- ❖ Intelligent control algorithms to maximize self-consumption, based on the flexibility offered by shiftable loads

- ❖ 2nd life batteries combined with flexible control algorithms will be used to improve PV self-consumption and reduce electricity costs in residential buildings
- ❖ Mobile apps on energy consumption will be deployed to allow interaction with sensing and control devices and facilitate user experience
- ❖ PAYT (Pay-as-you-throw) waste containers encouraging recycling and reduction in waste production



Energy Transition - Companies

DECSIS

- ❖ > Improve Data Center Power Usage Efficiency (PUE) leveraging on PV production and efficient AVAC with free cooling and optimization techniques from UNINOVA
- ❖ EV charging station for hybrid/electric fleet transition
- ❖ EV charging management platform combined with optimal control algorithms will optimise electricity bill according to the Data Center Usage and EV fleet management
- ❖ Cloud computing resources
- ❖ City Operations Framework and Datalake (City OS)

SONAE

- ❖ Building Management System and Uninova's intelligent algorithms will boost building's energy efficiency by maximising SONAE's resources (PV, EV fleet, freezing storage)
- ❖ 2 V2G chargers (DC + AC) combined with optimal control algorithms to maximise SONAE's own resources

PACT

- ❖ Mobile apps on energy Consumption providing a smart and enriching user experience for the buildings' management
- ❖ Flexibility control algorithm to perform DSM, based on the flexibility offered by shiftable loads
- ❖ BIPV solutions' deployment accommodating aesthetical and cultural features

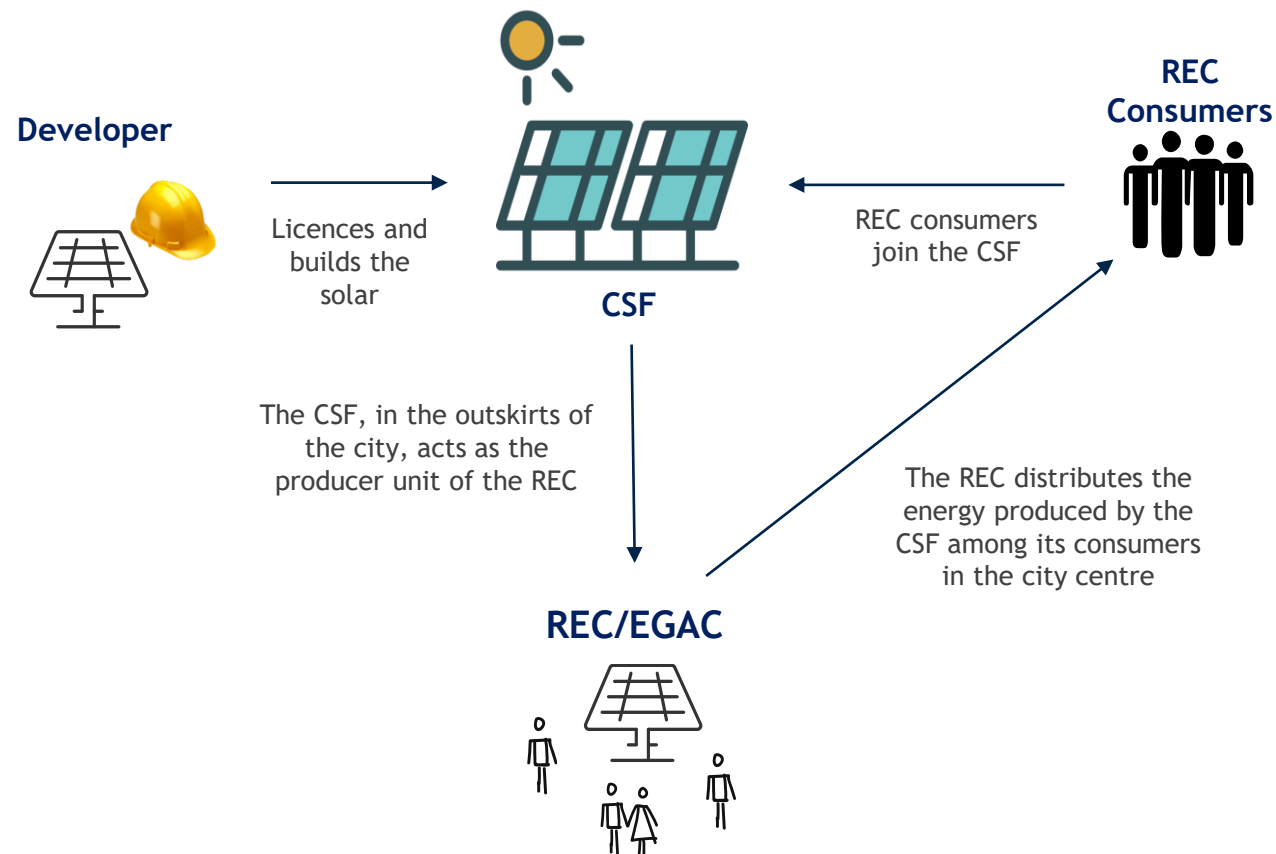


Energy Transition - Community Solar Farm

Community Solar Farm (5 MW)

Allow citizens living in the protected areas to generate and consume renewable energy

- ❖ Deploying the CSF following the new PT legislation on Renewables Energy Communities (REC)
- ❖ Guaranteeing the attractiveness of the CSF business model and engaging the different stakeholders from Évora ecosystem



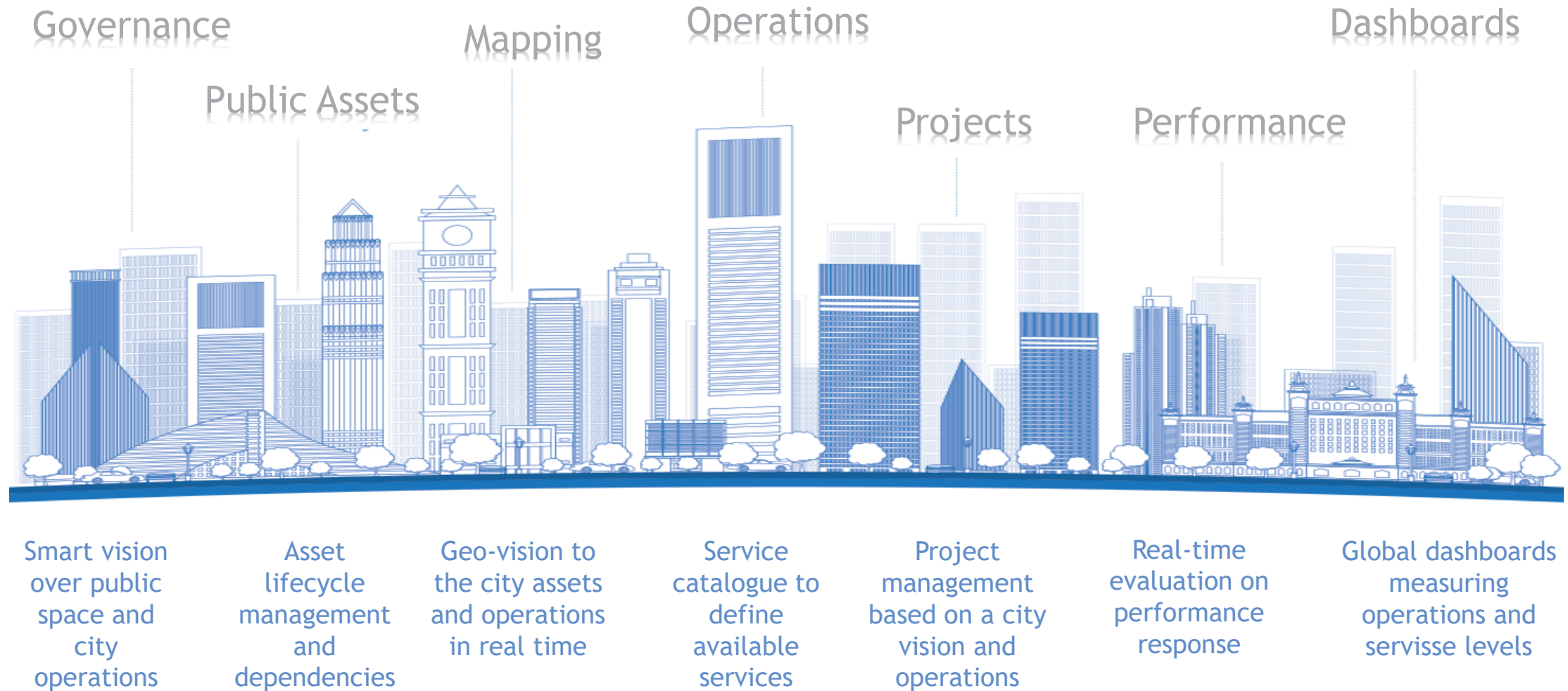


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City Operation
Framework for Digital
ecosystem



SMART CITY FRAMEWORK - VIP for City



SMART CITY FRAMEWORK - Digital Twin



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SMART CITY FRAMEWORK- Data interop

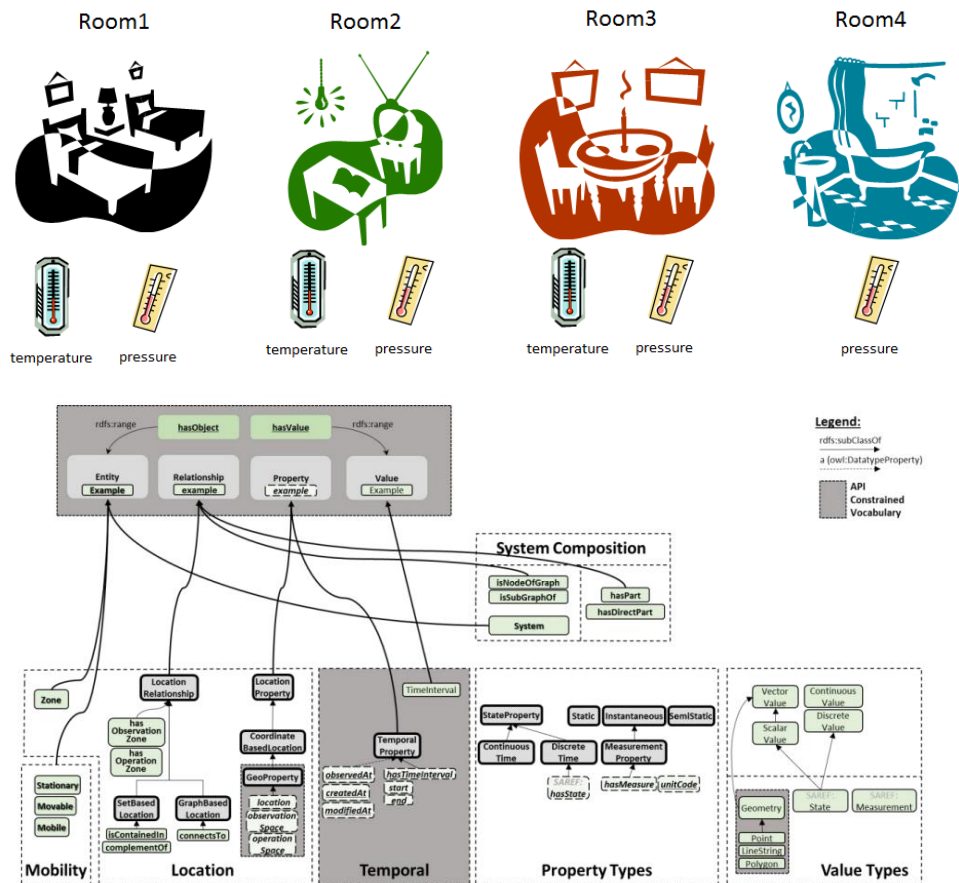
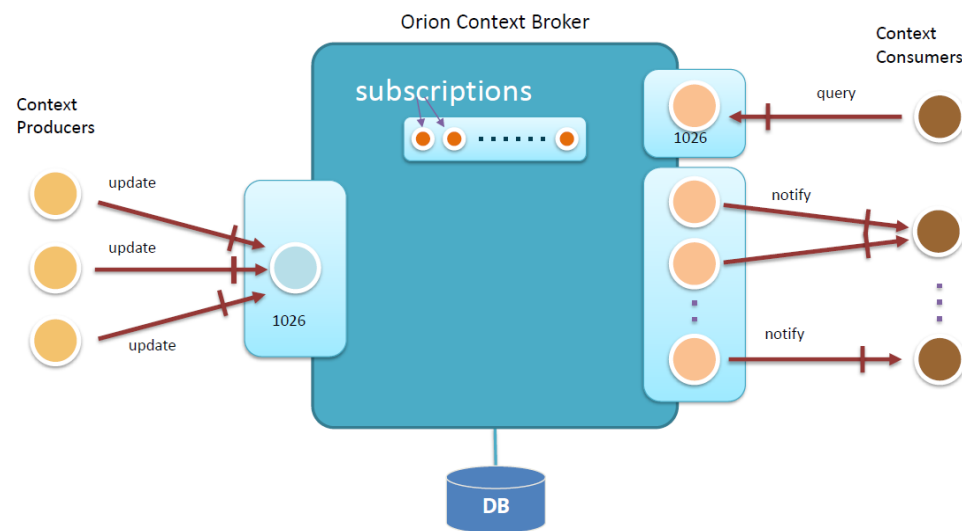


Figure 1 : NGSI-LD Cross-Domain Ontology, with referenced Meta-model⁵

Orion Context Broker in a nutshell



SMART CITY FRAMEWORK- Data interop



A GLOBAL PROGRAM LED BY



Data models ▾

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Domains

Smart Cities	Smart Agrifood	Smart Water	Smart Energy
Smart Environment	Smart Robotics	Smart Sensoring	Cross sector
Smart Aeronautics	Smart Destination	Smart Health	Smart Manufacturing
Lifecycle repositories	Incubated	Harmonization	

Start data model/s

Data Models in progress

Go to a data model

Type part of the name and it will be filtered

dataModel:

dataModel

List of data models

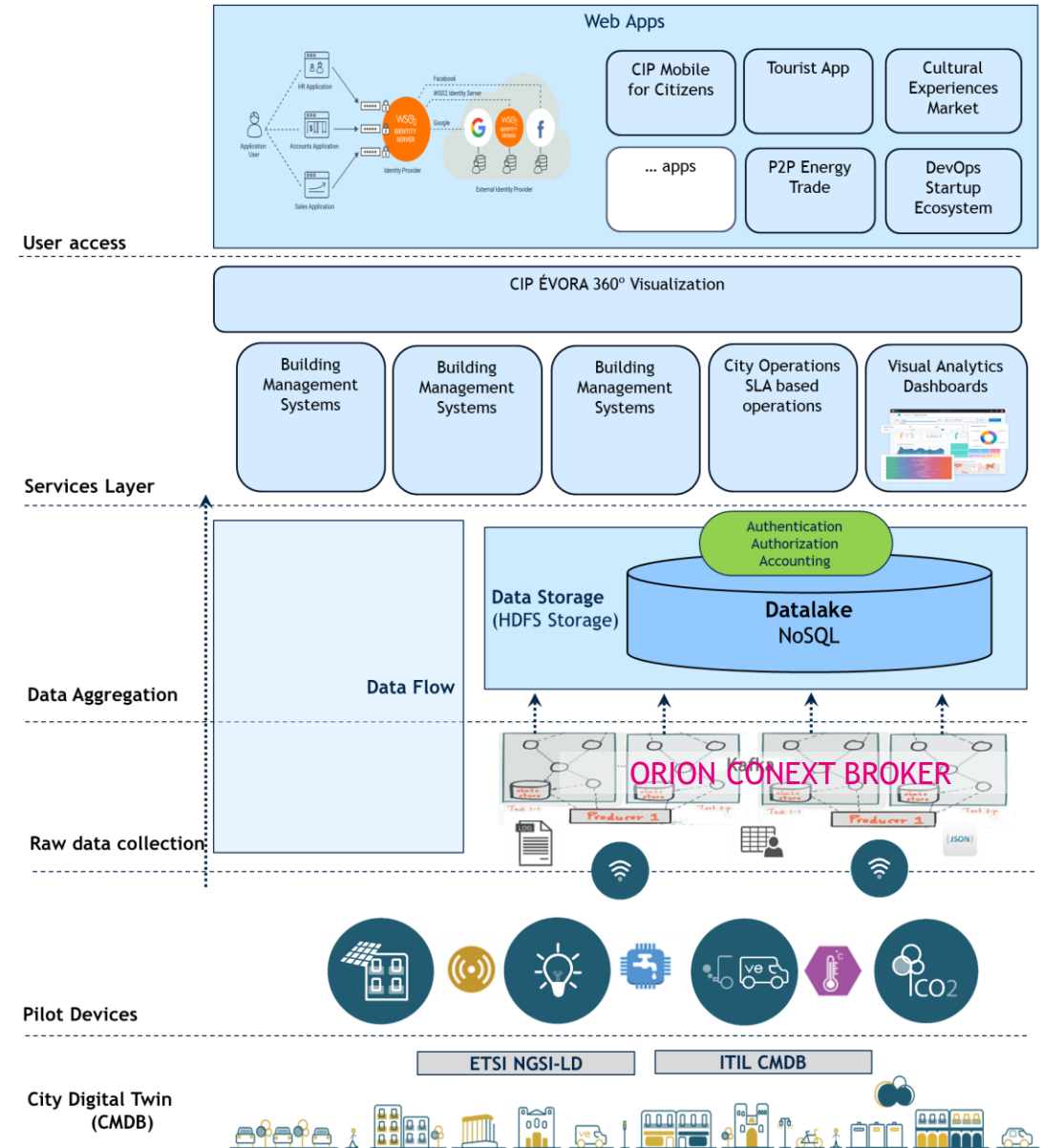
If you do not find the data model you need, you can drop us an email.



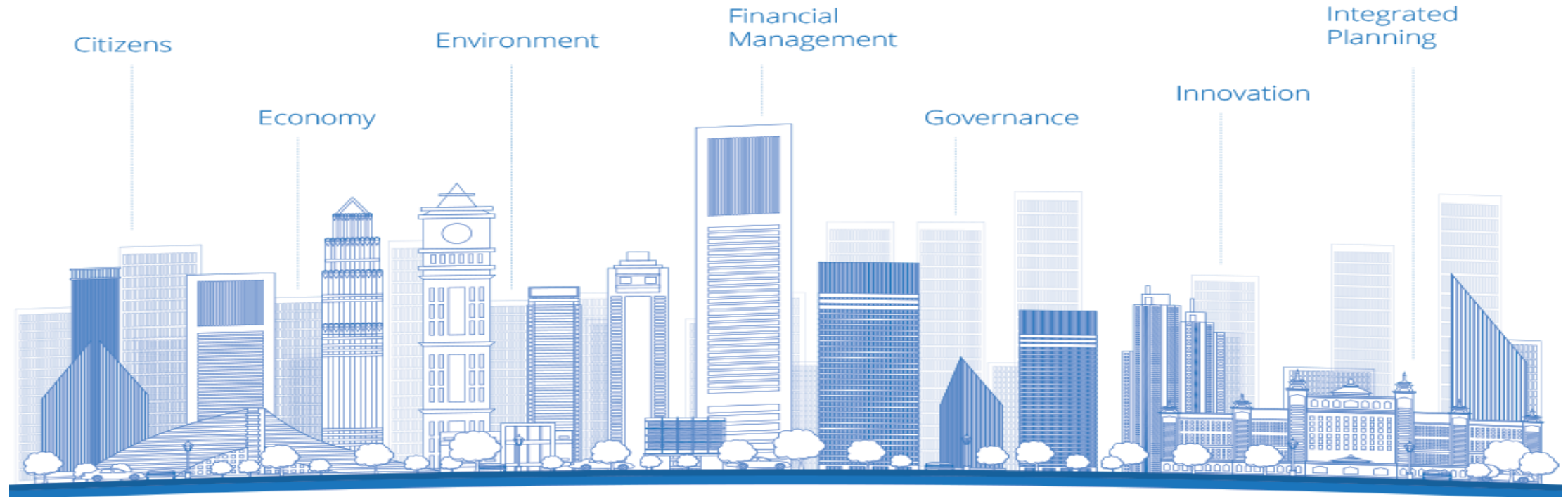
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SMART CITY FRAMEWORK - City OS

- Digital Twin City CMDB (asset mapping - smartdatamodels) (DECSIS) <https://cmdb.evoralab.xyz>
- Datalake compliant with NGSI-LD+ORION Context Broker <https://ec.europa.eu/digital-building-blocks/wikis/display/CEFDIGITAL/Orion+Context+Broker> (DECSIS)
- Common ID for all apps <https://id.evoralab.pt> (DECSIS)
- CIP for citizens (dev) (UBIWHERE)
- Stats tool Matomo (DECSIS) <https://analytics.evoralab.pt/>
- Tourist App (prototype) <https://touristapp.pocityf.grisenergia.pt> (UNINOVA)
- Cultural Experiences Market (prototype) (UBIWHERE)
- P2P Energy Trade (prototype) <http://demo.kimatica.com> (KIMATICA)
- Startups sandbox (deployment) (DECSIS)
- Open Data Portal (in spec) (DECSIS) <https://opendata.evoralab.pt>
- Gamification aggregation tool (dev) (CERTH)
- Citizens Portal (go-live) <https://citizens.evoralab.pt>
- EV charging management platform (dev) (INESCTEC)
- Intelligent and optimal control algorithm (deployment) (UNINOVA)
- PAYT - Pay as You Throw (deployment) (UBIWHERE)
- Mobile Apps on Energy Consumption + HEMS (dev) (INESCTEC)



SMART CITY FRAMEWORK - Digital compliance and Governance



Common asset mapping Federated citizen login Data Interoperability
Application governance Compliance (GDPR) Vendor Lockin mitigation



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Engagement strategy
for citizens



Engagement Strategy

Community leaders

Team to engage discussion lead by a community citizen in partnership with municipality's technical stakeholders able to contribute to the technical discussion.

Storytelling

Storytelling based on the city's experience during a timeline related to the topic or specific solutions to cocreate within the city scope and development.

Design and development of workshops to discuss and enrich the topic, challenges, and solutions to cocreate.



1. Learn and build storytelling together with citizens
2. Enrich information to consolidate knowledge
3. Consolidate conclusions and possible voting
4. Design virtual solutions (digital twin of the project)
5. Experiment solutions to optimize solutions (whenever feasible)
6. Include conclusions in city's strategy and planning

Engagement Strategy - thematic drivers



Social Innovation

Engage 3rd sector organizations to cocreate solutions

Energy transition in infrastructures owned by 3rd sector organizations

Promote P2P contribution to fight energy poverty in families

Digital transformation gap and challenges

City Energy Transition

Engage Citizens to energy solutions to houses and business

Discuss solutions applicability to citizen's houses

Codesign replication to non-municipal buildings in the city historical centre

Debate community solar farm uptake on citizens and SME

Sustainable Cultural Experiences

Engage cultural agents to design sustainable events evaluation

Define an assessment framework or methodology for events sustainability

Design process to involve agents and citizens in the evaluation

Promote sustainable events city with agents and citizens

Mobility and Logistics

Engage citizens to discuss mobility in the city

Present mobility plan and solutions

Collect citizens feedback and proposals

Experiment solutions and adaptations to citizens feedback

History of centralities of the city

Discuss city central places and squares during time

Build a storyline about city's places of human interaction and centralities

Promote discussion and knowledge build-up about central places in the city during times

Collect proposals for city urban development

Entrepreneurs Support Program

Startup LABWARE

Programa de Aceleração de Transformação Digital
para Cidades Inteligentes



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