VICINITY

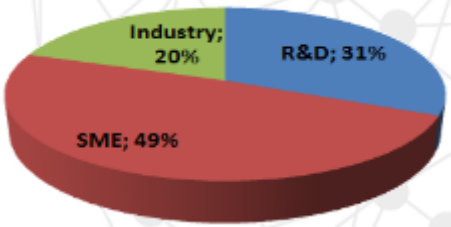
Short Project Overview

European Commission
Horizon 2020
European Union funding
for Research & Innovation

Consortium & Key Data

Big RIA Project, 7,5M€ EU Funding
4 Years - 1/1/2016-31/12/2019
15 Partners – 9 countries:

1) TU Kaiserslautern, DE *(Project Coordination)*
2) ATOS Spain SA, ES *(Exploitation Manager)*
3) Centre for Research and Technology Hellas, GR *(Scientific & Technical Manager)*
4) Aalborg University, DK
5) Gorenje Gospodinjski Aparati D.D., SL
6) OTE – Hellenic Telecommunications Organization S.A., GR
7) bAvenir s.r.o., SK *(Innovation Manager)*
8) Climate Associates Ltd., GB
9) InterSoft A.S., SK
10) Universidad Politécnica de Madrid, ES
11) Gnomon Informatics S.A., GR
12) Tiny Mesh AS, NO
13) HAFENSTROM AS, NO
14) Enercoutim – Associacao Empresarial de Energia Solar de Alcoutim, PT
15) Municipality of Pylaia-Hortatis, GR



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Challenge and Vision

IoT arises from
***interoperability** of things on **semantic layer**,*
*creating **new services***

However,

- **"Silos"** or **"Islands"** characterize current status
- Different ..
  - .. standards (W3C, oneM2M, FIware, ZigBee, ...),
  - .. application areas (energy, mobility, health, building automation, ...),
  - .. brands (deliberate vendor locks, incompatibilities, ...)
  - ..
- Gap to users, social networks, market of services ...

Vision and Objectives

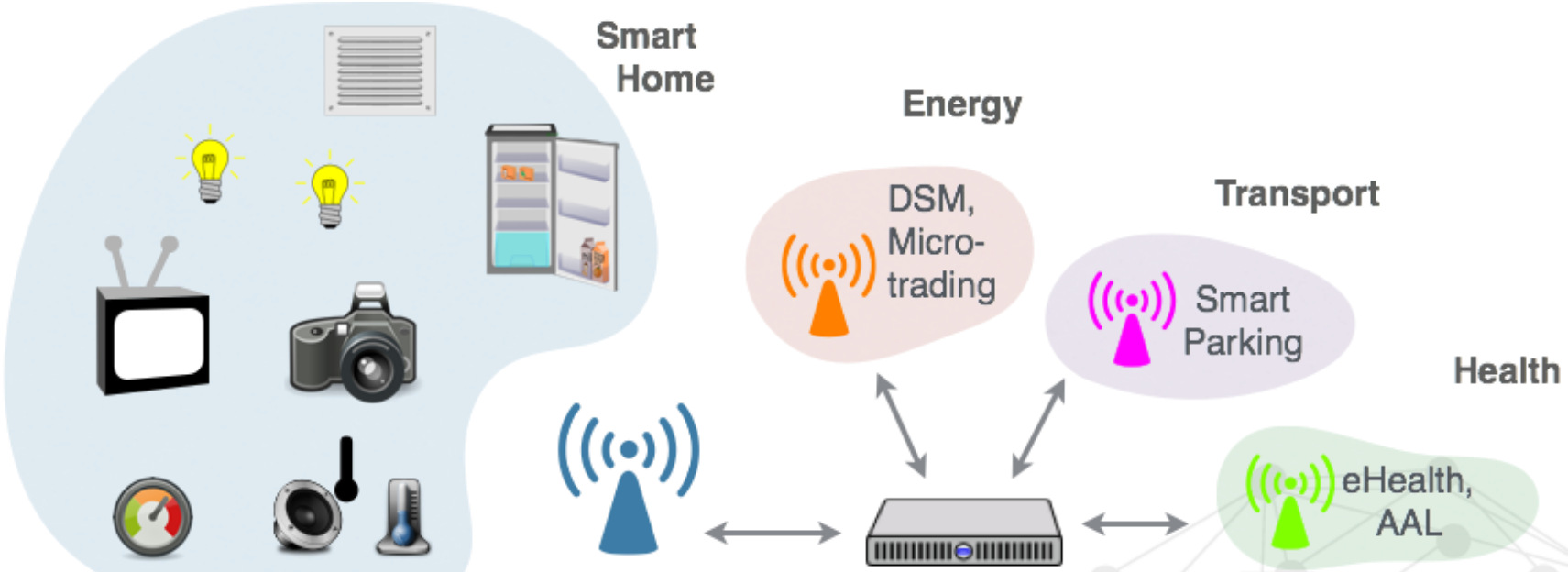
VICINITY's vision is to

- provide **"Interoperability" as a service**
- create a platform for domain-crossing, **value-added services**

.. by building and demonstrating ..

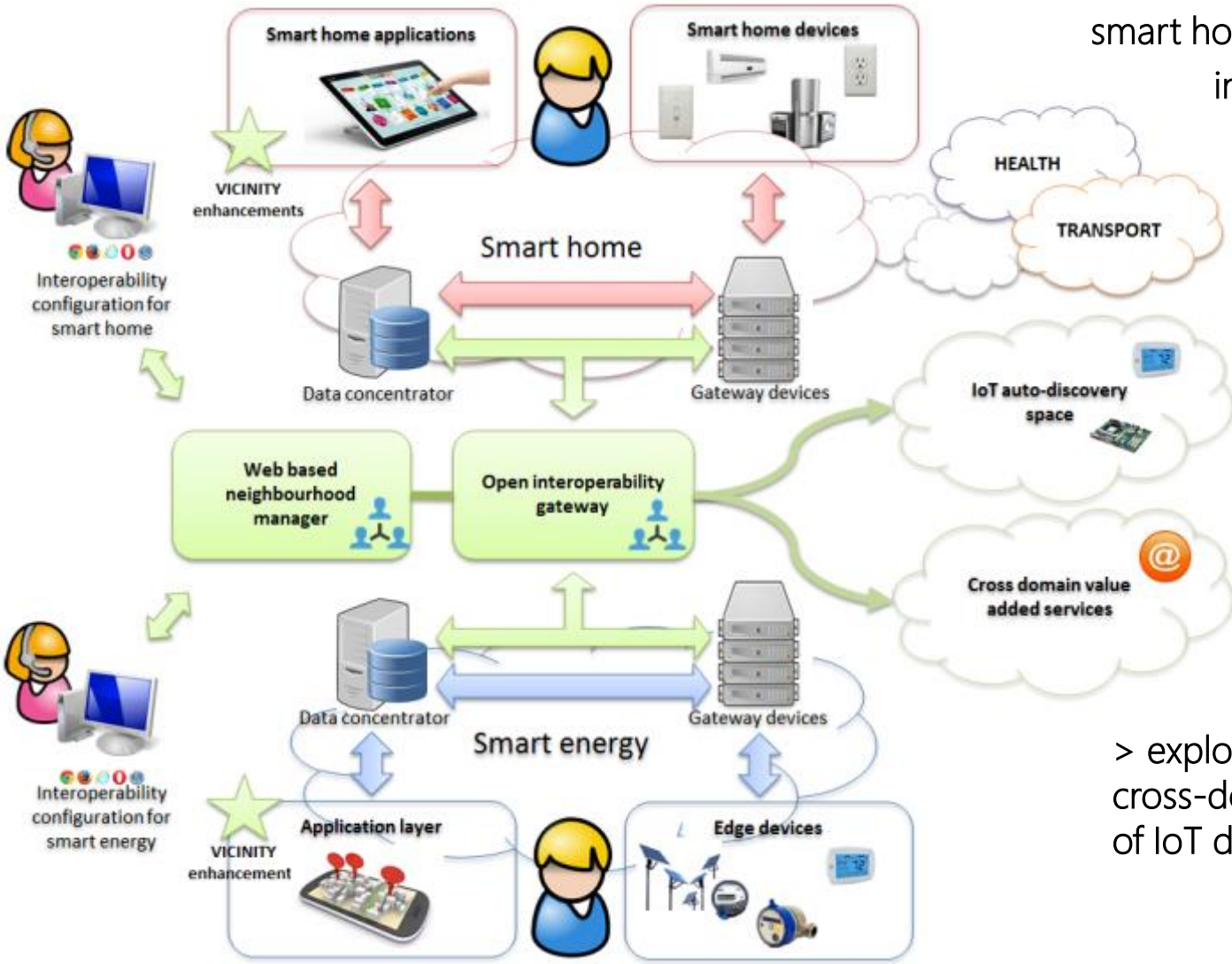
- a **bottom-up** ecosystem of **decentralised interoperability** of IoT infrastructures, called "**virtual neighbourhood**"
- like social network for things, enabling **value-added services**
  - where users can **share** the access to their smart objects **without losing the control** over them
  - where **cross-domain services & business models** can be established

Approach: VICINITY User Platform



VICINITY neighbourhood concept

Interconnecting
smart home & smart energy
infrastructures



> enabling value-added services

> exploiting cross-domain availability of IoT data

Platforms

HW/SW Platforms

- HW nodes: SmartCoDe FP7, TinyMesh
- Android or OSGI VM
- Protocols: ZigBee, WLAN, Bluetooth Mesh, TinyMesh
- W3C Linked Data Platform (LDP), FIWARE

Semantic interoperability

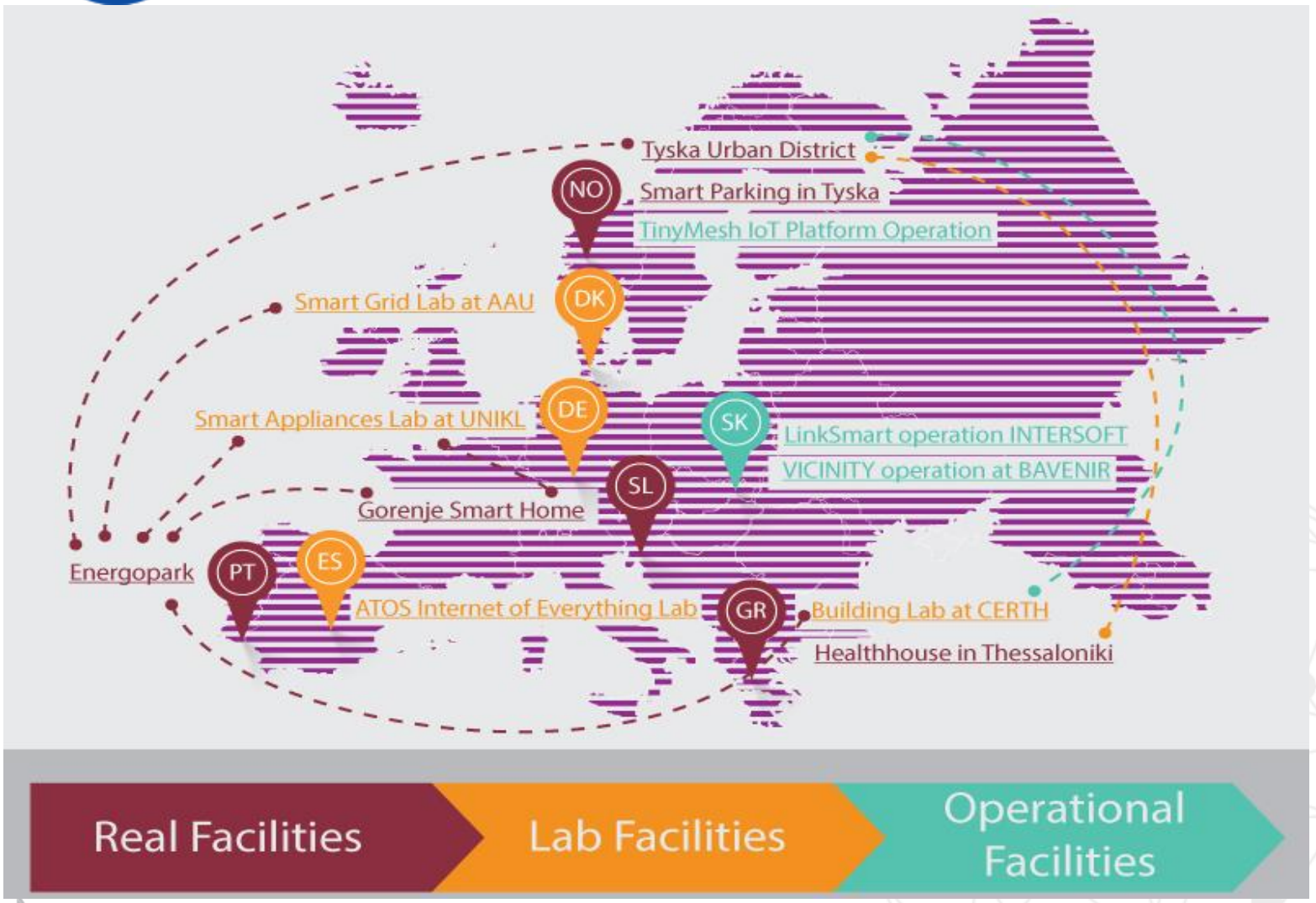
- Interoperability middleware building on LinkSmart/Hydra, Ebbits
- Ontologies from Ready4SmartCities, SmartCoDe FP7, OneM2M …

(+ dynamic, user-driven, bottom-up extensibility, …)

*Evaluation of APIs and standards by **model-based approach** within development process*

=> Feedback to ETSI/OneM2M standardization processes

Pilots: World Wide Vicinity



Pilot 1: Smart Energy Microgrid enabled Municipal buildings

Municipal buildings in Algarve region, Portugal

- Community-scale **energy microgrid**

VICINITY value-added services:

- **Data exposition to citizens** so that they can understand the value of the investment
- Access to **key performance indicators**

Pilot 2: Assisted Living integrated in Smart Grid Energy Ecosystem

Demand Side Management (DSM) combined with Assisted Living in Tyske, Norway

VICINITY value-added services:

- Real-time monitoring of building facility and occupancy
- User energy profiling
- Assistive services for people with disabilities
- Health personnel services

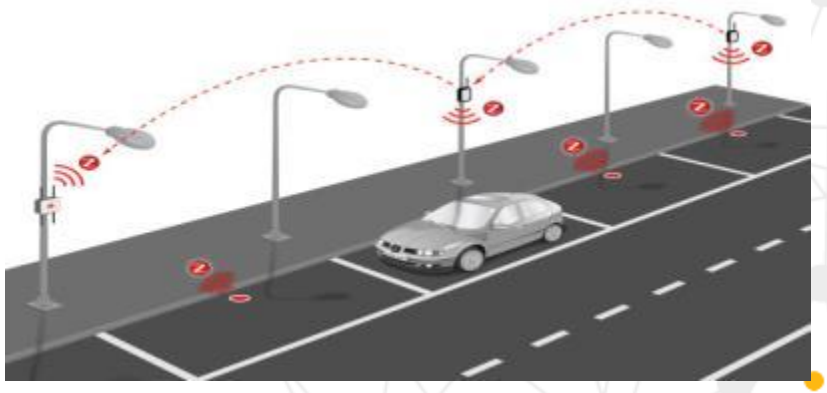
TinyMesh Sensors

Pilot 3: Intelligent (Transport) Parking

Demonstrated in Tyske, Norway

VICINITY value-added services:

- Virtualized and distributed **Business Intelligence framework** providing customized **recommendations**
- **Mobile apps** presenting information on parking space options, allowing **behavioral incentives**
- **Intelligent distribution/allocation** of parking space in case of **conflict**
- **Payment services** with variable pricing system based on historical data analysis



Pilot 4: eHealth at Home with social networks

Electronic **medical care services** demonstrated in homes of the municipality of Pilea-Hortiatis in Northern Greece

VICINITY value-added services:

- Intelligent processing of multi-sensorial signals received to raise events/alerts based on abnormal conditions (e.g. end-user hasn't interacted with any device for a prolonged period)
- **Clustering of users** with similar profiles and health data streams constructing a **social network**

Panic Button

Data Center Communication

Location Sensor

Weight Sensor

Pressure