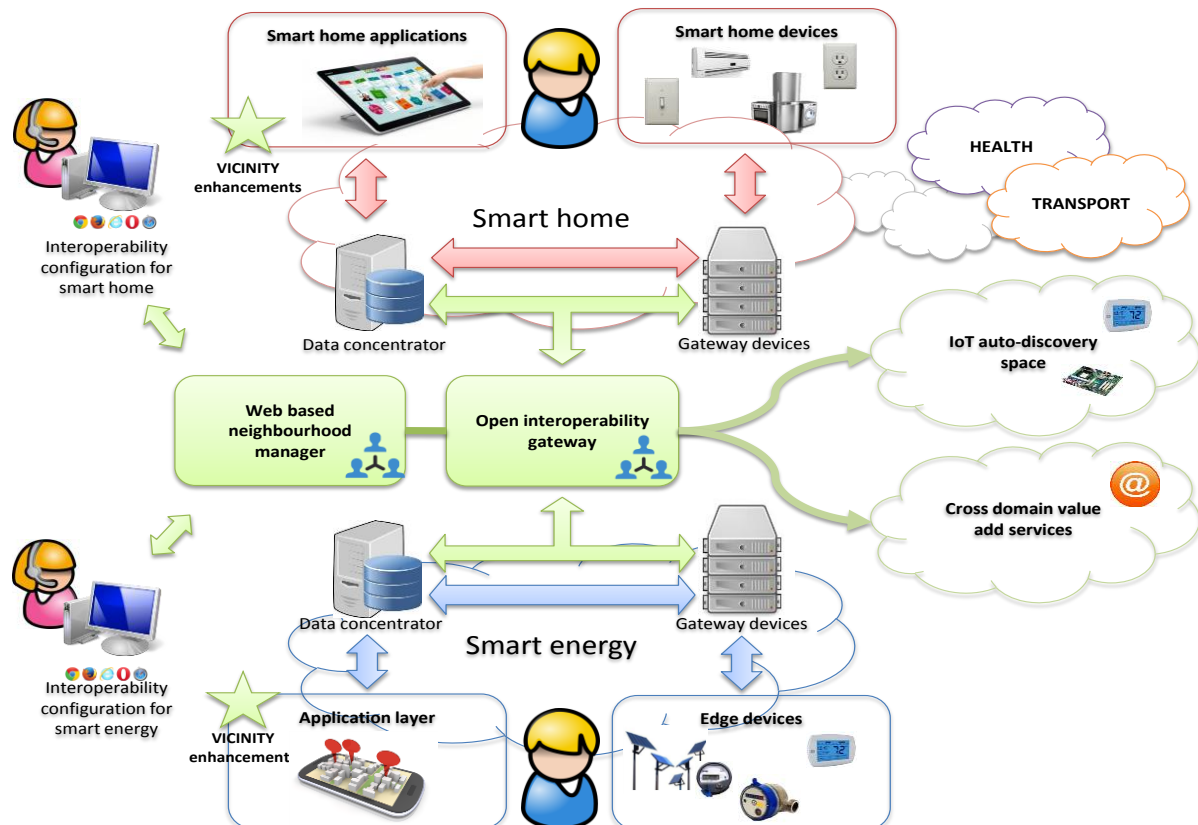


VICINITY - Open virtual neighbourhood network to connect IoT infrastructures

Challenge: Nowadays various IoT networks are being deployed for sensing, measuring, controlling and business process optimization purposes while various IoT platforms are emerging on the market to manage these networks. Nevertheless, these infrastructures are mostly acting as **isolated islands in the global IoT landscape** while inter-connection of these islands might bring significant added value (such as an ecosystem running on close to zero energy for example). Exploitation of these benefits is however inhibited by various interoperability barriers that are present in the current IoT ecosystems. Such barriers are:

- **Lack of IoT protocol interoperability** (systems are often vendor locked by design),
- Smart objects of different owners requires data sharing that raises serious **privacy issues**,
- IoT component vendors might be reluctant to share interface specifications (**IP problem**),
- Large-scale integration imposes rules that are **disadvantageous for particular participants**.

Idea & Objective: VICINITY project will build and demonstrate an **ecosystem of decentralised interoperability of IoT infrastructures** where users can share the access to their smart objects without losing the control over them. The solution will be based on an open interoperability gateway enabling different IoT networks to get connected into large ecosystems while the connections will be organised peer-to-peer building a social network of smart objects (**virtual neighbourhood**). The operators of the particular IoT infrastructures can select which other systems they wish to connect to (on a similar way as we are selecting friends on social networks) using a **web-based neighbourhood manager** where they can configure the scope of the cooperation with other systems (E.g. They can decide which data are visible and which controls are applicable for a partner entity).



Pilot Applications: The solution will be demonstrated on the **virtual neighbourhood of intelligent buildings** cooperating with **smart renewable energy sites** connected to **intelligent transport infrastructures**. Moreover application scenarios in the **health and transport domains** will be examined where the term “virtual neighbourhood” will be supporting geographical proximity as well as personal health status monitoring and communication to selected participants of the network.

Why should this work?

In our concept the participants can decide with whom they wish to cooperate and to which extent. Thus, **each participant can set up the conditions for himself in his own maximal favour**. No central databases with sensitive data are planned (everything is negotiated between the peers) and therefore the concept preserves **user's privacy by design**.

Moreover the system vendors do not need to share their specifications and source codes (their IP). They simply take our open specifications and with the help of open source samples for adapter implementations they can easily get connected.

The consortium will also develop a device with **semantic discovery** features to easily connect standard IoT infrastructures placed into **IoT auto-discovery space**.

The concept decentralism also provides flexibility on creating well-defined business models for all stakeholders and releases the vendor locks present in the current ecosystems. This will enable **cross-domain value-add service providers** to enter the existing and emerging IoT ecosystems. Such services with features based on artificial intelligence will be demonstrated by the project as well.

Project partners:

Universities & Research institutes:

- Information Technologies Institute (GR), Intelligent buildings, **coordinator**
- TU Kaiserslautern (DE), M2M standardisation concepts, HW/SW development
- Aalborg University (DK), smart grid expertise

Industrial & SME partners:

- Gorenje (SI), Industrial partner in the field of smart appliances
- OTE - Hellenic Telco Organisation – (GR), home gateways, energy management, communications
- BAVENIR (SK), Development and operation of VICINITY gateway
- CLIMATE ASSOCIATES LIMITED (UK), IoT standardization -> ETSI, Environmental assessment
- InterSoft (SK), IoT ontologies and AI expertise at value add services
- Gnomon Informatics (GR), special sensor devices for remote health and activity monitoring
- Tiny Mesh (NO), IoT platform, RF Mesh moduls and building and energy sensors.

End-users:

- Tiny Mesh (NO), use case in intelligent buildings
- Intelligent Transport Systems (NO), use cases of intelligent transport
- Energopark (PT), use cases in smart renewable energy domain
- Municipality of Pylaia (GR), "e-Health at home" use case

The **Consortium is open toward strategic stakeholders in the IoT domain**.

Possible Call - ICT 30 – 2015: Internet of Things and Platforms for Connected Smart Objects,

Deadline - 14-04-2015 17:00:00 (Brussels local time)

Budget - Proposals requesting a large contribution (5-8 million) are expected. The action may involve financial support to third parties (typically in the order of EUR 50.000 – 150.000 per party).