Digital Platforms for 'Interoperable and smart homes and grids'

Focus Area "Digitising and Transforming European Industry and Services"
Focus Area 'Digitising and transforming European industry and services', Platforms and Pilots

**LEIT-ICT**

DT-ICT-08-2019: Agricultural digital integration platforms  
DT-ICT-09-2020: Digital service platforms for rural economies  
DT-ICT-10-2018-2019: Interoperable and smart homes and grids  
DT-ICT-11-2019: Big data solutions for energy  
DT-ICT-12-2020: The smart hospital of the future  
DT-ICT-13-2019: Digital Platforms/Pilots Horizontal Activities

**SC1:**

- DT-TDS-01-2019: Smart and healthy living at home  

**LEIT-NMBP:**

- DT-NMBP-20-2018: A digital 'plug and produce' online equipment platform for manufacturing
Focus investments on:

- Integration of key digital technologies
- Digital industrial platforms, reference architectures, ...
- Reference implementations, large-scale piloting, experimentation environments
- Ecosystem building and standardisation
Towards digital platform economy

**WHY?**

- Market fragmentation makes it challenging to create novel IoT products and services
- Issues related to interoperability and IoT standardisation have not yet been solved
- Consumer market is evolving quickly → thread to B2C?

---

**Consumer IoT**

- Percentage of IoT platforms vendors focused on each segment:
  - Home: 21%
  - Lifestyle: 8%
  - Mobility: 8%
  - Health: 5%

**Business IoT**

- Smart Cities: 22%
- Energy: 21%
- Mobility: 20%
- Health: 16%
- Supply Chain: 16%
- Retail: 14%
- Public/Services: 9%
- Other business: 32%

 Courtesy: IoT Analytics, 2017
• **Target**
  - Link and align to *Strategy Digitising Europ. Industry DEI*
  - Fostering the take-up of IoT in Europe and enabling the emergence of *IoT ecosystems supported by open technologies and platforms.*

• **The challenge**
  - **Address business model validation & standardisation**
  - Address user validation and acceptability
  - Organisation of **open calls**
  - Exploitation of **security & privacy** mechanisms?
DEI Platforms & Pilots
Key Elements

Platform Building
- Enhance visibility
- Encourage experimentation
- Prevent further fragmentation
- Facilitate alliances across sectors and domains
- Use structural funds to stimulate MSs involvement

Piloting
- Realistic settings
- Increase availability of facilities
- Integration with legacy systems

Ecosystem Development
- Strong focus needed
- Actively engage SMEs, start-ups & entrepreneurs

Standardisation
- A key consideration in any platform development
- Better coordination of industrial, national and EU initiatives to stimulate interoperability
- Collaboration to achieve weight of EU actors
Specific Challenges:

• Novel services for more comfortable, convenient and healthier living environment at lower energy costs for consumers
• The integration of renewable energy sources (RES) and promotion of energy efficiency
• To match user needs with the management of distributed energy across the grid.
• Management of distributed energy across the grid, and to gain access to benefits from Demand Response
Perspectives for Smart Home Comfort

• Understanding IoT for the Home Consumer
  • Awareness – Fun
  • Interaction – Satisfaction
  • Security – Ownership

• B2C Considerations
  • Cross-cutting managed services
  • Managed Security & Lifecycle
  • Provision as a Service

Courtesy: State of IoT at Home, ALTIMETER Group Aug. 2017
Thriving for Energy Efficiency

Key challenge: flexibility (demand-side)
Key enabler: interoperability

- Goal: Delivering a fair deal for consumers
  - efficient integration of renewables
  - integrated smart home services through IoT
  - interoperable smart grids (production capacity optimisation)
Success Factors of a large-scale pilots

Approach:

- **Internet of Things (IoT) enables a seamless integration** of home appliances with related home comfort and building automation services // IoT reference architectures models based on platforms that enable the integration of relevant digital technologies like IoT, AI, cloud and big data services and where applicable, combined with blockchain technologies.

- **Developing interoperability and seamless data sharing across** different application domains such as home comfort & well-being, smart appliances, building automation and energy management,

- **Aligning existing standards from the utility and ICT domains**; and explore the need for further standardisation and legislation

- Active **user engagement** and a multi-disciplinary approach to ensure the understanding of user needs

- The envisaged **architecture** should **allow for third party** contributions that may lead to **new value added services** both in energy and the home/building domain.

Scale:

- **promote** the use of these **interoperable** solutions as widely as possible involving many different types of appliances

- Clear evidence of **demonstrating** the **benefits** of energy management through IoT application and services for the users

- **demonstrate** that such **platforms lead to** a marketplace for **new services** in EU homes and buildings
Expected Impacts

• Increasing number of **energy apps/services and home devices and appliances** allowing to shift consumption according to wholesale market or grid-constraints-related price signals.

• Validation of **user acceptance**, as well as demonstration of viable concepts that ensure privacy, liability, security and trust in connected data spaces.

• Accelerated wider deployment and adoption of **IoT standards and platforms** in smart homes and buildings in Europe.

• Platforms lead to **a marketplace for new services in EU homes and buildings** [*built on a sustainable European IoT ecosystems and related business models with opportunities also for SMEs and start-ups*]

• Increasing the **use of renewable energy and increased energy efficiency**, offering access to cheaper and sustainable energy for consumers and maximising social welfare.
SAREF (Smart Appliances REFerence ontology) - one common "language" for any home appliance to talk to any energy management system/entity

Stakeholder-inspired at a workshop

Energy and product related info

Fast track standardisation via a study by a broad stakeholder community (appliances, ETSI, TNO, EC, etc.) -> Global ETSI/OneM2M standard in 2015

Version 2 – modular structure with extensions (Energy, Building, Environment and many others upcoming such as Smart Cities)


Commercial products by EEBus/Energy@Home since 2016
Study on **aligning the standards** in the full **smart grid** *(demand-side flexibility (DSF))* value chain

- Address the **multitude** of non-aligned **standards** on a **semantic** level in the Demand-side flexibility (DSF) flow

- End result - from a semantic point of view the **most important** DSF use cases are possible.

- Stakeholder workshop in June:
  [https://www.dnvgl.com/events/interoperability-for-demand-side-flexibility-93109](https://www.dnvgl.com/events/interoperability-for-demand-side-flexibility-93109)

- Demoed at the European Utility Week in Amsterdam 3-5/10/2017

- Final report expected in November/December 2017
The Smart Grids Task Force (co-chaired by CONNECT and ENER)

- Set up by the European Commission in 2009 to advise on issues related to smart grid deployment and development.
- Currently the Task Force work is dedicated to the alignment of energy data formats with the aim to ensure interoperability and the development of network codes for demand-response, as well as cybersecurity. First interim reports: December 2017, final reports: December 2018.

Cybersecurity

- We are developing a comprehensive energy-sector strategy on how to reinforce the implementation of the NIS directive at energy sector level and also foster synergies between the Energy Union and the Digital Single Market agendas.
- In addition to the above, we are currently reviewing the EU Cyber Security strategy that will entail a proposal for the creation of a voluntary, flexible European Certification and Labelling Framework for ICT products and services (including for Internet of Things products and services).
• **Interoperability** – essential for a Digital Single Market, with seamless flow of data across sectors and value chains.

• All **high-level semantics standards defined** and after the EC study **aligned**. Scaling up needed.

• Underlying **IoT standards** - Chicken and egg – supply- and demand-side are both struggling to define standards at appropriate level and scale-up.

• **Innovation** – open innovation systems move fast, and the standards processes struggle to keep up.
Platforms
Interoperability Frameworks
Reference Architectures
...

Labs & Testbeds
Large-scale / System-level Experimentation

Standardization in a Global Context

Pan-European Acceleration Pooling of Investment

Up-scaling
Thank you - useful links

- Digitising European Industry Strategy (DEI):

- The Alliance of Internet of Things Innovation
  [http://www.AIOTI.eu](http://www.AIOTI.eu)


- ICT Proposers' Day: 9-10/11/2017 in Budapest