interconnect

interoperable solutions connecting smart homes, buildings and grids

WP9 – Sustainability of the InterConnect Project

D9.1

Standards and regulatory bodies impact plan

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DISCLAIMER:

EXECUTIVE SUMMARY

The work package 9 is structured in four tasks, which will be developed and implemented during the whole project (Task 9.1 Standards and regulatory bodies impact; Task 9.2 Go-to-market strategy and business impact; Task 9.3 Societal impact; Task 9.4 InterConnect community and ecosystem building).

This document presents the standards and regulatory bodies impact plan and the participation of the consortium in several initiative of reference in the ICT and Energy domains. This deliverable is divided into the following chapters: introduction, standardization & regulation plan and conclusion.

Actions toward standardisation and regulatory bodies are of prime importance for InterConnect. As a result, InterConnect has already started to identify relevant standardization bodies, and to align with their roadmap and work programme, so to maximize the potential project impact on their work. Among the goals of this activity, a better understanding of technical challenges relevant to the project objectives and results is expected. This will also help to have a consolidated visibility on the respective timelines of key standardization bodies, another key aspect for a successful impacting strategy.

As a matter of fact, InterConnect has identified various standardisation targets since the beginning of the project which are at the heart of the project scope such as relevant IEEE, ETSI standards, CEN/CENELEC and AIOTI where partners of the consortium are key participants. The project is already taking actions in the respective working groups.

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ABBREVIATIONS AND ACRONYMS

AIOTI	Alliance for the Internet of Things Innovation
CEN/CENELEC	European Committee for Electrotechnical Standardization
CIM	Context Information Management
DIH	Digital Innovation Hubs
DSO	Distribution System Operator
EC	European Commission
ESCOs	Energy Service Companies
ESO	European Standards Organisation
ETSI	European Telecommunications Standards Institute
EU	European Union
IoT	Internet of Things
KPI	Key Performance Indicators
MS	Milestones
PUC	Primary Use Case
RES	Renewable Energy Sources
SAREF	Smart Appliances REFerence ontology
SDO	Standards Developing Organization
WP	Work Package

1. INTRODUCTION

The InterConnect project aims at contributing to the democratization of efficient energy management, through a flexible and interoperable ecosystem through which the demand side participation can be actively supported with effective benefits to end-users. The project will be implemented based on a 48-month work plan, structured in eleven work-packages (WP).

The main objective of the WP9 is to ensure initial adoption and sustainability of the InterConnect results/solutions, throughout and after the end of the project. More specifically, this WP will target the:

- Technological relevance: sustain the InterConnect SAREF-compliant interoperability solutions through interactions with standardization and regulatory bodies and other associations (in T9.1).
- Business and market sustainability: provide tools and service/app enablers for smart energy communities stakeholders to ensure sustainability of their business with recommendations for innovative go-to-market strategies. Evolve existing and/or propose new recommendations and measures to policymakers in order to foster the creation of a marketplace for decentralised energy in homes and buildings (in T9.2).
- Societal impact: identify societal-wide impact based on the project results and provide tools and recommendations to foster decentralised energy market and RES use (in T9.3).
- InterConnect ecosystem formation: Initiate, organise and grow an ecosystem around the project to disseminate the project results to energy and the home/building domain (in T9.4).

Work Package (WP) 9 is structure in four tasks, which will be developed and implemented during the all project. The tasks, duration of each one is presented in the figure below.

FIGURE 1 – WP9 PLAN

This document consists of a Standardization and Regulation Plan. The plan outlined in this document focuses on the period that goes from the beginning of the project (M1) until its end (M48).

2. STANDARDIZATION & REGULATION PLAN

This document focuses mainly on the Standards and regulatory bodies impact plan. As a result, is to monitor, assess and, if deemed appropriate, engage all the relevant SDO and regulatory agencies. Project results will influence standards, whereas engagement with regulatory bodies will ensure that the proposals of the project are aligned with the different regulatory frameworks that are used in the main European countries. Major SDOs, associations and fora will be considered by the project (e.g., CEN/CENELEC, ETSI, AIOTI, ISO/IEC). In in this context, the activities include: a) identification and analysis of standards and SDO that can increase project's impact; b) development of an appropriate strategy for maximizing the impact to such bodies; c) engaging regulatory and standardization bodies for wider acceptance of the InterConnect outputs.

2.1 STRATEGY

Various partners in the InterConnect project have a long history in standardization and closely follow regular activities of standardization bodies, contributing and often leading these activities. The strategy of Interconnect is to contribute to standardization since the beginning of the project throughout its entire life-cycle, rather than submitting results only at the end of the project. Interconnect partners not only are engaged in standardization, but they actively make standardization happen. The strength of Interconnect is that its partners were already committed participants to standardization before the project started and will continue their active contribution to standardization also after the end of the project. In other words, standardization is at the core of this project. Interconnect achieves impact by monitoring as much as possible (in a broad variety of standardization and regulation bodies) while participating and leading strategically in selected, key activities of high impact (mainly related, but not limited to, SAREF, semantic interoperability in general, energy management and flexibility).

The overall strategy of Interconnect was presented on June 22nd 2021 at the 7th IEEE forum on Internet of Things[1] as showed in Figure 2. It leverages existing work in EC projects on use cases, interoperability (SAREF), architecture (3-D representations), and strive for contribution on use cases for energy, semantic interoperability for energy, IoT architecture and data space for energy, and security and privacy plan for energy ecosystems.

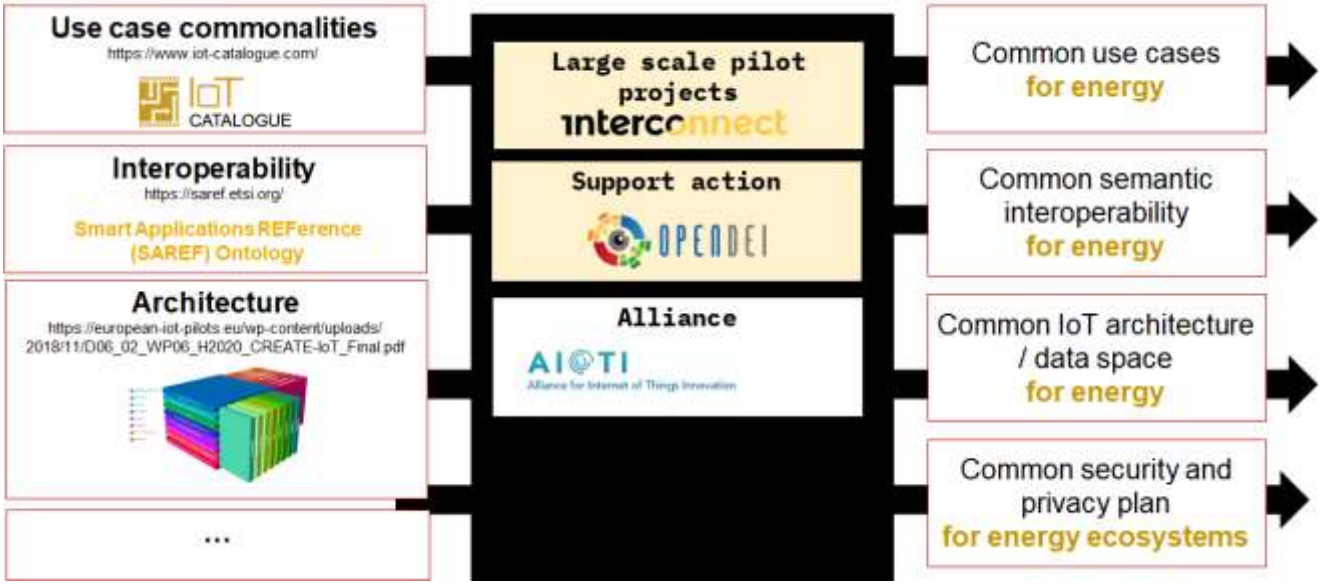

FIGURE 2 – STANDARDIZATION STRATEGY

Examples of ongoing InterConnect contributions are showed in Figure 3. A complete list is presented later:

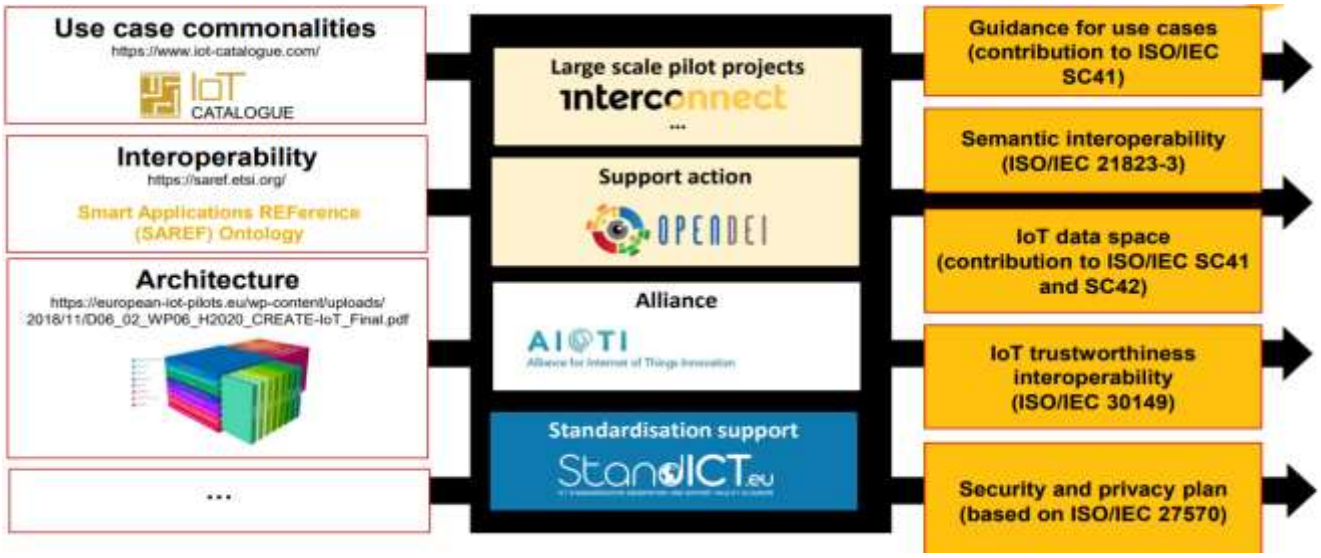

FIGURE 3 – EXAMPLES OF INTERCONNECT STANDARDIZATION CONTRIBUTIONS

[1] https://wfiot2021.iot.ieee.org/program/plenary-program/. The video of the session (presentation of interconnect 00:59:40 to 01:10:08): https://zoom.us/rec/share/vSC1ACJ2t9QjTGo17pxwpWFtxVJU8BB925AiWPBnVz8znm--XFOpC2JKe9w1CELz.UVYOW94XP8hqD3Mk

After taking stock of the participation of the InterConnect partners in standardization and regulation bodies, a list was compiled in this deliverable, according to the following template:

- Name of the targeted body
- Short description
- Partners involved
- Role (i.e., monitoring, participating, managing, leading)
- Additional function: (chair, rapporteur, other)

In addition, for each targeted body in which Interconnect partners are actively involved or leading, the deliverable outlines also the meetings (to be) attended, and the specific contribution of the Interconnect partners (ongoing or planned).

2.2 TARGETED BODIES

2.2.1 ETSI

2.2.1.1 ETSI ISG CIM

Name: ETSI ISG CIM

Description: The ISG CIM group's mission is to make it easier for end-users, city databases, Internet of Things and 3rd-party applications to exchange information. It aims to facilitate the exchange of contextual information between vertical applications, especially for use cases related to Smart Cities, but also to be extended later to Smart Agrifood and Smart Manufacturing. Applications using the NGSI-LD API can discover, access, update, publish, and manage data, including contextual information [1]. It is about bridging the gap between abstract standards and concrete implementations.

Partners involved: SENSINOV

Role: monitoring

Additional function: none

Meetings: occasional participation in regular and plenary meetings, but also with SmartM2M TC

Contribution:

- Contributions to ETSI TC SmartM2M to push SAREF ontology extensions in appropriate ETSI documents. Ensure SmartM2M will liaise with other groups (e.g., ETSI ISG CIM) to promote the endorsed SAREF extensions **(planned in 2023)**

- Stimulate discussion on cross-platform interoperability framework and approach for the home, building, and energy domains **(ongoing)**

2.2.1.2 ETSI ONEM2M

Name: ETSI oneM2M

Description: oneM2M is the global standards initiative that covers requirements, architecture, API specifications, security solutions and interoperability for Machine-to-Machine and IoT technologies. oneM2M specifications provide a framework to support applications and services such as the smart grid, connected car, home automation, public safety, and health. It actively encourages industry associations and forums with specific application requirements to participate, to ensure that the solutions developed support their specific needs. oneM2M specifies a Common Service Layer (CSL) for the Internet of Things. The CSL sits between applications and the network and exposes APIs to access functions commonly needed by IoT applications [2]. oneM2M has a base ontology that has been aligned to a large extent with SAREF.

Partners involved: SENSINOV, VLF

Role: monitoring

Additional function: none

Meetings: ETSI SmartM2M has three meetings per year, the only meeting planned to date is between March 1st – 4th.

Contribution:

- Extensions to oneM2M base ontology to align it with SAREF extensions contributed by InterConnect **(planned in 2023)**
- Present InterConnect's SAREF extensions during next meeting **(March, 2022)**
- Contribute to the cross-platform interoperability framework and approach for the home, building, and energy domains **(in progress)**

2.2.1.3 ETSI SMARTM2M

Name: ETSI SmartM2M

Description: The SmartM2M Technical Committee develops standards to enable M2M services and applications and certain aspects of the Internet of Things (IoT). The Committee is a partner in oneM2M and helps to produce the specifications to enable users to build

platforms by which devices and services can be connected, regardless of the underlying technology used. It enables connected devices to exchange information through the Smart Applications REFerence (SAREF) suite of ontologies that run with oneM2M-compliant communication platforms.

Partners involved: TNO

Role: leading

Additional function: rapporteur

Meetings:

- Participation in regular SmartM2M TC meetings (2 days 4x per year)
- (leading) participation in additional ad hoc-meetings concerning SAREF activities

Contribution:

- Updates about SAREF in Interconnect to ETSI SmartM2M members in regular TC meetings **(during the entire Interconnect project 2019-2024)**
- Submission of the SAREF extensions created in Interconnect to ETSI SmartM2M **(planned in 2022-2023)**
- Work Item DEN/SmartM2M-123158 on creation of EN 303 760 titled "SAREF Guidelines for IoT Semantic Interoperability; Develop, apply and evolve Smart Applications ontologies" based on SAREF suite of Technical Specifications. See https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=59591
  (planned Start of work 2022-02-01 and planned publication 2024-08-06)
- Contribution to SAREF roadmap and evolution, including writing of new SAREF Specialist Task Force (STF) proposal submitted to the EC (currently pending for funding, **planned for 2022-2023**). This new STF includes the following Work Items:
  - DTR/SmartM2M-103781 (TR 103 781) titled "SmartM2M; Study for SAREF ontology patterns and usage guidelines" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=61440
    SAREF extensions created in Interconnect will play a crucial role especially in this Work Item
  - DTR/SmartM2M-103782 titled "SmartM2M; SAREF: AI opportunities for the ontology context" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=61441

- DTS/SmartM2M-103826 titled “Smart M2M (SmartM2M); SAREF: AI Support for ontologies” at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63075
- DTR/SmartM2M-103827 titled “Smart M2M (SmartM2M); SAREF: Digital Twins opportunities for the ontology context” at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63114
- DTS/SmartM2M-103828 titled “Smart M2M (SmartM2M); SAREF: Ontology Support for Digital Twins and usage guidelines” at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63076
- DMI/SmartM2M-123169 titled “Smart M2M (SmartM2M); Report from STF SAREF/AI/DT dissemination activities” at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63077

- Yearly organization of ETSI IoT week (Laura Daniele-TNO part of the Programme Committee)
- Relevant presentations on Interconnect SAREF (standardization) activities to scientific events:
  - Presentation @ETSI IoT week 2021 by David Rua (INESC TEC) and Laura Daniele (TNO) (see https://vimeo.com/534951023) titled “Contributions to SAREF Towards an Interconnected World for Smart Homes, Buildings and Grids”)
  - Keynote @LDAC2020 by Laura Daniele (TNO) titled “Multiple paths to the destination: the SAREF journey” (see https://www.youtube.com/watch?v=uti93CscvFs&t=255s
  - Presentation by Barry Nouwt (TNO) @SEMANTICS 2021 (see https://2021-eu.semantics.cc/validating-interconnect%E2%80%99s-interoperability-layer-smart-home-environment) titled “Validating InterConnect’s interoperability layer in a Smart Home environment”

2.2.2 CEN/CENELEC

2.2.2.1 CLC TC 59X WG 07

Name: CLC TC 59X WG 07 **-** Performance of household and similar electrical APPLIANCES

Description: Aim of this WG is to prepare International Standards on methods of measurement of characteristics which are of importance to determine the performance of electrical appliances for household use or of electrical appliances for commercial use and that are of interest for the user. This may include associated aspects related to the use of the appliances and aspects such as the classification, accessibility and usability of appliances, ergonomic characteristics and conditions for the information provided at the point of sale. Appliances for household use designates equipment intended for housekeeping functions such as washing, cleaning, heating, cooling, cooking, etc. and appliances intended for use in the home environment such as shavers, hair care appliances, food preparation appliances, etc.

Partners involved: EEBUS

Role: leading

Additional function: Acting secretary + document editor

Meetings: Regular participation in working group meetings (one formal meeting per quarter; monthly review/work meetings)

Contribution:

- TC59x WG07 is planning in the process of creating a new revision of the **EN50631** series with a focus on interoperability. The results from the InterConnect project will make an important contribution as they will provide real-life experience with white goods in an energy management context.
- PUCs from InterConnect German pilots in standardization on EU level in EN50631 Ed.2 (submitted for ENQ).
- A mapping to energy and appliance-related ontologies developed as part of InterConnect can also be provided as a document in the EN50631 series.

According to the procedures of the group, Working Item (WI) proposals for the first four documents (use cases, specifics, SHIP, SPINE) have been submitted; additional WIPs for further documents will be submitted as soon as possible. Then, around 12 months are needed for preparing a working draft followed by a 3 month review approximately (which are the usual timings for such standards). So, overall 15 months will be needed for having a contribution influenced by InterConnect. The first four documents have been submitted for Enquiry; they are expected to be published as standards in early 2023.

2.2.2.2 CLC TC 205 – WG19

Name: CLC TC 205 – WG19 - ADHOC GROUP ON ENERGY MANAGEMENT ONTOLOGY
Description: The preliminary scope of TC 205 - WG19 is to create an ad-hoc group which aims to develop a common standard ontology starting from the existing data models (CEN, CENELEC, ISO and IEC).
Partners involved: EEBUS, KNX, TNO
Role: monitoring
Additional function: none
Meetings: after a kick off in 2020 with general introduction about ontologies to the WG members**,** no further meetings have been organized
Contribution: TC 205 WG 19 will work on an energy management ontology. The results of Interconnect W 2.4 in terms of a flexibility ontology (SAREF4ENERv2) can be brought into WG19 to become part of the new standard ontology. Main scope will be “Decentralized energy resources". Detailed timeline was not discussed yet within the group, which moves at slow pace.

2.2.2.3 CLC TC 205 – WG18

Name: CLC TC 205 – WG18 – SMART GRIDS
Description: This TC is responsible for the EN50491 standard series which consists of 11 documents that provide requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) regarding general requirements, eEnvironmental conditions, electrical safety, general functional safety for products intended to be integrated in Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS), EMC requirements, HBES installations and Smart Metering. The EN 50491 series of standards is entitled “General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS)” and contains requirements for HBES devices including environmental performance, safety, functional safety, EMC, and design, planning and installation. The EN 50491 series is in the process of replacing the existing EN 50090 series of standards entitled “Home and Building Electronic Systems (HBES)” covering the areas system overview, aspects of application, media independent layers, media and media dependent layers, interfaces, system management, conformity assessment of products and installation requirements.
Partners involved: EEBUS, KNX, TNO

Role: participating

Additional function: None

Meetings: Participating in working group meetings (until August 2021 weekly conference calls to finish the EN50491-12-2 draft).

Contribution:

- Input for EN50491-12-2 (General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 12: Smart grid - Application specification - Interface and framework for customer - Part 2: Interface between the Home/Building CEM and Resource manager(s) – Data model and messaging) and the data model for the S2 interface described therein, as well as for any upcoming standardization activities regarding other interfaces EN50491-12-2 will be submitted for formal voting on 05-11-2021. Voting will close on 31-12-2021. When approved, publication of the standard is planned for 30-06-2022.

2.2.3 AIOTI

Name: The Alliance for the Internet of Things Innovation (AIOTI)

Description: The AIOTI mission is to drive on behalf of their members business, policy, research and innovation development in the IoT & Edge Computing and other converging technologies across the Digital Value Chain to support digitization in Europe, and competitiveness of Europe.

Interconnect partners are active in the following AIOTI WGs:

- AIOTI WG02: Innovation ecosystems

Description: This working group works on recommendations to stimulate the development of Open Innovation eco-systems for Internet of Things (IoT) innovation in the EC. The IoT ecosystem will flourish only when many stakeholders work collaboratively together with open standards, platforms, and interfaces and when data flows. AIOTI WG02 IoT Innovation Ecosystems is coordinating the work of the IoT Digital Innovation Hub (DIH) Network which is important also for visibility of Interconnect.

Partners involved: TNO, Yncrea, VLF

Role: leading

Additional function: TNO (David Langley) Co-Chair

- AIOTI WG03: Standardisation

Description: Being the most active WG of AIOTI, the vision for WG03 is to be recognized as a major contributor to the worldwide interoperability, security, privacy, and safety of IoT systems and applications, and particularly for the development of the market in Europe.
Scope: (1) Maintaining an IoT standards framework landscape, (2) Consolidation of architectural frameworks, reference, architectures, and architectural styles in the IoT space, (3) HLA / High Level Architecture, (4) IoT identifiers, (5) IoT relation and impact on 5G, (6) (Semantic) Interoperability, (7) Personal data protection/privacy to the various categories of stakeholders, in the IoT space (with WG04 IoT Policy), (8) IoT Security (with WG04 IoT Policy)

Partners involved: Trialog, TNO

Role: leading

Additional function:

- Trialog (Antonio Kung) Co-Chair of WG3 and Amelie Gyrard
- TNO (Laura Daniele) Co-leader of WG3 Semantic Interoperability expert (sub)group

Meetings:

- (Leading) participation in Bi-weekly regular calls of Semantic Interoperability expert group
- Participation in AIOTI WG3 Quarterly Meeting, giving regular updates to WG3 members about Semantic Interoperability expert group activities.

Contribution:

- Ontology Landscape in IoT, draft document at https://tinyurl.com/2dvz34mf planned to be published as official AIOTI release 1 (**most likely Q1 2022**). Interconnect contributed to the landscape by providing information on the existing ontologies in Smart Energy and Smart Grids. The AIOTI Semantic Interoperability Expert Group is creating an IoT Ontology Landscape (summary draft: https://lnkd.in/d7YtrKd) as a tool for creating semantically interoperable IoT solutions. Add your IoT ontology by filling out our survey: https://lnkd.in/ddeS4zw We see that ontologies are perceived as a useful tool for interoperability by stakeholders, but we also get the feedback that it is difficult for industrial practitioners to understand them in practice. This hinders the further uptake of semantic technologies in general and the use of ontologies in particular. For example, to start with, a common question we get from non-experts is about which ontology to choose for their particular purpose. Which ontologies are

relevant in a certain domain? Where to find them? How to choose the most suitable? Who is maintaining and taking care of their evolution? These questions motivated our work on the IoT Ontology Landscape, which has the scope to guide stakeholders in the very first step of using ontologies in practice. Document: https://drive.google.com/file/d/1uYNoFqXaDNA8NSLkB-4xN-Pk5BXnQte7/view

- Semantics Tutorial presented at Online IoT Week 2021 - successful collaboration with SAREF team from ETSI (see https://sites.grenadine.co/sites/iot/en/iot-week-online-edition/items/8021, slides at https://tinyurl.com/4bt5kerp). Planned to be repeated in other events and improved in content **in 2022**. The AIOTI WG03 Standard (IoT Semantic Interoperability Expert Group) tutorial introduces the idea of semantic interoperability and the use of ontologies. Participants will learn what an ontology is and how it can be used. A focus will be on reusing and extending existing ontologies, e.g., SAREF, and getting experience on finding the right ontologies for a given purpose in an ontology catalogue. Finally, ontologies will be used to develop a semantic application for one application domain, e.g., smart home, which will then be extended to semantically interoperate with another application domain.
- Co-author of OpenDEI position paper on design principles for data spaces (https://design-principles-for-data-spaces.org/), in charge of chapter 1, fundamentals of data spaces,
- Starting the AIOTI/BDVA initiative for a common IoT architecture that would serve a data space on energy (see Figure 4)

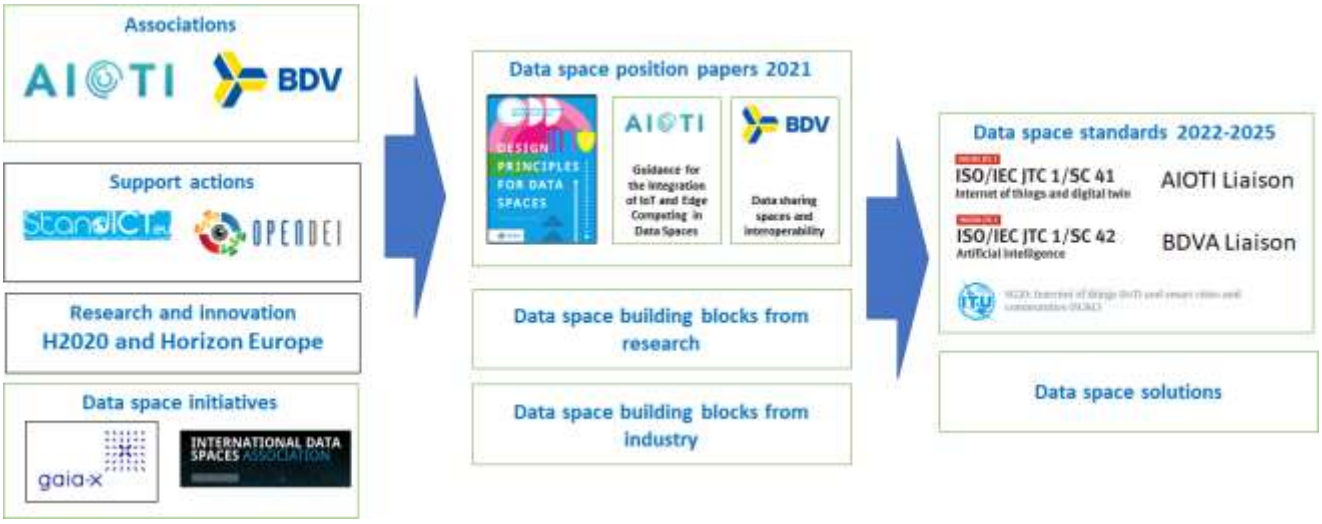

FIGURE 4 – INITIATIVE OF A FAMILY OF STANDARDS ON DATA SPACES

Name: AIOTI WG08: Smart Cities

Description: According to the successful Smart City Large Scale Pilot will tackle the demand side real needs and problems (citizens and cities) and will build on supply side technologies and challenges. It will demonstrate scalability and replicability through interoperability at the data layer, sustainability from economic and social perspectives, and will boost local digital life and economy in European cities.

Partners involved: SENSINOV, Trialog

Role: monitoring

Additional function: None

Name: AIOTI WG09: Smart Mobility

Description: This AIOTI group has prepared a report on smart mobility. The report defines the scope and focus of the WG and in particular considers applications of the Internet of Things to the mobility domain (Internet of Vehicles) as next step for future smart transportation and mobility applications with short-termed European wide economic potential and applicability. Partners of Interconnect are participating in this group and aspects of charging vehicles may brought into scope if relevant topics will be discussed.

Partners involved: Trialog

Role: monitoring

Additional function: None

Name: AIOTI WG12: Smart energy

Description: The topic for this Working Group refers to IoT solutions deployed by various companies along the value chain (i.e. IoT technology providers, energy companies (in generation, supply, grid and market participants, traders, aggregators, etc.) to allow the performance optimisation of their energy asset portfolios (Renewables plants, Grid Substations, Control Rooms, Prosumer Demand Responsive Loads and EV Charging infrastructures). Such aspects are very relevant to Interconnect and will be closely monitored.

Partners involved: Yncrea, Trialog

Role: monitoring

Additional function: None

Name: AIOTI WG13: Smart buildings

Description: The topic of this Working Group is the IoT technologies and solutions deployed in buildings and districts of buildings to improve life of the occupant by addressing and optimizing elements such as comfort, light, temperature, air quality, water, nourishment, fitness, and energy usage.

Partners involved: SENSINOV, VLF

Role: monitoring

Additional function: None

2.2.4 ISO/IEC

Name: ISO/IEC

Description: Interconnect partners are active in the following groups:

- ISO/IEC 5312 Knowledge engineering RA,
- ISO/IEC 21823-3 for semantic interoperability
- ISO/IEC 30149 IoT trustworthiness principles
- ISO/IEC PWI-6 Guidance for IoT and digital twin use cases
- ISO/IEC 23751 data sharing agreement (DSA) framework
- ISO/IEC 27403 IoT security and privacy - Guidelines for IoT domotics
- ISO/IEC 27402 IoT security and privacy - Device baseline requirements
- ISO/IEC 27556 User-centric framework for the handling of personally identifiable information (PII) based on privacy preferences
- ISO 31700 Privacy-by-design for consumer goods and services
- IEC TC 69 PT 63380 on e-mobility

Partners involved: Trialog, EEBUS

Role: participating

Additional function: Trialog is co-Editor of ISO/IEC 21823-3 on IoT semantic interoperability, co-Editor of ISO/IEC PWI-6 Guidance for IoT and digital twin use cases, convenor of SC41/AG25 Use cases, co-Editor of ISO/IEC 30149 IoT trustworthiness principles, convenor of SC41/Ahg26 Trustworthiness interoperability, co-editor of ISO/IEC 27556 User-centric framework for the handling of personally identifiable information (PII) based on privacy.

Meetings: Regular participation/lead in TC 69 PT 63380 on e-mobility, ISO/IEC JTC1 (AG8 on architecture, WG13 on trustworthiness, SC41 on IoT and digital twins, SC27 on cybersecurity and privacy, SC42 on AI).

Contribution:

- Include e-mobility-related PUCs from German InterConnect pilots in TC 69 PT 63380 on e-mobility **(draft planned late 2021; to be published in late 2023)**
- Impact Report from StandICT.eu 2023 Fellowship Programme https://zenodo.org/record/5179890#.YRoWU4gzY2z . Interconnect is mentioned page 10 in this report, Amelie Gyrard and ISO activities are described (page 12-13), and Olivier Genest (page 14-15).
- Contributions to several standards as editor,
- Starting two initiatives whch leverage the work of Interconnect: a new work item on privacy models and a study on privacy in data spaces (see figure below))

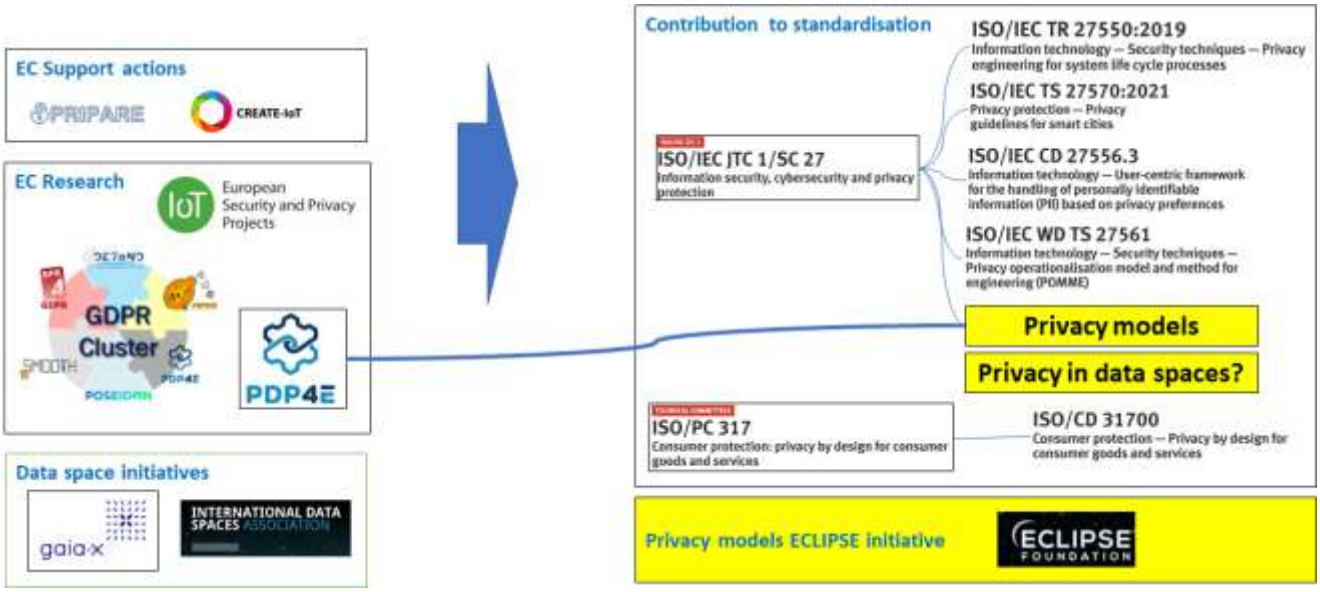

FIGURE 5 – INITIATIVE FOR A STANDARD ON PRIVACY MODELS AND PRIVACY IN DATA SPACES

2.2.5 BDVA/DAIRO

Name: Big Data Value Association (BDVA)

Description: The mission of the BDVA is to develop the Innovation Ecosystem that will enable the data and AI-driven digital transformation in Europe delivering maximum economic and societal benefit, and, achieving and sustaining Europe's leadership on Big Data Value creation and Artificial Intelligence.

Interconnect partners are active in the following BDVA task force:

- BDVA TF6: Technical

Partners involved: Trialog

Role: participating

Meetings:

- All AG meetings
- Standardisation meetings concerning ADRA (https://ai-data-robotics-partnership.eu/)

Contribution:

- Starting the AIOTI/BDVA initiative for a common IoT architecture that would serve a data space on energy (see Figure 4)

- BDVA TF10: Data sharing spaces

Partners involved: Trialog

Role: participating

Meetings:

- Position papers meetings

Contribution:

- Participation to the 1st position paper: Towards a European Data Sharing Space - Position Paper (2019) Lopez de Vallejo, I., Scerri, S., Tuikka, T. (eds).
- Participation to the 2nd position paper: Towards a European Governed Data Sharing Space - BDVA/DAIRO position paper (November 2020)

2.2.6 REGULATORY BODIES

The main regulatory body in France for the energy market is the French Energy Regulatory Commission (**CRE** - Commission de Régulation de l'Energie), its missions consist in:

- participating in the construction of the internal European market in energy
- contributing to the smooth functioning of the electricity and natural gas markets, for the benefit of end consumers
- regulating the networks for gas and electricity, which are monopolies: setting tariffs and ensuring they do not give any user an undue advantage
- ensuring that consumers are properly informed
- implementing certain mechanisms to support renewable energies, by organising tender processes

The French authority in data protection is the **CNIL** (Commission Nationale Informatique et Libertés). Beyond raising awareness and sharing information on data protection culture, the CNIL has an advisory power, an onsite and offsite investigatory power as well as an administrative sanctioning power. It has established and coordinates the network of Data

Protection Officers (also known as the "Correspondants Informatiques et Libertés"). The CNIL analyses the consequences of new technologies on citizens' private life. Finally, it collaborates closely with its European and international counterparts.

In Portugal, **ERSE's**, the Energy Services Regulatory Authority, purpose is to regulate, throughout the Portuguese territory, the electricity, natural gas, liquefied petroleum gas (LPG) in all categories, petroleum-derived fuels and bio-fuels sectors, and the operations management of the electric mobility network. Its vision is to create value for society through an independent, transparent, and sustainable regulation of the energy sector, by promoting the efficiency of the markets and by strengthening consumer confidence.

DGEG, Directorate General for Energy and Geology, aims to contribute to the conception, promotion and assessment of policies related to energy and geological resources in Portugal, promoting a sustainable development and ensuring security of supply. DGEG is also keen on raising awareness of the citizens to the importance of those policies within a sustainable economic and social development framework, sharing information on available instruments to the execution of the political decision making and disclosing the impact and results of its implementation.

Any recommendations and guidelines from InterConnect (for example on applicability of the developed ontologies / protocols / standards, pilot conclusions, exploitation and replicability plans, etc.) will need to comply with both institutions vision and mission.

In Greece, the Regulatory Authority for Energy (**RAE**) is an independent administrative authority, which enjoys, by the provisions of the law establishing it, financial and administrative independence. The main duties and responsibilities assigned to RAE relate to the following subjects: (i) Monitoring the operation of all sectors of the energy market (Electricity, Natural Gas, Oil Products, Renewable Energy Sources, Cogeneration of Electricity and Heat etc.); (ii) Collection and processing of information from companies in the energy sector while respecting the principles of confidentiality; (iii) Cooperation with Regulatory Authorities of other countries, international Organisations and the European Commission; (iv) Advice under the form of a simple opinion, with respect to the terms and conditions for access to the transmission and distribution networks. Approval of the methodologies for the access tariffs to electricity transmission and distribution networks and various other aspects.

2.3 ACTION PLAN

The following table provides an overview of the identified SDOs and planned activities described in Section 2.2.

SDOs/Activity		Partners	Audience/ Timeframe for contributions	Planned Contributions	Planned Date
ETSI	ISG CIM	SENSINOV	12 months are needed for preparing a working draft followed by a 3-month review approximately (usual timings for such standardization bodies)	Monitoring	
	oneM2M	SENSINOV, VLF		Monitoring	
	SmartM2M (**primary focus** - once done, the input should be forwarded to CLC TC205 WG19 as a proposal for inclusion)	TNO (as primary contact), all partners contributing in SAREF.		• Plan to submit the SAREF extensions created in Interconnect to ETSI SmartM2M starting in **Q1 2022** • Planned Work Item **(Start of work 2022-02-01 and planned publication 2024-08-06)** DEN/SmartM2M-123158 on creation of EN 303 760 titled "SAREF Guidelines for IoT Semantic Interoperability; Develop, apply and evolve Smart Applications ontologies" based on SAREF suite of Technical Specifications	**2022-2024**
	Contribution to SAREF roadmap and evolution, including writing of new SAREF Specialist Task Force (STF) proposal submitted to the EC (currently pending for funding). This new STF includes the following Work Items: • DTR/SmartM2M-103781 (TR 103 781) titled "SmartM2M; Study for SAREF ontology patterns and usage guidelines" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=61440 à **SAREF extensions created in Interconnect will play a crucial role especially in this Work Item** • DTR/SmartM2M-103782 titled "SmartM2M; SAREF: AI opportunities for the ontology context" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=61441 • DTS/SmartM2M-103826 titled "Smart M2M (SmartM2M); SAREF: AI Support for ontologies" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63075 • DTR/SmartM2M-103827 titled "Smart M2M (SmartM2M); SAREF: Digital Twins opportunities for the ontology context" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63114 • DTS/SmartM2M-103828 titled "Smart M2M (SmartM2M); SAREF: Ontology Support for Digital Twins and usage guidelines" at https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63076 • DMI/SmartM2M-123169 titled "Smart M2M (SmartM2M); Report from STF SAREF/AI/DT dissemination activities"			**2022-2023**

SDOs/Activity		Partners	Audience/ Timeframe for contributions	Planned Contributions	Planned Date
	at: https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63077				
CLC	TC 59x WG 07 **(primary focus)**	EEBUS	12 months are needed for preparing a working draft followed by a 3-month review approximately	Contributions planned for use cases of: • PUC#18: Monitoring of DHW Temperature • PUC#19: Configuration of DHW Temperature • PUC#20: Configuration of DHW System Function • PUCs from InterConnect German pilots in standardization on EU level in EN50631 Ed.2 (submitted for ENQ)	**2023 or later** **Final Vote Dec, 2022, publication March 2023**
	TC 205 – WG19	EEBUS, KNX, TNO		Monitoring	
	TC 205 – WG18 **(primary focus)**	EEBUS, KNX, TNO		Input for EN50491-12-2 (General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 12: Smart grid - Application specification - Interface and framework for customer - Part 2: Interface between the Home/Building CEM and Resource manager(s)	To be submitted for formal voting on **05-11-2021**. Voting will close on **31-12-2021**. When approved, publication of the standard is planned for **30-06-2022**.
AIOTI	WG02 – Innovation Ecosystems	Yncrea, TNO, VLF	Depending on discussed topics and WGs. Contributions and white papers are targeted.	Leading, Monitoring	
	WG03 – IoT Standardization	TNO, Trialog	Depending on discussed topics and WGs. Contributions and white	• TNO co-leading together with NEC of Semantic Interoperability expert group • (Leading) participation in Bi-weekly regular calls of	**2021-2024** Liaison letter to SC41 sent on October 2021

SDOs/Activity		Partners	Audience/ Timeframe for contributions	Planned Contributions	Planned Date
			papers are targeted.	Semantic Interoperability expert group • Participation in AIOTI WG3 Quarterly Meeting, giving regular updates to WG3 members about Semantic Interoperability expert group activities	
		Trialog	Depending on discussed topics and WGs. Contributions and white papers are targeted.	• Co-Chair of AIOTI WG3 since May 2021 • Provision of initial draft of the AIOTI and BDVA position paper. • Meeting every two weeks in the HLA working group • Interactions with SC41 and SC42 to announce the position paper and declaration of intention to create a family of data space standards • Discussion with GAIA-X to ensure alignement of standards	Draft version available in **July 2021**. Slide deck prepared for SC41 October plenary
	WG08 – Smart Cities	SENSINOV, Trialog		Monitoring	
	WG09 – Smart Mobility	Trialog		Monitoring	
	WG12 – Smart Energy	Yncrea, Trialog		Monitoring	
	WG13 – Smart Buildings and Architecture	SENSINOV, VLF		Monitoring	
ISO/ IEC	• ISO/IEC 5392 Knowledge engineering RA, • ISO/IEC 21823-3 for semantic interoperability	Trialog	Approximately one year is needed for preparing a working draft followed by a 3-month review approximately	Trialog is co-Editor of ISO/IEC 21823-3 on IoT semantic interoperability	**Finalisation of 21823-3 for publication Contributions in July on 5392**
	• ISO/IEC PWI-6 Guidance for IoT and digital twin use cases	Trialog		Trialog is co-Editor of ISO/IEC PWI-6 Guidance for IoT and digital twin use cases. Trialog is convenor of SC41/AG25 Use cases,	First draft of PWI-6 Guidance on IoT and digital twin use cases provided
	• ISO/IEC 23751 data sharing agreement (DSA) framework	Trialog		Contribution on ecosystems and collaboration with NIST	**1st semester 2021**
	• ISO/IEC 30149 IoT trustworthiness principles	Trialog		Trialog is co-Editor Trialog is convenor of SC41/Ahg26 Trustworthiness interoperability.	**Contribution in March 2021**

SDOs/Activity		Partners	Audience/ Timeframe for contributions	Planned Contributions	Planned Date
	• ISO/IEC 27403 IoT security and privacy - Guidelines for IoT domotics • ISO/IEC 27402 IoT security and privacy - Device baseline requirements	Trialog		Participation tof comment resolution meetings	**Several meetings in 2021**
	• ISO/IEC 27556 User-centric framework for the handling of personally identifiable information (PII) based on privacy preferences	Trialog		Trialog is co-editor of ISO/IEC 27556 User-centric framework for the handling of personally identifiable information (PII) based on privacy	**Contribution in May 2021**
	• ISO 31700 Privacy-by-design for consumer goods and services	Trialog		Contribution on use case. Editor of a work item on use cases	**Contribution in September 2021**
	• A new work item on privacy models • A study on privacy in data spaces	Trialog		Interactions with PC317 and SC27 to announce the creation of a preliminary work item on privacy models. That will be followed by work on data spaces	**October 2021**
	• Regular participation in TC 69 PT 63380 on e-mobility (by EEBUS)	EEBUS		(Leading) participation; PUCs from InterConnect # 1, 2, 7, 10, 11, 12, 13, 14	Draft: **Q1/2022** Standard **Q1/2024**
BDVA	TF6	Trialog	Contributions ongoing	Participation	Position paper **Q4 2021**
	TF10	VU, Trialog	Contributions ongoing	Participation	
DKE	• Regular participation in working groups on e-mobility, grid connection and energy management (AK 353.0.11, 353.0.12, 353.0.401, 901.0.4, K716)	EEBUS	Contributions ongoing	PUCs 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14 from InterConnect standardized nationally in two application rules: • AR 2829-6-x Ed. 1: PUCs 1, 2, 3 • AR 2829-6-x Ed. 2: + PUCs 4, 5, 6 in work • AR 2122-1000 Ed. 1: PUCs 1+2 AR 2122-1000 Ed. 2: + PUCs 7, 10, 11, 12, 13, 14) in work/ preparation	AR 2829-6-x Ed. 1 released; Ed. 2 planned for **H2 of 2022** AR 2122-1000 Ed. 1 to be published **December 2021**; Ed. 2 in parallel to IEC PT 63380

TABLE 1 – INTERCONNECT ACTION PLAN

3. CONCLUSION

This deliverable aimed at defining a standards and regulatory bodies impact plan for the InterConnect project. Other deliverables will be submitted under the scope of WP9 during the 48 month of the project and some strategies depend on the results of other WPs. Nevertheless, the strategy has been outlined, the target bodies have been identified together with an action plan of contributions with timelines. Potential risks include the time needed for publication of related standardization activities to have meaningful impact during and after the project's lifetime, as part of the InterConnect sustainability.

REFERENCES

EXTERNAL DOCUMENTS

[1] ETSI – CIM. https://www.etsi.org/committee/cim

[2] oneM2M. https://www.onem2m.org/

INTERCONNECT DOCUMENTS

[3] InterConnect Grant Agreement number 857237.