Alliance for IoT
and Edge Computing
Innovation

Webinar • 17 April 2023

Presentation of WG Standardisation reports

IoT and Edge Computing EU funded projects landscape

IoT LSP Standard Framework Concepts

AIOTI

Opening and Welcome

Georgios Karagiannis, AIOTI WG Standardisation Chair (Huawei)

AIOTI

Agenda

AICTI

Agenda

15.00 **Opening and Welcome (10 min)**

Georgios Karagiannis, AIOTI WG Standardisation Chair (Huawei)

15.10 **Presentation of the IoT and Edge Computing EU funded projects landscape Report (10 min)**

Zbigniew Kopertowski (Orange), report editor

15.20 **Presentation of the project example (20 min)**

George Suciu (BEIA Consult) - IoT-NGIN project

Vivek Kulkarni (Siemens AG) – IntellIoT project

Prof. Dr. Simon Mayer (University of St. Gallen) – IntellIoT project

15.40 **Presentation of the Report IoT LSP Standard Framework Concepts (10 min)**

Georgios Karagiannis, AIOTI WG Standardisation Chair (Huawei)

15.50 **Presentation of the SDO work (10 min)**

David Boswarthick (ETSI), report contributor

16.00 **Questions from the audience (20 min)**

Moderated by Georgios Karagiannis,
AIOTI WG Standardisation Chair

16.20 **Wrap up and end of Webinar (10 min)**

Georgios Karagiannis, AIOTI WG Standardisation Chair

About AIOTI
WG Standardisation

AIOTI

Leadership and Vision

Chair
Georgios Karagiannis
Huawei

Co-Chair
Antonio Kung
Trialog

Vision:
To be recognized as a major contributor to the worldwide interoperability, security, privacy and safety of IoT and Edge Computing systems and applications, and particularly for the development of the market in Europe

Deliverables:
https://aioti.eu/standardisation/

Latest deliverable: Report IoT and Edge Computing impact on Beyond 5G: enabling technologies and challenges R2

Scope

Sub-Group	Lead	Deliverable
IoT Landscape	Georgios Karagiannis (Huawei)	
IoT Landscape maintenance	Georgios Karagiannis (Huawei), Z. Kopertowski (Orange), A. Rennoch (Fraunhofer)	last version focusing on edge computing landscape maintenance published in September 2021
Gap Analysis and recommendations	Georgios Karagiannis (Huawei)	3rd release published in April 2022, focusing on edge computing gap analysis
Cooperation with SDOs/Alliances	Georgios Karagiannis (Huawei)	
IoT relation and impact on 5G and beyond	Georgios Karagiannis (Huawei)	report published in April 2023
Computing Continuum	Ronald Freund (Fraunhofer)	report published in April 2022
High Level Architecture for IoT, Edge Computing and Digital Twins	Marco Carugi (Huawei)	
IoT Reference Architecture	Marco Carugi (Huawei)	report published in December 2020
IoT identifiers	Juergen Heiles (Siemens)	1st release published February 2018
Guidance for the Integration of IoT and Edge in Data Spaces	Antonio Kung (Trialog)	report published on 23 September 2022
Semantic Interoperability	Martin Bauer (NEC Lab) Laura Daniele (TNO)	Ontology Landscape Report published in Dec 2021, webinar Jun 2022
Security and Privacy in computing continuum	Antonio Kung (Trialog) Asbjorn Hovsto (Hafenstrom)	AIOTI Workshop Report Security and Privacy in IoT, 2016 AIOTI 2nd Workshop Report Security and Privacy in IoT, 2016 Final Report Workshop Privacy and Security in IoT, 2017 IoT Risk Classification Spectra, Rolling Release, webinar Jul 2022

Highlights

Relevant facts:
113 member organisations, 204 participants

Main achievements:

Deliverables	Collaborations	Events
• IoT Landscape Reports • High priority gaps Reports • IoT relation and impact on (beyond) 5G Reports • High Level Architecture and IoT Identifier Reports • IoT Risk Classification Spectra • Semantic Interoperability Joint White Papers • Ontology Landscape • Guidance for the Integration of IoT and Edge in Data Spaces	• Cooperation with SDOs/Alliances to foster co-creation and interworking (MoUs and Liaisons) • SNS Partnership • Trans Continuum Initiative • Stand.ICT - EU OS • EGDC	• AIOTI signature event 2020/2021/2022 • IoT Week – lead standards track • IoT and Edge computing workshops • Chariot project webinar • Navigating IoT Architectures and Standards Days Event • Edge Computing Forum • ETSI IoT Week • Policies to support Data Markets

Priorities 2023 (I)

IoT and Edge Computing Landscape

- Cooperation with SDOs/Alliances to foster co-creation and interworking
- Maintain IoT and Edge Computing landscapes
- Recommendations and guidelines on solving protocol and interface gaps needed to support new IoT and Edge Computing features
- Provide Computing Continuum requirements (on IoT and edge computing) and (Optical Communication) enablers
- Provide guidelines on how IoT can become an enabler for 5G (and beyond 5G) and vice versa
- Provide guidelines on how IoT and Edge Computing standardisation can impact the Industry Digitization, and vice versa
- Provide guidelines on how IoT and Edge Computing standardisation can impact the UN SDGs and European Green Deal, and vice versa
- Explore and document the EU funded projects landscape focusing on IoT and Edge computing

High Level Architecture (HLA)

- Recommendations of reference architectures, both for experimentation and deployments within IoT domains and cross - IoT domains
- Architecture and interfaces for IoT & Edge Computing Data (Services & Solutions) marketplaces; Guidelines for Data Access and Data Sharing; Guidelines of enhancement of data sharing in support of the Green Deal e.g. GreenData4all, Destination Earth (A European strategy for data - Common European Green Deal data spaces)
- Recommendation of an interoperable IoT Identifier space that transcends geographical limits
- Recommendations for a Digital Twin based IoT and Edge Computing reference architecture

Priorities 2023 (II)

Semantic Interoperability

- Identification of missing (semantic) interoperability standards and technologies within IoT domains and cross - IoT domains and recommendations for solving them. In addition, topics related to the impact of edge computing on semantic Interoperability will be as well taken into account
- Promoting the use and development of Open Reference Vocabularies and Open Application Programming Interfaces to allow for flexible ad-hoc communication and interaction between different actors within IoT domains and cross - IoT domains
- Landscape of ontologies supporting semantic interoperability
- Investigate the impact of the Twin green and digital transformations on existing semantic interoperability models and ontologies

Security and Privacy

- GDPR conformance of communications and data storage in an IoT network and in devices
- Careful identification of properties of devices, restriction to absolutely necessary data details, etc.
- Anonymity preservation: considering their different roles in various applications, including AI aspects, transparency in processing, disclosure/transfer control, threat analysis, certification, encryption, best practices for compliance, stakeholder roles/rights/responsibilities, de-personalization of data to safeguard privacy (e.g. when building digital twins)
- Assessment and certification/qualification: threat analysis, certification, best practices for compliance, stakeholder roles/rights/responsibilities for IoT/Edge Computing (e.g. devices, infrastructures, platforms)
- Privacy in complex systems/system of systems (e.g. edge analytic, data spaces, digital twins, AI systems), network, service, resource and data orchestration and decentralisation (also Security Work Item), together with Cybersecurity assurance of complex system (digital twins, AI systems, data spaces)
- AI based threat detection and classification
- Security of edge processing
- IoT/Edge computing related to human & infrastructure safety and security in various applications including AI aspects
- Security and privacy of autonomous vehicles and drones for mobility
- Physical security of unattended devices: cybersecurity, security and privacy of verticals (e.g. health, manufacturing, mobility and critical infrastructure)

Presentation of the IoT and Edge Computing EU funded projects landscape Report

Zbigniew Kopertowski (Orange), report editor

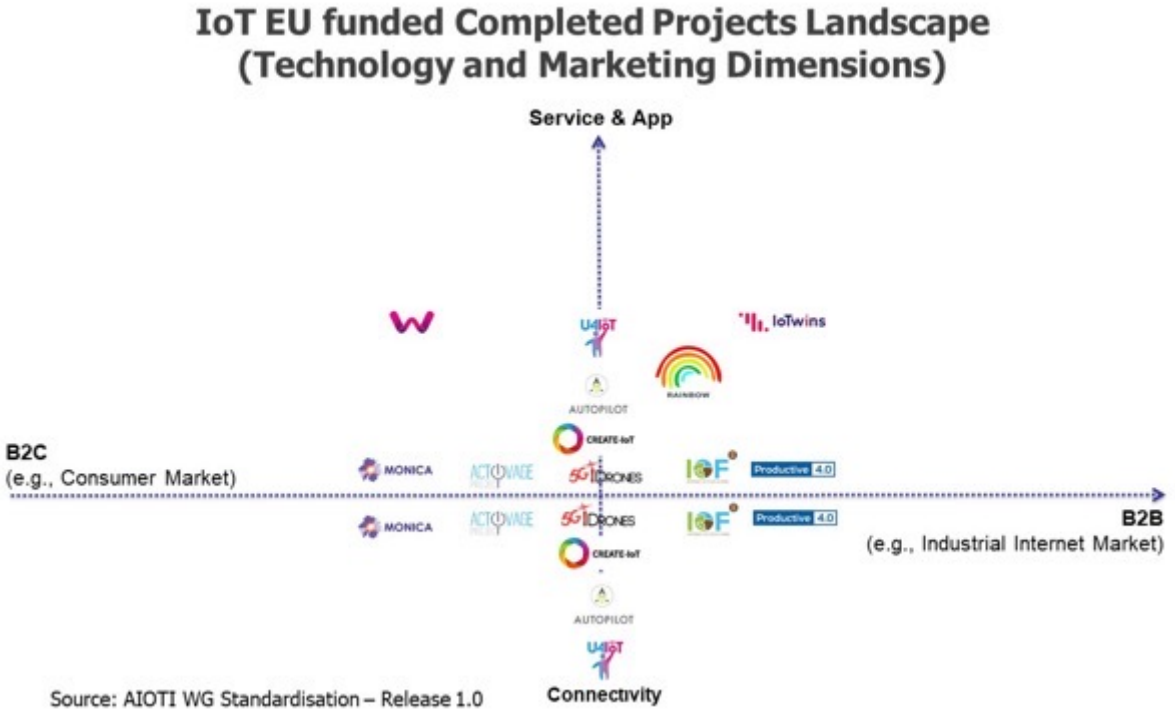
AIOTI

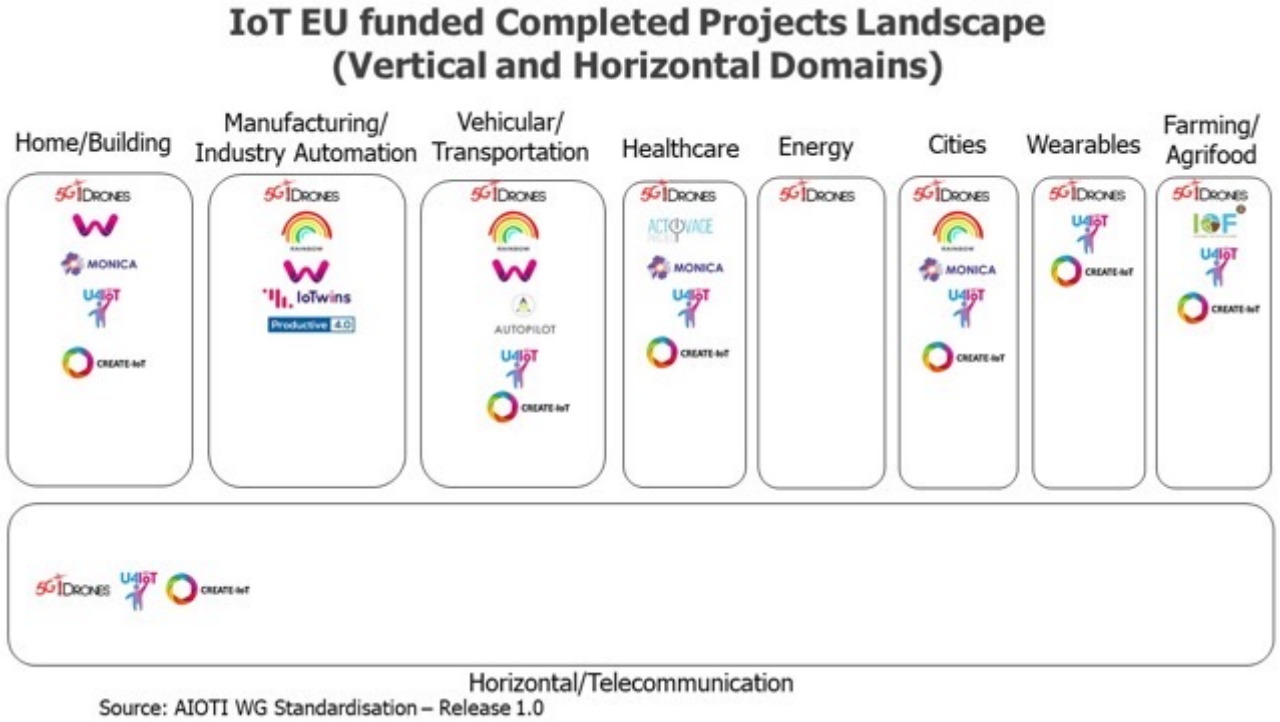
Goal and Content of the Report

- **Published on 10 January 2023**: "IoT and Edge Computing EU funded projects landscape, Release 1", https://aioti.eu/wp-content/uploads/2023/04/AIOTI-Report-EU-funded-research-projects-landscape-IoT-Edge-Final.pdf
- **Goal of report:**
  - Present the EU funded projects focusing on IoT and edge computing, which can be used to:
    - ✓ leverage on existing IoT and edge computing research and innovation activities in Europe, and
    - ✓ provide input to IoT and edge computing standardisation gap analysis activities
- **Method of collecting information:**
  - ✓ Using template
  - ✓ Inputs provided by AIOTI members coming from completed and ongoing EU funded IoT and Edge Computing projects
- **Table of contents:**
  - ✓ Executive Summary
  - ✓ 1. IoT EU funded projects landscape
    - ✓ 1.1 Completed Projects
    - ✓ 1.2 Ongoing Projects
  - ✓ 2. Edge Computing EU funded projects landscape
    - ✓ 2.1 Completed Projects
    - ✓ 2.2 Ongoing Projects
  - ✓ Annex I. Used Template for input collection

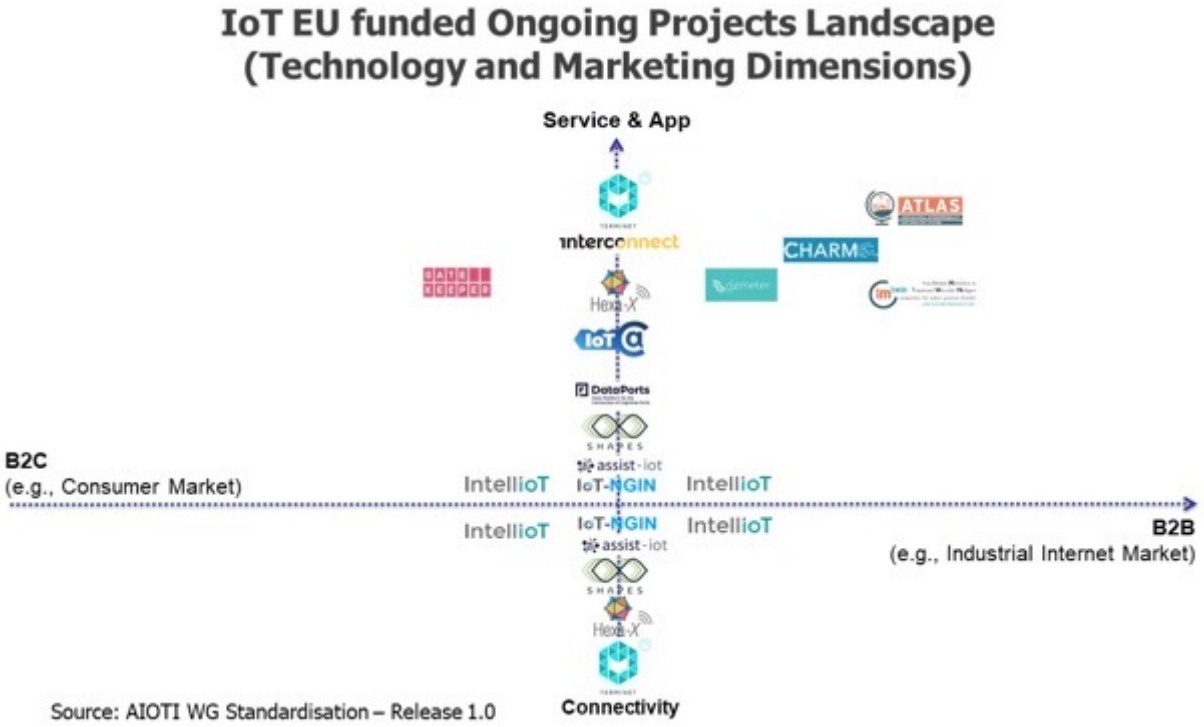
- **Summary of used template**
  - Title of the EU funded Project
  - URL/Reference
  - Abstract
  - Starting and (target) end time of project
  - IoT and/or Edge Computing research challenges
  - Expected activities on "Dissemination and Impact on Standards"

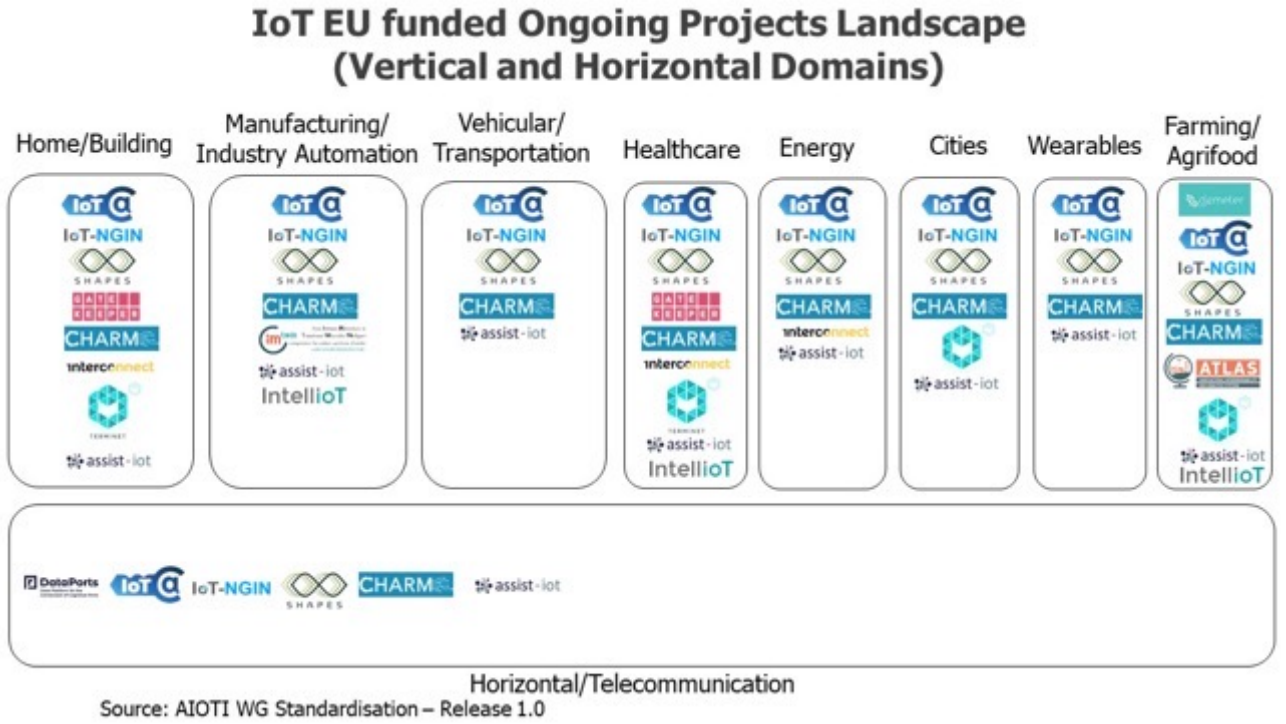
IoT EU funded Completed Projects Landscape



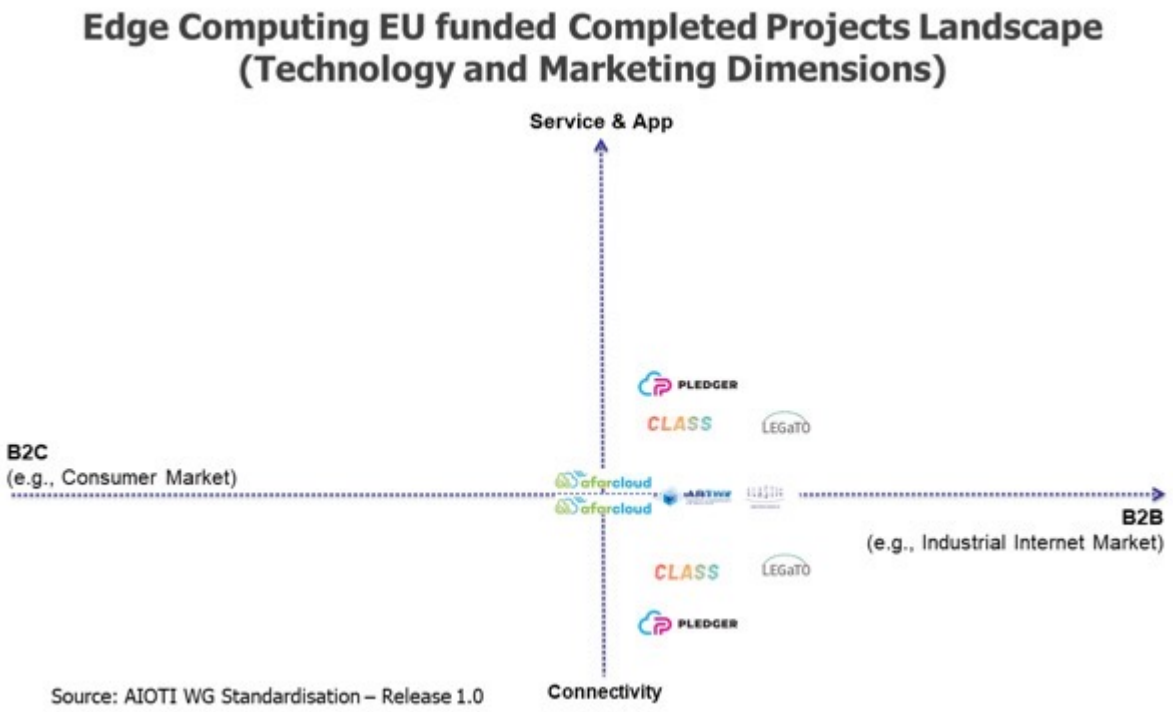


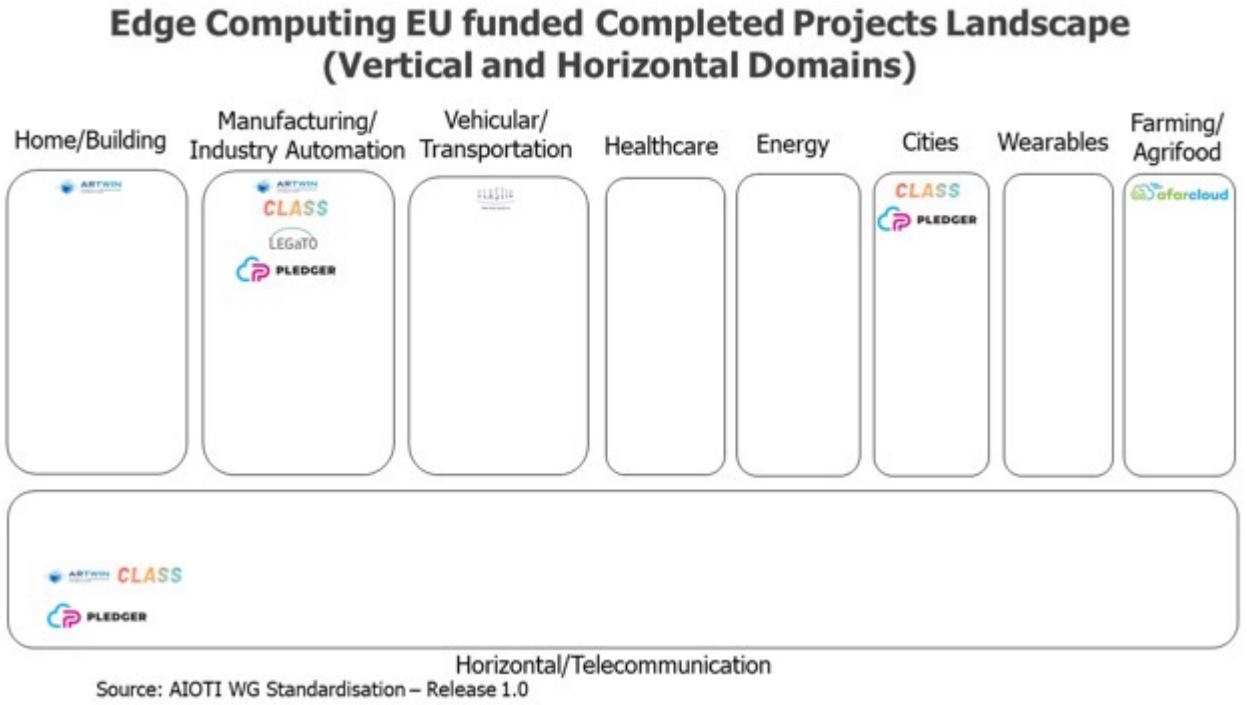
IoT EU funded Ongoing Projects Landscape



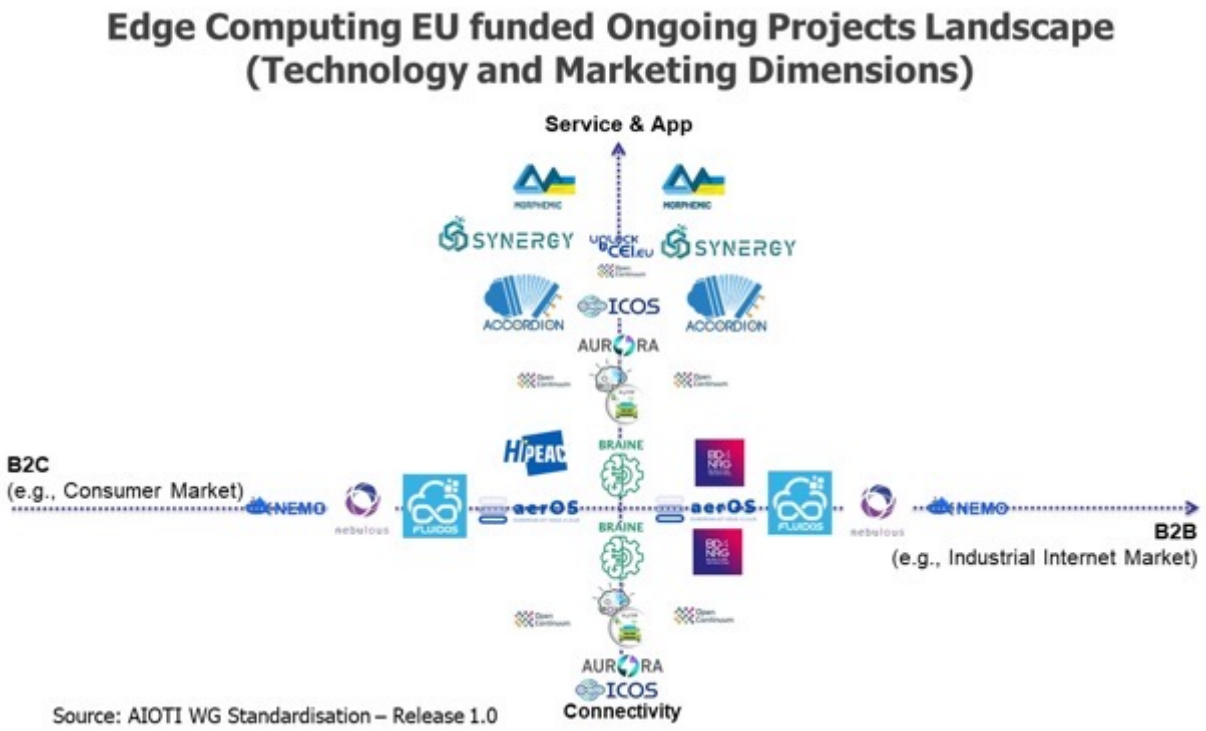


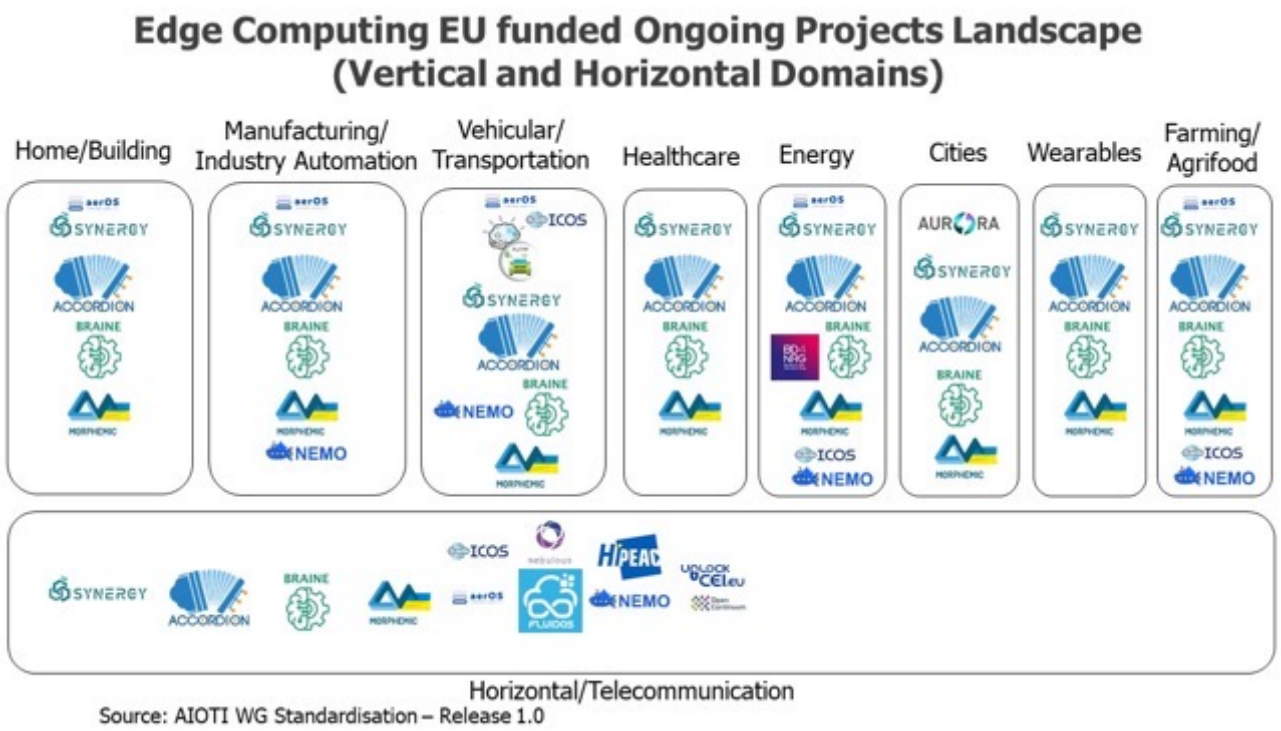
Edge Computing EU funded Completed Projects Landscape





Edge Computing EU funded Ongoing Projects Landscape





Summary

- **Goal of this presentation** is to promote the key results documented in the "IoT and Edge Computing EU funded projects landscape, Release 1"
- **50 projects included** (selected)
  - 27 IoT, 23 Edge Computing
  - 21 completed, 29 ongoing

- IoT projects landscape
  - Challenges in (most effort):
    - System architecture
    - Data security
    - Interoperability
    - Intelligence
  - Standardization
    - organizations and initiatives (most popular): ETSI, AIOTI, TMF, ISO/IEC, BDVA, IEEE SA, IETF, 3GPP, ITU-T
    - Activities:
      - Usage of standards
      - Contributions to technical reports
      - Use case specific
      - 10 projects no activities

- Edge Computing projects landscape
  - Challenges in (most effort):
    - Platform architecture
    - Cloud-edge-IoT (CEI) computing continuum
    - AI support
    - Security
  - Standardization
    - organizations and initiatives (most popular): ETSI, AIOTI, BDVA, StandICT, ISO/IEC, TMF, 3GPP, ITU-T
    - Activities:
      - Usage of standards
      - Contributions to SDO, technical reports
      - 8 projects no activities

Next Steps

- **Goal of this presentation** is to promote the key results documented in the "IoT and Edge Computing EU funded projects landscape, Release 1"

- **Updated version of the report** "IoT and Edge Computing EU funded projects landscape, Release 2" is planned with new projects and deeper analysis of the standardisation activities.

- **Questions to the audience**:
  - Is this report useful for your community?
    - ✓ If yes, we can have one-to-one meetings to discuss details on topics interesting for your community
  - Are there any IoT and Edge Computing EU funded projects known to your community that need to be included in a subsequent Release?
    - ✓ If yes, we can have one-to-one meetings to discuss the way on how this input can be provided to AIOTI

- **Open Discussion**

Presentation of the IoT-NGIN project example

George Suciu (BEIA Consult), report contributor

AIOTI

IoT-NGIN: Next Generation IoT as part of Next Generation Internet

- Both IoT & Edge computing
- URL/Reference
  - https://iot-ngin.eu
  - https://cordis.europa.eu/project/id/957246
  - https://twitter.com/IotNgin
  - https://www.linkedin.com/company/iot-ngin/
  - https://www.facebook.com/IotNgin
  - https://gitlab.com/h2020-iot-ngin
  - https://hub.docker.com/u/iotngin
- Starting and (target) end time of project (ongoing): 01.10.2020 – 30.09.2023

IoT-NGIN: Next Generation IoT as part of Next Generation Internet

- It is well known that the Internet of Things (IoT) has been identified as one of the next big concepts to support societal changes and economic growth.
- To address this opportunity, the EU-funded project IoT-NGIN introduces novel research and innovation concepts to establish itself as the **'engine' that will fuel the next generation IoT**.
- It starts by uncovering a **pattern based meta-architecture** and optimises IoT/machine-to-machine and 5G/machine-cloud-machine communications by extending the **edge cloud paradigm**.
- Moreover, it enables user and **self-aware autonomous IoT** systems through privacy-preserving **federated machine learning** and **ambient intelligence**, with augmented reality support.
- Finally, IoT-NGIN research towards distributed I**oT cybersecurity and privacy**. IoT-NGIN will be validated using dozens of **heterogeneous devices**, including **drones and robots**.

IoT-NGIN: Next Generation IoT as part of Next Generation Internet

- IoT and/or Edge Computing challenges
  - Research challenges
    - **IoT** Meta Architecture
    - Enhance **IoT**/5G Further Enhancement Device-to-Device (FeD2D)
    - **Data** sovereignty and privacy "by design"
    - Privacy preserving federated **ML**
    - Protection against attacks on federated **ML**
    - DLT-based meta-level **Digital Twins**
  - Innovation challenges
    - Optimising **5G** resource allocation
    - Ultra reliable **IoT** based on Time Sensitive Networking
    - Secure edge cloud **IoT** micro-services execution framework
    - **Ambient Intelligence** monitoring and control
    - Dynamic machine **self-learning** framework
- Expected activities on "Dissemination and Impact on Standards"
  - IoT-NGIN partners follow the activities of **standardisation bodies**, which have been identified as relevant to the project developments, namely GAIA-X, IDSA, ITU Smart City, IEC, OGC, NIST, ENISA, and ISO.
  - In addition, the IoT-NGIN project plans to contribute to 5G-ACIA, ONF, and 3GPP **standardisation**.
  - Moreover, the project monitors closely and has active links with **clusters and associations** in the field of **IoT**, communication, software, open source, as well as domains related to the Living Labs, indicatively 5GPPP, 6G-IA, Networld Europe, NGI, BDVA and DIHs.

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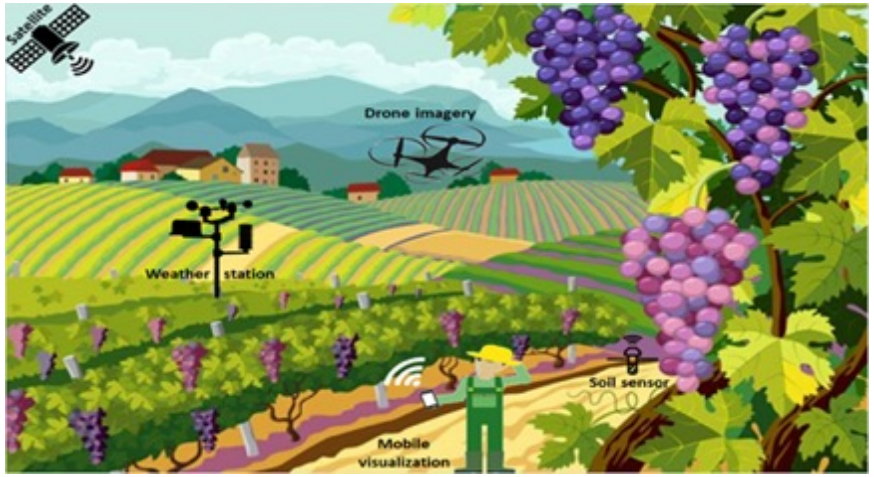
IoT-NGIN: Next Generation IoT as part of Next Generation Internet

- The Smart Viticulture Management system for better environmental sustainability (**SmartViT**) by BEIA Consult International (**BEIA**), Romania.
  - The project aims to implement an intelligent system for vineyard close to Bucharest which will integrate sensors necessary for precision viticulture and meteorology and an advanced analytical engine that exploits **Artificial Intelligence** techniques and **Blockchain** technologies for data processing, modeling and security.



Presentation of the project IntellioT

Vivek Kulkarni (Siemens AG), Prof. Dr. Simon Mayer (University of St. Gallen)

AIOTI

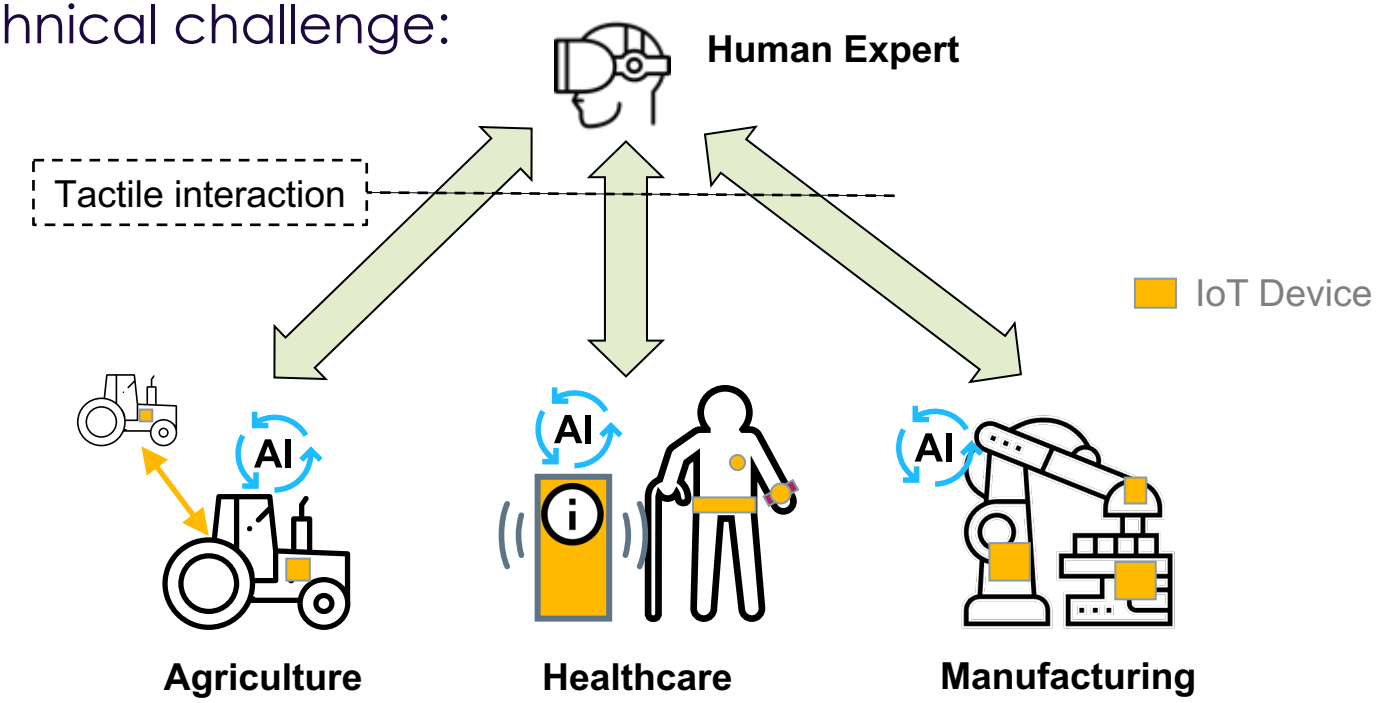
IntellIoT - Intelligent, distributed, human-centered and trustworthy IoT environments

https://intelliot.eu/

IoT and Edge computing project

H2020 call: ICT-56-2020
Next Generation Internet of Things (RIA)

- Main technical challenge:



Enable **collaborative IoT** environments
to execute **de-centralised AI**-driven applications
interacting with the **human-in-the-loop**.

Project Information

IntellIoT

Grant agreement ID: 957218

DOI
10.3030/957218

Start date 1 October 2020
End date 30 September 2023

Funded under
INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies (ICT)

Total cost
€ 7 997 615

EU contribution
€ 7 997 615

Coordinated by
SIEMENS AKTIENGESELLSCHAFT
Germany

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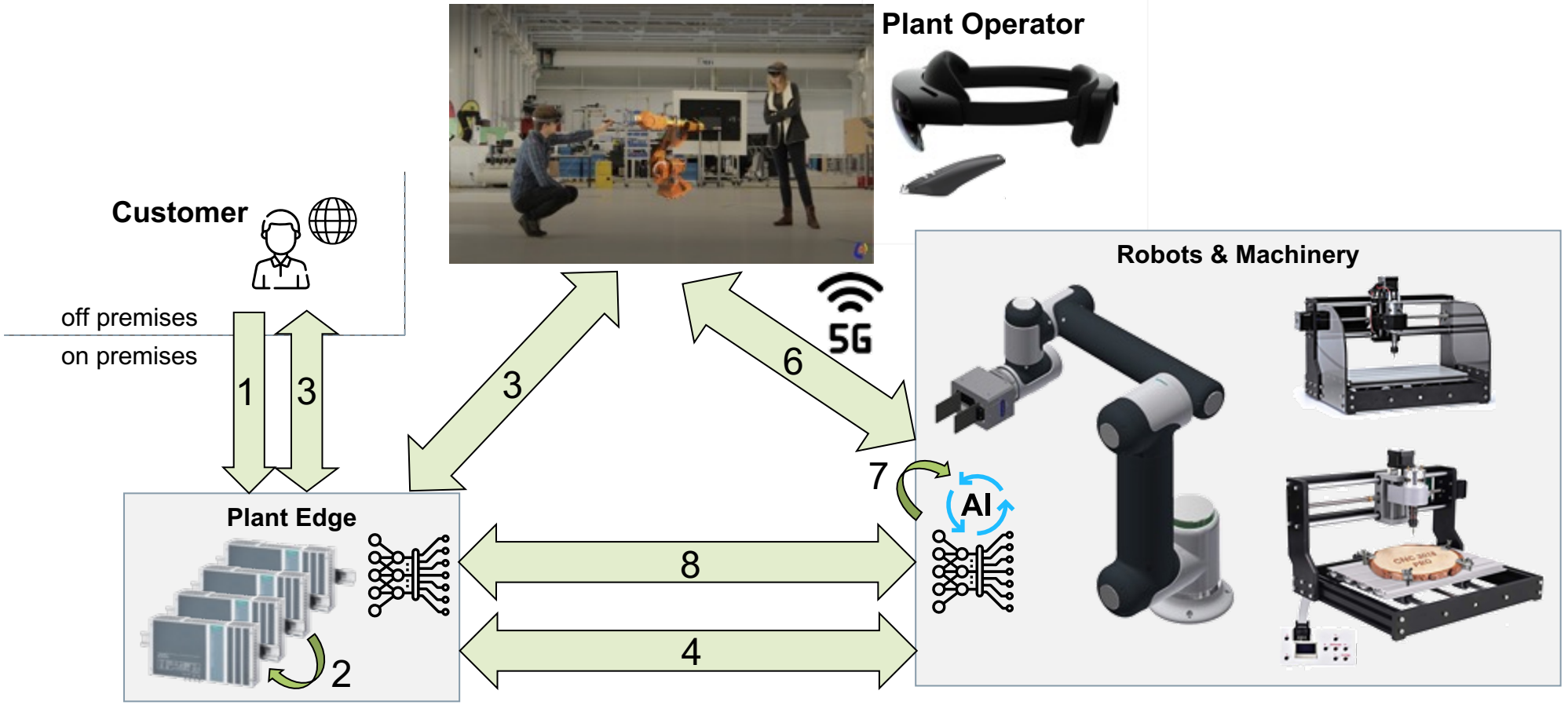
IntellioT Manufacturing Use Case



1. Define manufacturing goal
2. Process planning & machine orchestration
3. Support process planning
4. Transport commands and Production data
5. Robot movement & workpiece handling (local AI)
6. Get human help and guide robot
7. Learn from human help
8. Model update

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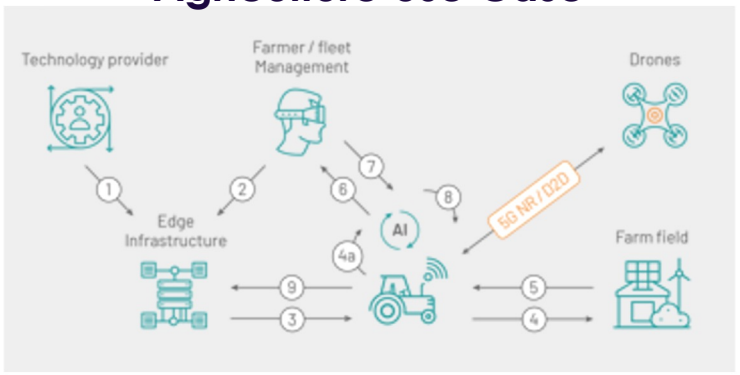
IntellioT Use Cases

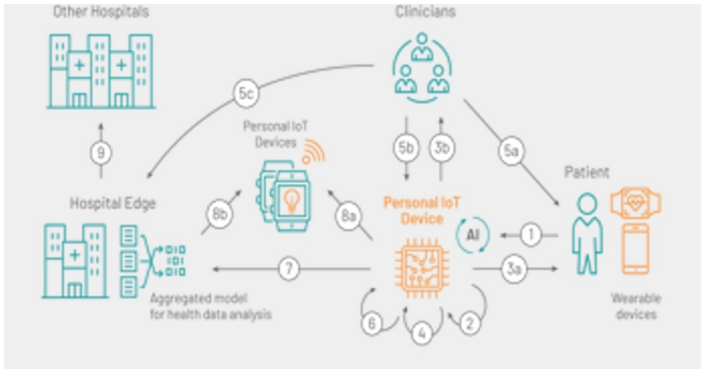
Agriculture Use Case



Research challenges:

- **Handling heterogeneous local AI models** or knowledge from different entities in the field
- **Real-time remote control of agricultural vehicle** in an IoT & Edge computing infrastructure
- Implementation of DLT on resource-constrained devices

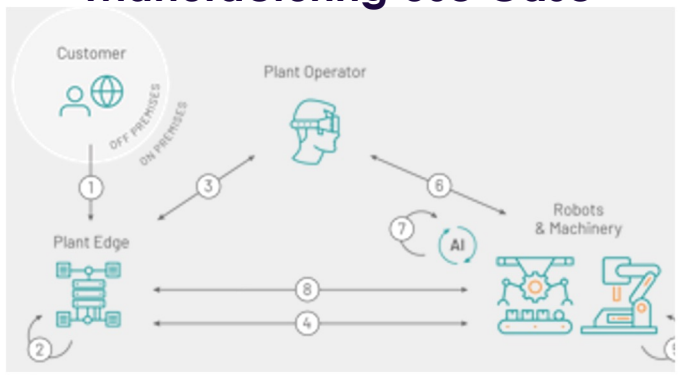
Healthcare Use Case



Research challenges:

- **Model personalization** to individual patients while preserving overall performance
- **Federated learning** (training, validation and model execution) on patients devices with constrained resources and 5G MEC
- Monitor and protect many distributed devices, patient data privacy while providing full access to info for clinicians

Manufacturing Use Case



Research challenges:

- **Optimal allocation algorithm** of compute resources
- Interaction between 5G network controller and TSN network controller
- **Semi-autonomous control of robot arm traversing heterogenous networks**.

IntellioT Impact on Standardization

- 5G-ACIA Standardization Group -> **5G for Industrial IoT**
- 3GPP -> **Mobile networks and network management**
- World Wide Web Consortium (W3C) -> **Interoperable infrastructure across domains**

Interaction with Core Standardization Bodies

- 5G-**ACIA**
  - IntellIoT contributions in context of **IntellIoT Manufacturing Use Case**
  - Topic 1: **Edge computing** in 5G environment
  - Topic 2: 5G-enablement of **distributed artificial intelligence** scenarios

Focus on **Edge Computing**

- 3GPP
  - Monitoring of 3GPP releases 15-18 from the project use case perspective
  - Topic 1: Enabling of **tight integration of AI and human-in-the-loop** / hybrid intelligence
  - Topic 2: **Private network management** (esp. Agriculture and Manufacturing use cases)
  - Topic 3: Extended device-to-device support

Focus on **Distributed AI** including Hybrid Intelligence

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IntellioT Impact on Standardization

- 5G-ACIA Standardization Group -> **5G for Industrial IoT**
- 3GPP -> **Mobile networks and network management**
- World Wide Web Consortium (W3C) -> **Interoperable infrastructure across domains**

Drive **Interoperability**!

- W3C **Web of Things** Working Group
  - IntellIoT **integration** of W3C Web of Things standards and **contribution** back to these standards, main standard: **W3C WoT Thing Description (v1.1, January 19, 2023)**[1]
  - Topic 1: Contribution of integration of edge orchestration with functional API descriptions: "Edge Deployment Negotiation"
  - Topic 2: Contribution of **Journaling** of TD-based Interactions in a distributed ledger (improved monitoring, root cause analysis, accountability, billing)
  - Topic 3: Contribution of No-Code Development Environment for **configuration of multiagent systems for domain experts**
  - Topic 4: Research on extensions of the W3C WoT Interoperability Standards, published at **flagship venue** on autonomous systems[2]

Enable **Autonomy**!

- W3C **Agents on the Web** Community Group
  - **Autonomy** of different components in IoT systems is becoming **more and more relevant across domains**!
  - Traditionally fragmented communities (Web of Things, Web Architecture, Autonomous Agents, Multiagent Systems, Semantic Web)
  - Dagstuhl Seminar[3] and new **W3C Community Group on Agents on the Web**[4] integrates these communities

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[1] https://www.w3.org/TR/wot-thing-description11/
[2] https://arxiv.org/abs/2302.06970
[3] https://www.dagstuhl.de/en/seminars/seminar-calendar/seminar-details/23081
[4] https://www.w3.org/community/webagents/

Presentation of the Report IoT LSP Standard Framework Concepts

Georgios Karagiannis, AIOTI WG Standardisation Chair (Huawei)

AIOTI

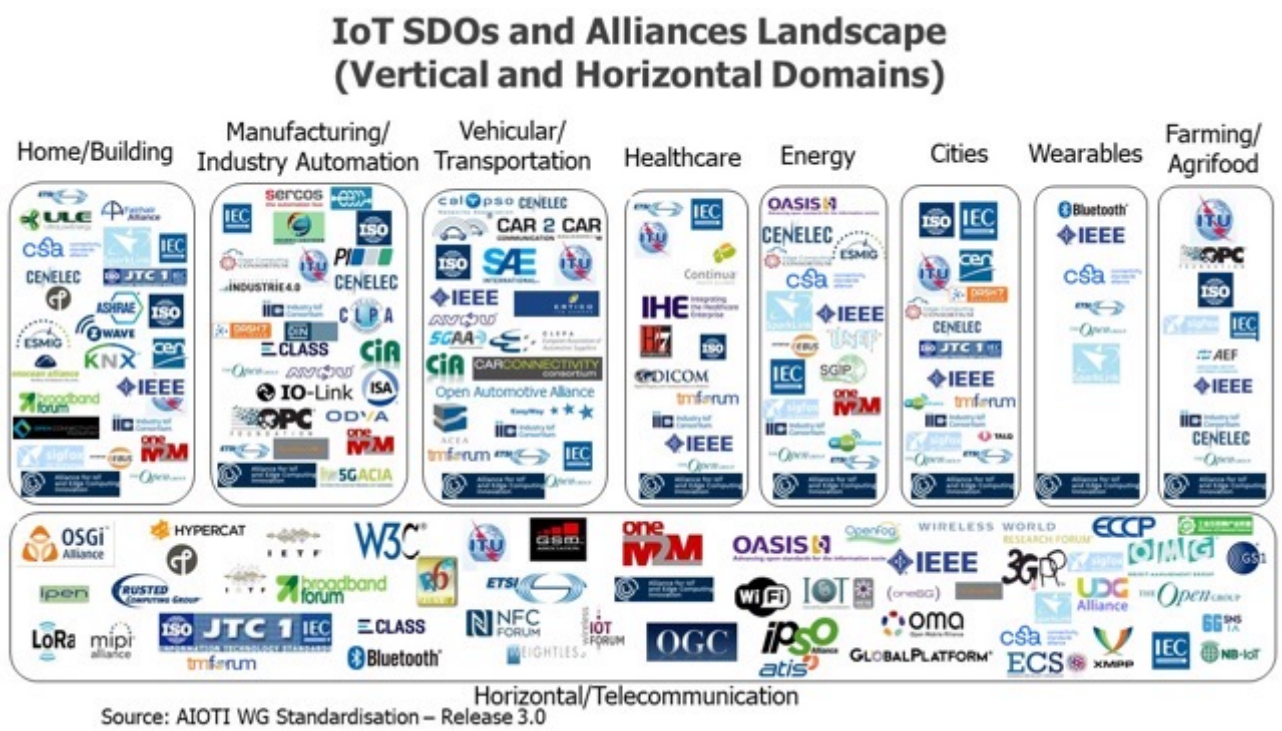
Goal and Content of the Report

- **Published on 1 February 2023**: "IoT LSP Standard Framework Concepts, Release 3", : https://aioti.eu/wp-content/uploads/2023/01/AIOTI-SDOs-Alliance-Landscape-IoT-LSP-standards-framework-R3-Final.pdf
- **Goal of report:**
  - ✓ to leverage on existing IoT standardization, industry promotion and implementation of standards and protocols,
  - ✓ as input for LSP standards framework and gap analysis and
  - ✓ to provide a guideline for the proponents of future project proposals associated with future IoT related calls financed by the EC on the positioning of these initiatives within these landscapes.
- **Method of collecting information:**
  - ✓ Using template
  - ✓ Input provided discussed and approved by AIOTI members
- **Table of contents:**
  - ✓ Executive Summary
  - ✓ 1. Goal and Motivation
  - ✓ 2. IoT SDO and Alliance Initiatives Landscape
  - ✓ 3. IoT Open Source Software Initiatives Landscape
  - ✓ 4. Mapping SDO/Alliance/OSS/ Initiatives into Knowledge Areas
  - ✓ Appendix 1: IoT SDOs, Alliances and OSSs

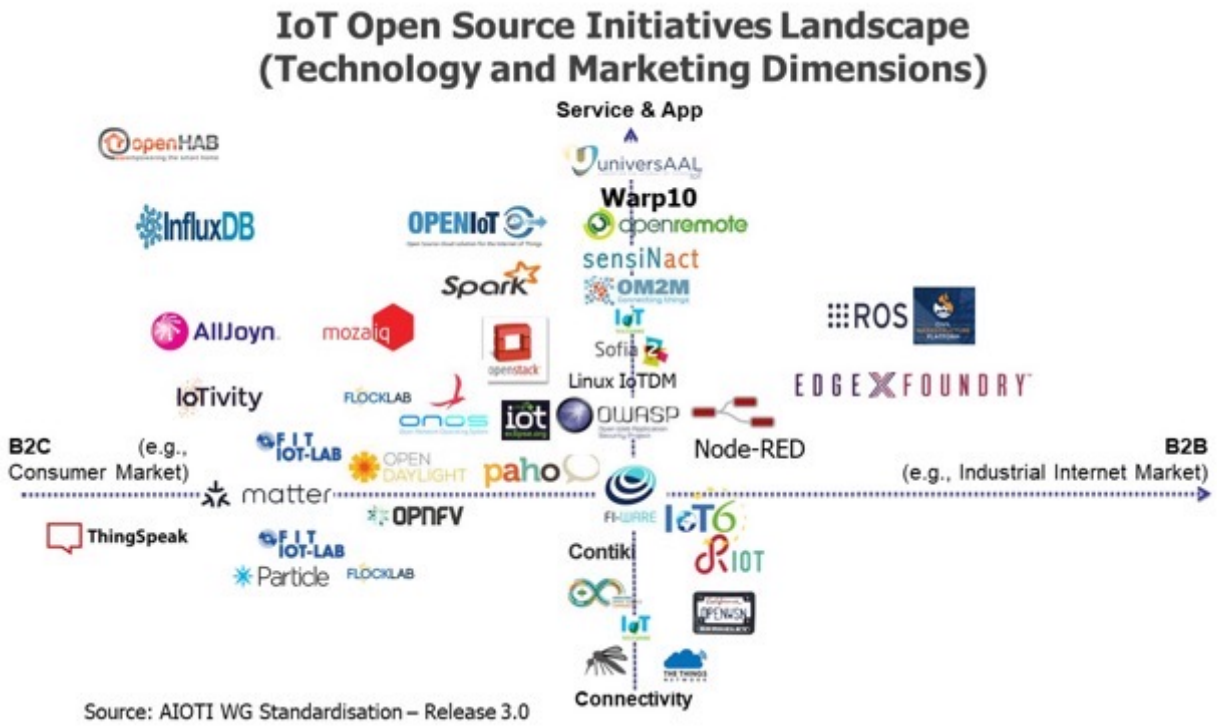
Sections used in template for SDO/Alliance/OSS description:

- Description
- Readiness:
  - OSS criteria: Community, Commitment, Road map, Alignment of ongoing Standards, Licensing, Portability
  - SDO/Alliance criteria: Adoption (users base), Development Status, Compliance, Openness, Ratification process
- Interoperability level
- Standards - Supporting organizations (mainly for Alliances/OSS)
- Domain
- Application area
- IPR Policy Available
- Specification Access

IoT SDO and Alliance Initiatives Landscape

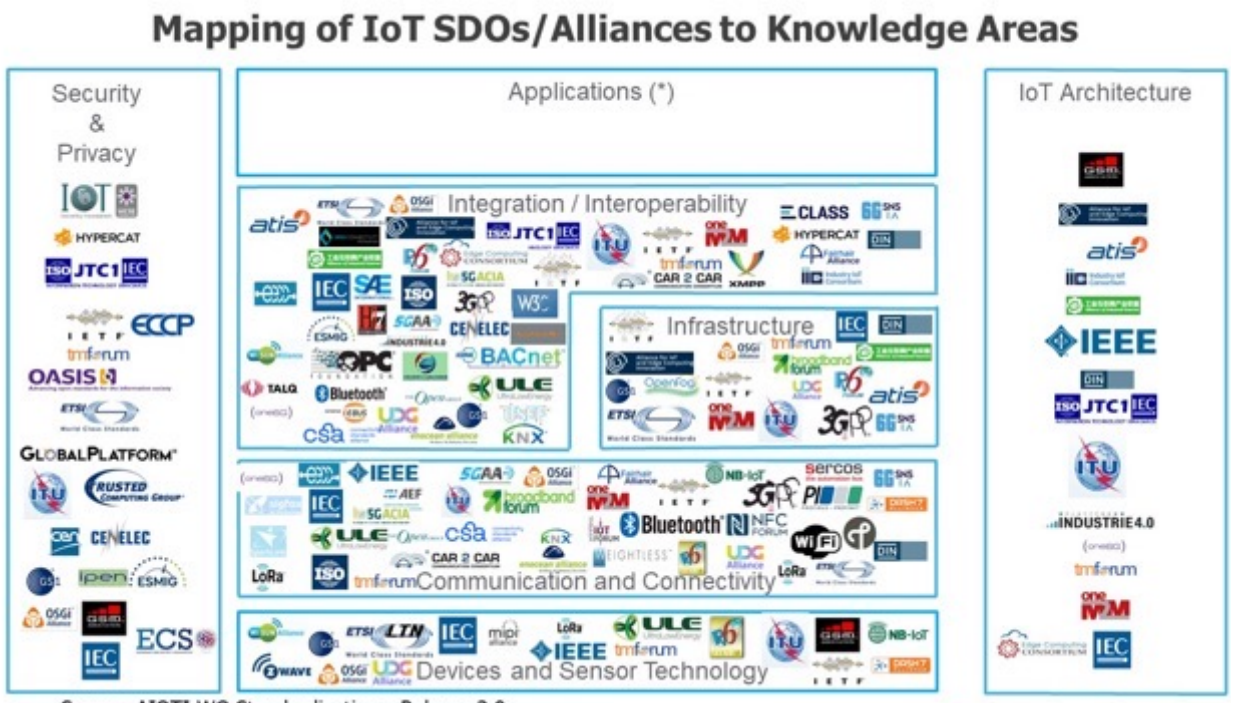


IoT Open Source Software Initiatives Landscape

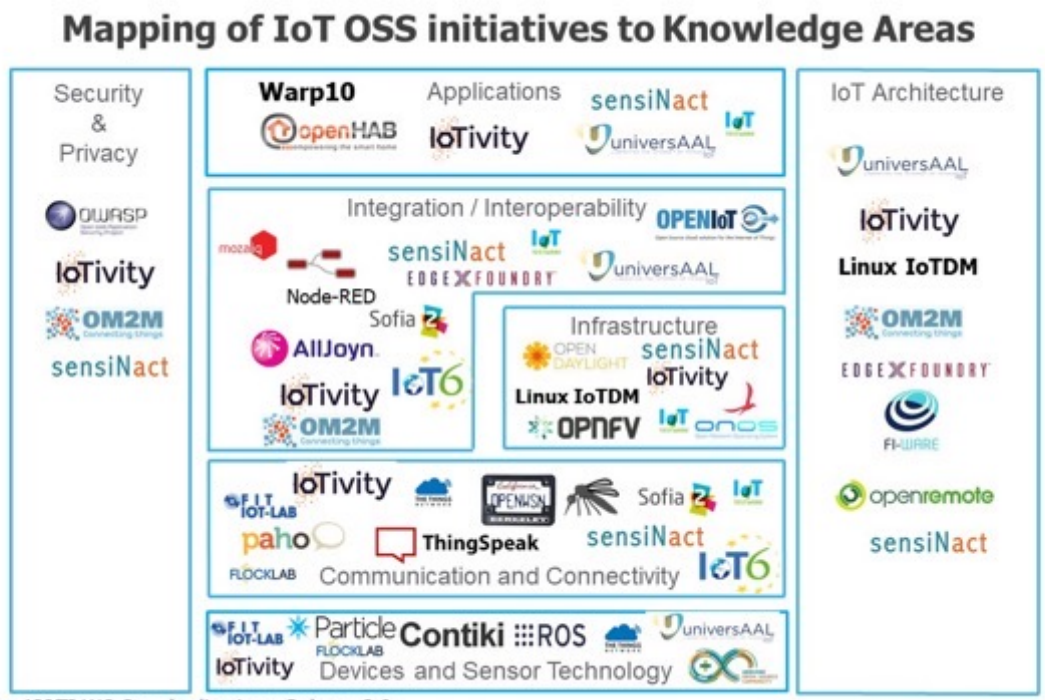


Source: AIOTI WG Standardisation – Release 3.0

Mapping SDO/Alliance/OSS/ Initiatives into Knowledge Areas



Source: AIOTI WG Standardisation – Release 3.0



Source: AIOTI WG Standardisation – Release 3.0

Next Steps

- **Goal of this presentation** is to promote the key results documented in the "IoT LSP Standard Framework Concepts, Release 3"

- **Questions to the audience:**
  - Is this report useful for your community?
    - ✓ If yes, we can have one-to-one meetings to discuss details on topics interesting for your community
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- **Open Discussion**

Presentation of the SDO activity

David Boswarthick (ETSI), report contributor

AIOTI

ETSI

ETSI Overview

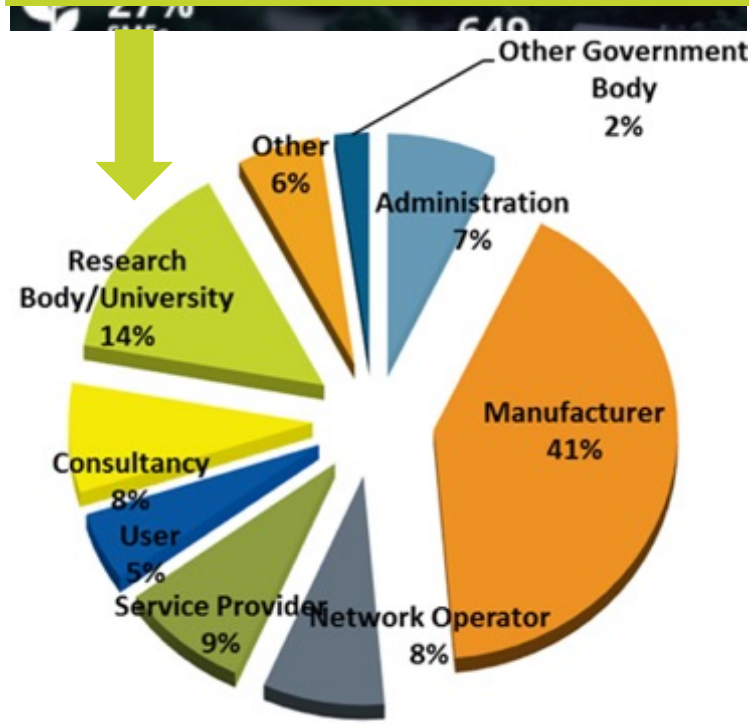
- Independent, non-profit standards organization
- Officially recognized by the European Union to support EU regulation
- **35** year track record of technical excellence in the ICT standardization sector
- Founding Partner of both 3GPP and oneM2M

- Over **900** members from **61** countries over **5** continents
- Diverse community: private companies, research and academia, governments, public bodies, societal stakeholders

- Over **51 000** standards published to date, **2 400** annually
- All standards are ***free of charge*** and may be downloaded from here https://www.etsi.org/standards

- Over **130** technical groups holding more than **4 000** meetings per year

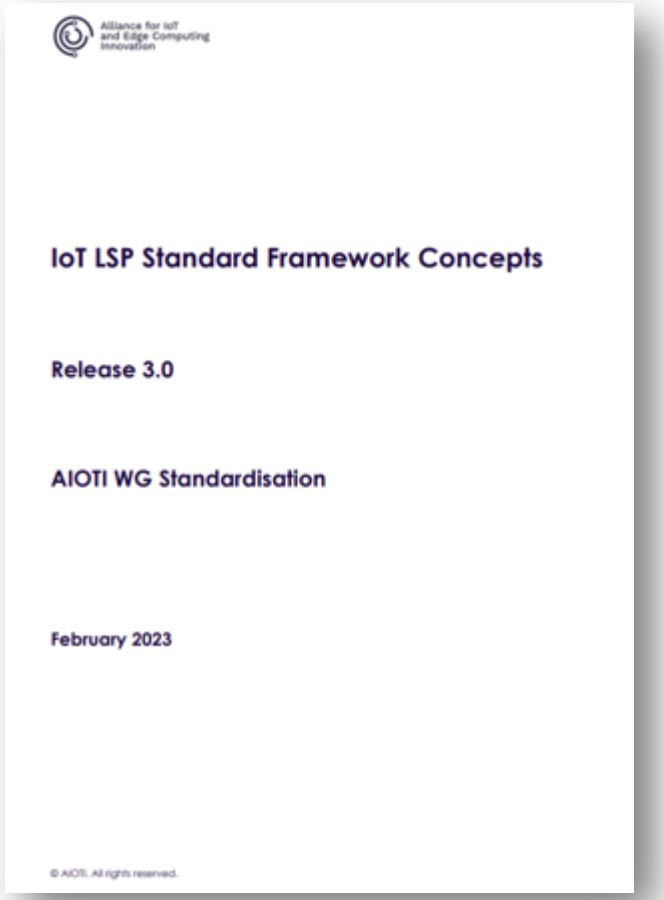
Public / Private Research organizations and Universities make up for over **14%** of our ETSI membership and are present both in Europe and globally



Source: April 2023 edition of the ETSI Enjoy! magazine https://www.etsi.org/newsroom/magazine

https://www.etsi.org/

ETSI in the IoT LSP Framework Report


Alliance for IoT and Edge Computing Innovation

IoT LSP Standard Framework Concepts

Release 3.0

AIOTI WG Standardisation

February 2023

More details on the ETSI IoT work can be found in Section 5.2.6 of the report "IoT LSP Standard Framework Concepts, Release 3.0". see: https://aioti.eu/wp-content/uploads/2023/01/AIOTI-SDOs-Alliance-Landscape-IoT-LSP-standards-framework-R3-Final.pdf

ETSI Technical Groups and ISGs

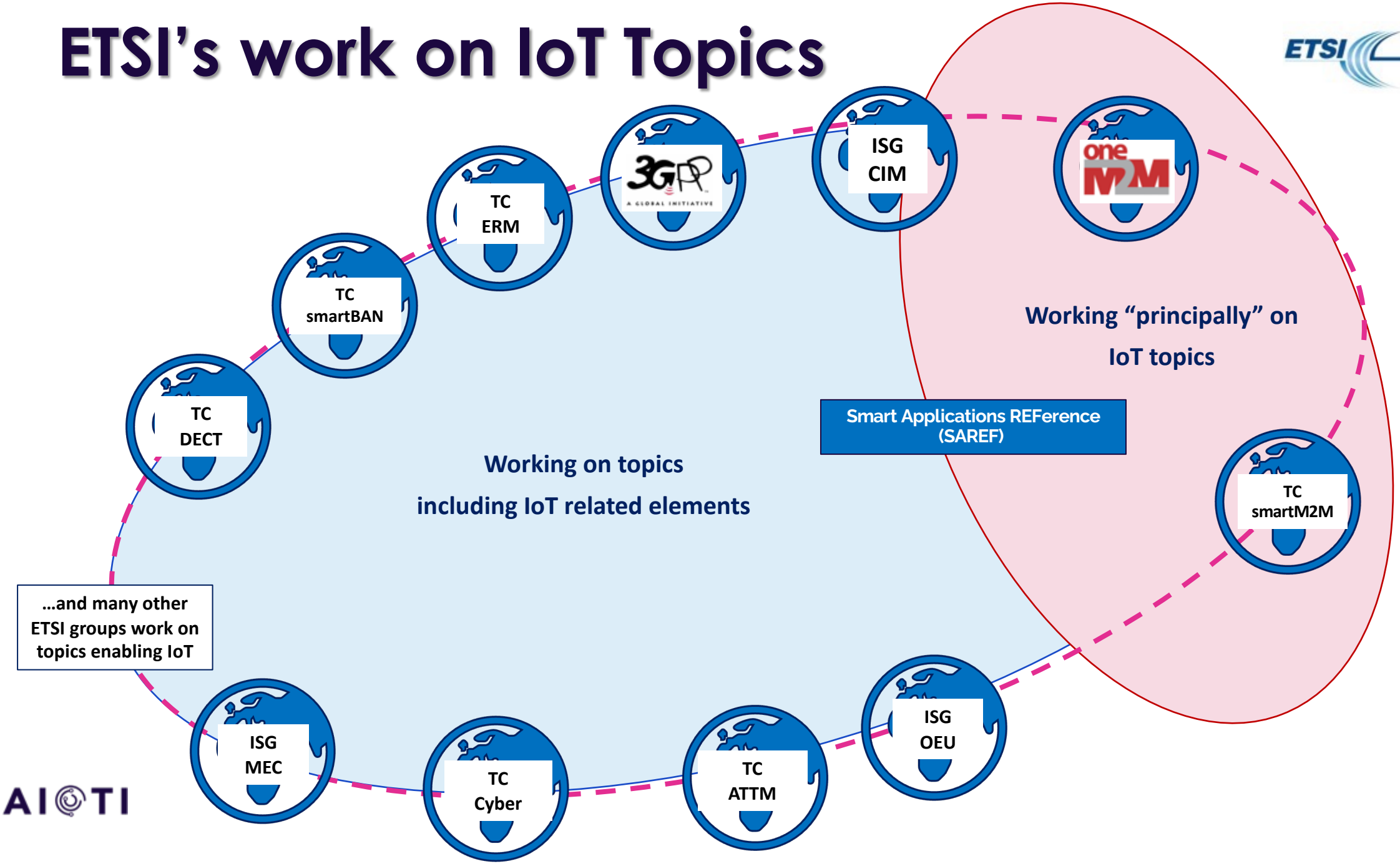
ETSI TBs (Technical Bodies) are used for more formal standardization and may produce ENs and ESs to respond to European Legislation.

ATTM Access, Terminals, Transmission & Multiplexing	**BRAN** Broadband Radio Access Networks	**BROADCAST** Broadcasting
CABLE Cable Networks	**CYBER** Cyber Security	**DECT** Digital Enhanced Cordless Telecoms
EE Environmental Engineering	**eHEALTH** eHealth	**EMTEL** Emergency Communications
ERM EMC and Radio Spectrum Matters	**ESI** Electronic Signatures and Infrastructures	**HF** Human Factors
INT Core Network and Interoperability Testing	**ITS** Intelligent Transport Systems	**Li** Lawful Intercept
MSG Mobile Standards Group	**MTS** Methods for Testing & Specification	**RRS** Reconfigurable Radio Systems
RT Multi-access Edge Computing	**SAFETY** Safety	**SAGE** Security Algorithms Group of Expert
SES Satellite Earth Stations & Systems	**SET** Secure Element Technologies	**SmartM2M** Smart M2M
SmartM2M Smart M2M	**STQ** Speech & multimedia Transmission Quality	**TCCE** TETRA & Critical Comms Evolution
USER User Group	**3GPP** Third Generation Partnership Project	**oneM2M** oneM2M Partnership Project

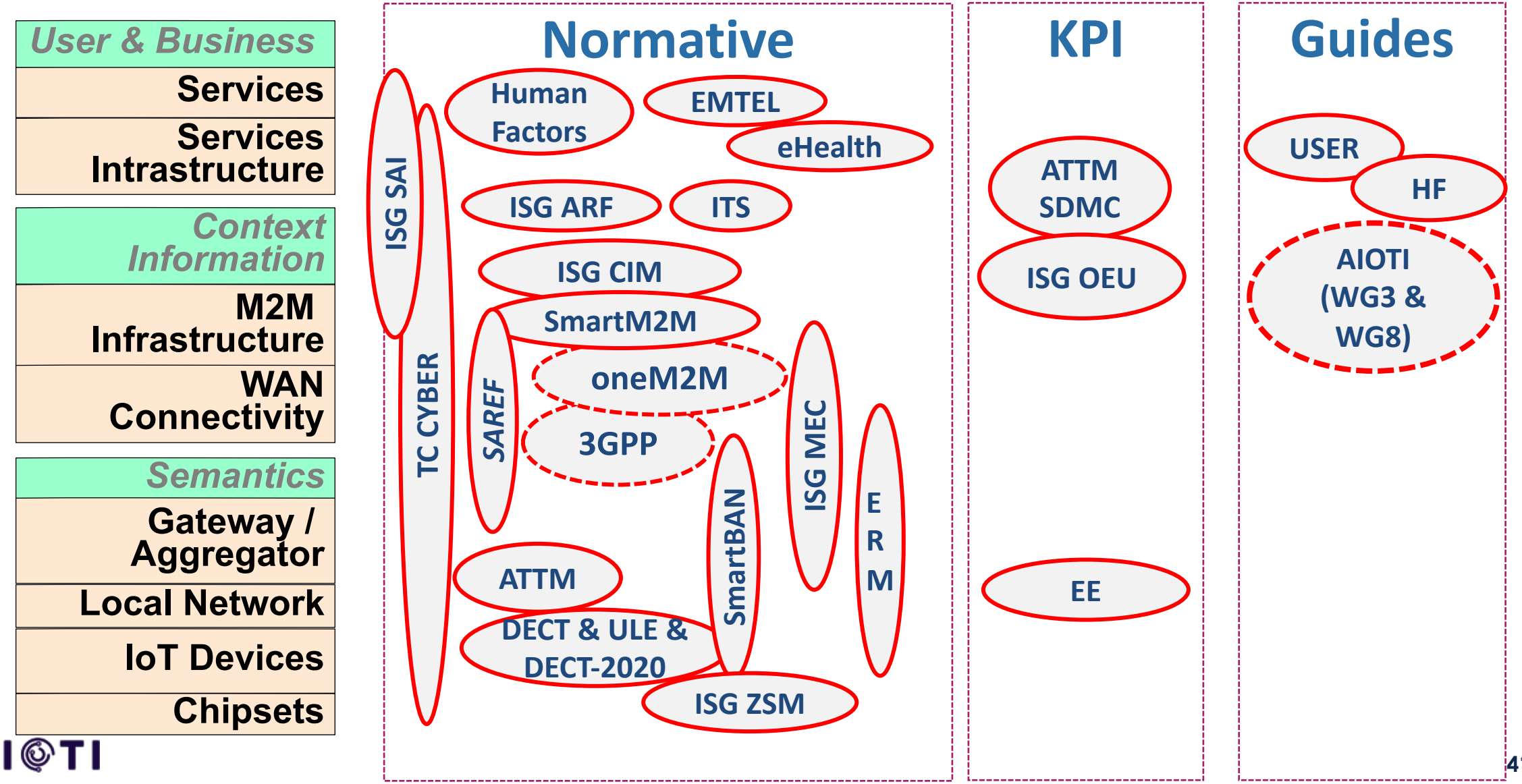
ETSI ISGs (Industry Specification Groups) are the perfect tool for developing '**early**' standardization work resulting from research projects

ARF Augmented Reality Framework	**NIN** Non-IP Networking
CDM european Common information sharing environment service and Data Model	**OEU** Operational energy Efficiency for Users
CIM cross-cutting Context Information Management	**PDL** Permissioned Distributed Ledger
ENI Experiential Networked Intelligence	**QKD** Quantum Key Distribution
ETI Encrypted Traffic Integration	**RIS** Reconfigurable Intelligent Surfaces
F5G 5th Generation Fixed Network	**SAI** Securing Artificial Intelligence
MEC Multi-access Edge Computing	**THz** Terahertz Modelling
mWT millimetre Wave Transmission	**ZSM** Zero-touch network and Service Management
NFV Network Functions Virtualisation	
OSM Open Source Mano	**TFS** TeraFlowSDN

ETSI's work on IoT Topics



ETSI groups cover nearly all of the IoT Stack



Source: Lindsay Frost (former) ISG CIM Chair

Back

ETSI IoT Conference 2023 (ETSI IoT Week 2023)

ETSI's annual flagship event returns in 2023. The **2023** edition of the **ETSI IoT Conference** - **IoT Technologies for Green and Digital Transformation** - will take place on **4 – 5 - 6 July 2023** in **ETSI premises, Sophia Antipolis, France.**

This gathering of IoT experts has become the must-attend event for anyone involved in IoT and who understands the importance of standard-enabled technologies for IoT service deployments. The event will offer attendees the opportunity to learn and share experiences related to IoT technologies, services, activities, requirements, looking at present and future standardization work.

The 2023 edition will include the ETSI IoT Conference and IoT demonstrations. It will offer a mix of keynote speeches, presentations, interactive panels, IoT demonstrations, with many networking opportunities.

The **2023 edition will focus on:**

- **IoT for the digital and green transformation.**
- **IoT technologies,** including but not limited to **ontologies, digital twins, edge computing, IoT security, SAREF, oneM2M.**
- **Horizontal IoT standards** for the vertical business sectors, including *but not limited* to **smart cities, energy and grid, smart agriculture and precise farming, lift & buildings, maritime services.**

Participation to the event is open to all and free of charge upon registration.

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Questions from the Audience

Moderated by:
Georgios Karagiannis, AIOTI WG Standardisation Chair

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Wrap up and end of the Workshop

Georgios Karagiannis, AIOTI WG Standardisation Chair

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Thank you for listening

Any questions?

You can find us at @AIOTI_EU or email sg@aioti.eu

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