**Alliance for
Internet of Things
Innovation**

Why   international collaboration makes sense

AII-AIOTI workshop – IoT Week 20 June 2019

Kees van der Klauw

Chairman AIOTI Management Board

Collaboration MoU
signed November 8 2018 in Wuzen, China

AIOTI and AII

AIOTI is a member-led organisation that brings together a wide range of stakeholders that seek to contribute to IoT thought leadership in Europe and stimulating IoT Innovation in Europe

AII is to facilitate exchanges and in-depth cooperation among related entities, promote alignment between demand and supply as well as share of knowledge for complementing advantages to make solid efforts for the industrial Internet sector to move forward and provide effective solutions to enterprises

AI TI

Subjects of common interest
as stated in MoU

- Standardisation
- Promotion of interoperability by harmonizing reference architectures
- Identification and exchange of good practices
- Collaboration on projects implementing topics of joint interest (test beds)

AI⊙TI

Key aspects of digital innovation

- Enabling platforms
  - Standardised technology solutions (form, fit, function)
  - Standardised interfaces
  - Providing application support, maintenance, high dependability
  - Generally commoditised and therefore requiring…

- Economy of scale
  - Minimising non-value added diversity
 - Global markets

- High speed competition on real differentiators

The IoT does not respect borders
... but should respect people

- Non-value added diversity is waste for any country
  - Different ways of doing exactly the same without benefit in terms of cost, speed, performance, quality
  - Different language/procedures to describe the same

- Scattering the market and driving cost up
  - For companies
  - For consumers

- Slowing down adoption

- Reducing trust, while we want to create human centric IoT

AI◎TI

Many non-differentiating topics of common interest

- Interfaces
- Quality standards   Working Group 3
- Testing procedures
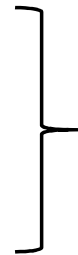
Establishing room to put more efforts in differentiators for competition and customer satisfaction

AI TI

AIOTI WG 03 – examples of AIOTI-AII cooperation topics

AIOTI WG03 Contributors: P. Guillemin, G. Karagiannis, M. Wetterwald, E. Darmois, T. Klein

AIOTI supports the win-win opportunity
for horizontal and vertical industries

- Industry digitisation is driving great demands for all-connectivity for sustainable network solutions with scalability, flexibility and interoperability

- Enabling technologies like 5G, IoT, Big Data and Artificial Intelligence (AI) support the industry digitisation:

  - robust connectivity of trillions of devices and open sharing of data

  - new engine for economic growth and social development

- AIOTI WG03 focuses on identifying key requirements imposed by vertical industry sectors and define their impact on the 5G architecture and features

Main global IoT Standardisation Activities

- oneM2M, a global initiative aiming to ensure efficient deployment of Machine-to-Machine (M2M) communications systems and IoT:
  - develops technical specifications for a common M2M Service Layer that can be embedded within various hardware and software to connect the wide range of devices worldwide with M2M application servers

- Other major initiatives such as 3GPP, BBF, ETSI, IEEE, ITU-T, ISO, IEC, OPC Foundation focus on IoT standardisation

- Examples of consortia focussing on IoT: IIC, IoT Forum, OSGi Alliance and OCF

AI☉TI

Main EU IoT Standardisation Activities

- ETSI's Technical Committee SmartM2M, develops specifications for requirements, functional architecture, and interface descriptions for a standardised M2M platform

- Platform Industrie 4.0

- CEN / CENELEC

- Alliance for Internet of Things Innovation (AIOTI) was initiated by the European Commission in 2015 as a result of European and global IoT technology and market developments.
  - address the challenges of IoT technology and applications deployment, which include standardisation, interoperability and policy issues

AI⊙**TI**

11

AIOTI WG3

Mission/ambition

Identify and, where appropriate, make recommendations to address existing IoT standards, analyses gaps in standardization, and develops strategies and use cases aiming for

- Identifying horizontal concerns/general principles for IoT
- Bootstrapping trust
- Investigating relevant regulations and their potential impact
- Community building
- Conducting initial studies on the role of people in IoT

Scope

- Maintaining an IoT standards framework landscape
- Consolidation of architectural frameworks, reference architectures, and architectural styles in the IoT space
- HLA / High Level Architecture
- IoT identifiers, IoT relation and impact on 5G
- (Semantic) Interoperability
- Personal data protection/privacy to the various categories of stakeholders in the IoT space (with WG04 IoT Policy)
- IoT Security (with WG04 IoT Policy)

Publications

- **IoT Landscape**
  - IoT Landscape maintenance is key to keep the liaisons alive and maintain dialogue on how to foster collaboration to improve interoperability & security, v09 to be published in Q2.Q3 2019
  - Gap Analysis and recommendations 1st release published May'18, 2nd (2019)
  - Cooperation with SDOs/Alliances to foster co-creation and interworking (e.g., Liaisons: 3GPP, ITU-T, ISO, OSGi Alliance, BBF, 3GPP; MoUs – signed: AII, OSGi Alliance, BDVA, under discussion OPC Foundation, SCI4.0, ISO/IEC JTC1 SC41
  - IoT relation and impact on 5G 1st release published in June 2018, 2nd in March 2019

- **HLA** / High Level Architecture R4, published in June 2018, R5 ongoing (2019)
  - IoT Reference Architecture and its mapping with existing IoT Reference Architectures
  - IoT identifiers 1st release published Feb'18

AI⊙TI

13

Publications

- **SemIoP** IoT Semantic Interoperability new JWP under construction

- **IoT Privacy** (with WG04) Nuances of Trust event, Series of GDPR-Centric AIOTI webinars,
  IoT Platform, experimentation, LSPs need concrete standard framework & references to enable "IoT Trust" and IoT "Privacy by design" + STF 547

- **IoT Security** (with WG04) IoT Security Architecture for Trusted IoT Devices;
  Baseline Requirements for Security & Privacy up to segment requirements; experimentation, LSPs need concrete standard framework & references to enable "IoT Trust" based on IoT "Security by design" + STF 547

- **Series of new IoT Webinars** on Application-Centric IoT (Verticals meet Horizontals)
  The central themes of the webinars are: Personal Wearables (H2x): Health, Living, Consumer, Public Space, and other verticals, Moving Sensors (M2x): Farm2Fork, Mobility, Consumer, Cities, and other verticals + Long Term Fixed IoT Applications (M2x): Industry 4.0, Cities, Consumer, Water Management, Energy, Construction, Living, and other verticals.

- **Joint MSP/DEI WG** on Standardisation participation
  November 2018 report + new plans in 2019

Possible cooperation subjects

IoT Standardisation Gaps

IoT relation and impact on 5G

AI©TI

Task Force on IoT Standardisation Gaps
objective

Complete version 2 of AIOTI report "High Priority IoT Standardisation Gaps and Relevant SDOs"

- **Main focus**: continue the study of resolution of High Priority IoT Standardisation Gaps by relevant SDOs
- Insert new gaps in the table when contributions are submitted and approved by the group
- As usual, work is contribution-driven (no specific study of standardisation gaps in STF 547)

AIOTI

Background: past activities
main reports

- STF 505
  - ETSI TR 103 376, "SmartM2M; IoT LSP use cases and standards gaps", September 2016, available in ETSI library
    - Result of a survey conducted in main SDOs
    - List of gaps (see next slide)

- AIOTI WG03
  - "High Priority IoT Standardisation Gaps and Relevant SDOs", Version 1.0, May 2018
    - From CREATE-IoT: Large-Scale Pilots perceived Major gaps
    - Preliminary analysis for gap resolution

- CREATE-IoT H2020 project
  - Deliverable D06.05, "Initial report on IoT standardization activities", September 2018

AI⊙TI

Consolidated list of key gaps in the report

Nb	Name	Nature of the gap [gap name in sub-section headers]	Domain
1	Connectivity interoperability	Competing communications and networking technologies.	Connectivity
2	Semantic interoperability [STF547]	Standards to interpret and process the sensor data in an identical manner across heterogeneous platforms. Need of a global and neutral data model.	Service and applications
3	Application portability	APIs to support application portability among devices/terminals.	Service and applications
4	Safety	Safety.	Deployment
5	Solution deployment and maintenance tools	Tools to enable ease of installation, configuration, maintenance, operation of devices, technologies, and platforms.	Deployment
6	Software deployment	Standardized methods to distribute software components to devices across a network	Deployment
7	Scalable device deployment	Unified model/tools for deployment and management of large-scale distributed networks of devices.	Deployment / Device-sensor technology
8	Usability	Easy accessibility and usage to a large non-technical public.	Applications Management
9	Harmonized identification	Harmonized reference to unique and secure naming mechanisms.	Applications Management
10	Platform interoperability	Multiplicity and fragmentation of frameworks, platforms and discovery mechanisms.	Integration / Interoperability IoT Architecture
11	Device certification	Certification mechanisms defining "classes of devices".	Device-sensor technology
12	Data management [STF547]	Data rights management: ownership, storage, sharing, selling, liability, etc.	Security / Privacy
13	(Cyber-)Security [STF547]	Risk Management Framework and Methodology.	Security / Privacy
14	Green technologies	Green technologies.	IoT Architecture
15	Ethics	Ethics.	Service and applications Security / Privacy

Share the presented IoT standardization gaps and identify whether there are common solutions on these gaps

Possible cooperation AIOTI-AII on IoT Standardisation Gaps

- Share the presented IoT standardization gaps and identify whether there are common solutions on these gaps

Task Force on IoT relation & impact on 5G
objective

- Identify IoT use cases, requirements and emerging topics that can contribute to 5G Advanced Key Performance Indicators: e.g., availability, latency, reliability, user experienced data rates, area traffic capacity

- Report focusing on Emerging topics, use cases and requirements to be used by SDOs such as 3GPP, ITU-T and IEEE as requirements for automation in vertical domains focusing on critical communications

Task Force on IoT relation & impact on 5G
objective

- AIOTI considers IoT as a key enabler for 5G (and vice-versa) and proposing use cases and contributing to 5G Advanced Key Performance Indicators: e.g., availability, latency, reliability, user experienced data rates, area traffic capacity

- Report focusing on Emerging topics, use cases and requirements to be used by SDOs such as 3GPP, ITU-T and IEEE as requirements for automation in vertical domains focusing on critical communications

Alliance for Internet of Things Innovation

IoT Relation and Impact on 5G

Release 2.0

AIOTI WG03 – IoT Standardisation

Supported use cases
in release 2 of report

- Autonomous Driving (such as: Platooning, Urban driving, Highway pilot)

- Smart Energy (such as: Future Energy Supply)

- Smart City, such as:
    - Public Warning System in critical infrastructures (H2020 STOP-IT project)
    - UAV (Unmanned Aerial Vehicles) as Multi-access Edge Computing (MEC) Nodes for Emergency Operations Support
    - UAS (Unmanned Aircraft Systems) operations in U-Space

- Smart Agriculture (such as: Smart Irrigation **Precision Livestock Farming**)

- **Smart Manufacturing** (Communication in car manufacturing, High performance manufacturing, Mobile control with safety)

- **Smart Health** (Intelligent Emergency Response Systems)

- **Cross Sector** (Tactile Internet)

Supported emerging topics
in release 2 of report

Related to IoT and can impact the specifications and deployments of 5G:

- Tactile Internet of Things

- ETSI ITS G5 versus 3GPP LTE-V2X

- 5G Non-public Networks and Network Slicing

- *5G in Energy (to be done in next version)*

- *Spectrum Discussions (to be done in next version)*

Possible cooperation AIOTI-AII on IoT relation and impact on 5G activities

- Identify new use cases and emerging topics that can contribute to 5G (and beyond)
  Advanced Key Performance Indicators: e.g., availability, latency, reliability, user experienced data rates, area traffic capacity

Alliance for
Internet of Things
Innovation

@aioti_eu
www.aioti.eu