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Issues Arising from the AI Standardization Landscape Report
ETSI Security Week – 19 June 2019, Sophia Antipolis
Outline

- Background
- The report in a nutshell
- Identified players and groups
- A closer look – landscape analysis
- Structure of the data
- Conclusion
Standards Watch

AI has started to enter all areas of society

AI not part of the 2018 Rolling Plan for ICT standardisation

Request of the European Commission Project Officer

No focused information in one document available before

Degree of European participation and leadership unclear
Structure of the report

Section 1 Introduction
Section 2 Background and Context
Section 3 Ongoing standardisation work and already established standards
Section 4 Landscape analysis
Section 5 Presentation of the ongoing AI-related work of SDOs and SSOs
Section 6 Gap analysis
Section 7 Community and industrial activities
Section 8 Communication of the EC and reports
Section 9 European projects and platforms
Section 10 Future priorities
Section 11 Conclusions
Comprehensive overview on activities of SSOs and SDOs with activities related to AI

At the time of writing the report five SDOs and two SSOs had active groups working on standardisation or related activities.

The five SDOs already active in 2018 or starting in 2019 are IEEE, ISO/IEC, ITU-T, ETSI, CEN-CENELEC.

The two SSOs with already active groups in 2018 or groups starting in 2019 are W3C and IRTF.

2 European Standards Organisations (ESOs) with ongoing or preparatory activities in the field of AI standardisation: ETSI and CEN-CENELEC.
The figure depicts the number of the SDOs/SSOs respective working groups, study groups, focus groups, community groups, committees and initiatives with activities related to AI standardisation.

Working Groups typically aim at producing standards or other normative documents. Study and Focus Groups are usually dedicated to explore an area and to eventually use the results to create a Working Group. (ISO) Committees host Working Groups and Study Groups working in the same field. (IEEE) Initiatives host different activities dedicated to explore an area and to eventually use the results to create Working Groups.
As of May 2019 in IEEE we can identify 14 working groups each of which is working on a distinct standard. Moreover, IEEE has launched the initiative Symbiotic Autonomous Systems (SAS) which aims at taking the lead in developing the new field of Symbiotic Systems Science, fostering interdisciplinary technology deployments that take into account Ethical, Legal, and Societal considerations, and promoting human-centric economic growth.

More working groups may be started from SAS in future.

- **EMELC-WG** - Engineering Methodologies for Ethical Life-Cycle Concerns Working Group (P7000, Working Group)
- **ASV WG_P7001** - Autonomous Systems Validation Working Group (P7001, Working Group)
- **PDP** - Personal Data Privacy Working Group (P7002, Working Group)
- **ALGB-WG** - Algorithmic Bias Working Group (P7003, Working Group)
- **WG-CSDG** - Working Group for Child and Student Data Governance (P7004, Working Group)
- **EDG-WG** - Employer Data Governance working group (P7005, Working Group)
- **WG-PDAI** - Personal Data AI Agent Working Group (P7006, Working Group)
- **EDARR-wg** - WG for the Adoption of: Robots and robotic devices: Guide to the ethical design and application for robots and robotic systems (P7007, Working Group)
- **Fail-Safe Design** - Standard for Fail-Safe Design of Autonomous and Semi-Autonomous Systems (P7009, Working Group)
- **Wellbeing for Ethical AI** - Wellbeing Metrics Standard for Ethical Artificial Intelligence and Autonomous Systems (P7010, Working Group)
- **Standard for the Process of Identifying and Rating the Trustworthiness of News Sources** (P7011, Working Group)
- **Standard for Machine Readable Personal Privacy Terms** (P7012, Working Group)
- **Inclusion and Application Standards for Automated Facial Analysis Technology** (P7013, Working Group)
- **SAS** - Symbiotic Autonomous Systems (Initiative)
ISO/IEC
May 2019 two sub committees with 6 working groups and 1 study group currently developing 12 AI standards (3 more already published) are active in ISO/IEC.

- JTC1 SC42 - Artificial Intelligence (Committee)
- JTC1 SC42 JWG1 - Governance implications of AI (Working Group)
- JTC1 SC42 Study Group 1 – Computational approaches and characteristics of artificial intelligence systems (Study Group)
- JTC1 SC42 WG1 – Foundational standards (Working Group)
- JTC1 SC42 WG2 – Big data (Working Group)
- JTC1 SC42 WG3 – Trustworthiness (Working Group)
- JTC1 SC42 WG4 – Use cases and applications (Working Group)
- JTC1 SC27 WG4 - IT Security techniques (Committee)
ITU-T
ITU-T has set-up 2 Focus Groups to do supportive research for the application of AI in the health sector and for using machine learning for future networks.

None of the groups aims at developing a standard but rather will produce different reports and specifications.

- FG-AI4H - Artificial Intelligence for Health (Focus Group)
- FG-5GML - Machine Learning for Future Networks including 5G (Focus Group)
ETSI
By end of 2018 ETSI has set up three working groups.

Two of them are focusing on the application of AI in the domain of future network management. The third group started recently and will address standards for secure AI.

- SAI ISG - Secure AI Industry Specification Group (Working Group)
- ZSM ISG - Zero touch network and Service Management Industry Specification Group (Working Group)
- ENI ISG - Experiential Networked Intelligence Group (Working Group)
CEN-CENELEC
CERN-CENELEC has decided to implement a focus Group on AI (no name has been assigned yet, the group will be launched in 2019).
**W3C**

At the end of 2018 W3C maintains one community group, which studies AI knowledge representation. No standards development is planned.

- **AI KR - Artificial Intelligence Knowledge Representation (Community Group)**

**IRTF**

Similar, the three research groups of IRTF work on studies on the possible role of AI in future networks. No standards development is planned.

- **NMLRG – Network Machine Learning Research Group (Research Group)**
- **NMRG - Network Management Research Group**
- **Computing in the Network Research Group will start working in 2019 (Research Group)**
Countries of the group chairs
Landscape analysis (2/8)

Distribution of European chairs
Landscape analysis (3/8)

Overall country distribution of the group chairs

- EU: 15
- US: 2
- CN: 9
- JP: 1
- CA: 1
- AU: 1

Overall country distribution of the group chairs
## AI related activities: Themes/Challenges/Areas vs SDOs and SSOs

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Landscape analysis (5/8)

Relation of number of working groups to study groups per SDO and SSO

- IEEE: 14 Working Groups, 1 Study Group
- ITU-T: 0 Working Groups, 0 Study Groups
- ETSI: 3 Working Groups, 2 Study Groups
- ISO/IEC: 6 Working Groups, 4 Study Groups
- W3C: 0 Working Groups, 1 Study Group
- IRTF: 0 Working Groups, 0 Study Groups
Landscape analysis (6/8)

Relation of standardisation to pre-standardisation activities
Themes and number of activities

- Trustworthiness: 5
- Ethics: 3
- AI Security: 2
- AI usage: 2
- Wellbeing metrics: 1
- Big Data: 5
- AI foundational standards: 3
- AI Governance: 1
- Computational approaches: 1
- AI for health: 1
- Conceptualization and...: 1
- Transparency of data processing: 1
- Privacy: 2
Landscape analysis (8/8)

AI standards maturity

- IEEE: 14 published
- ITU-T: 2 under development
- ETSI: 3 under development
- ISO/IEC: 11 under development
- W3C: 1 under development
- IRTF: 1 under development
In the main part of the report detailed information on groups and their respective work is provided. The information is structured as follows:

- **Group, Working Group, TC**: The name of the group carrying out the work.
- **Chair**: Information on the chair of the group (if available).
- **Scope**: The scope of the group.
- **Standard**: The name of the standard.
- **Description**: Purpose, Context and other information on the standard.
- **Link**: Usually a link to the group. If accessible, a link to the standard(s).
- **Readiness**: Presents information about the state of the standard covering three aspects, Development Status (Published or under process); Openness (publicly available or restricted access); Ratification Process (the way a standard is agreed upon and finalised).
- **Supporting Organisations**: Name of an affiliated organisation (if any).
- **IPR Policy Available**: A link to the IPR policy under which the group (or the entire organisation) works.
- **Remarks**: Additional information (if any).
With the report StandICT.eu provides an overview on the state of the standardisation in the area of Artificial Intelligence as of end of 2018.

The report presents the SDOs and SSOs with active groups working on AI. The work of the groups is presented in detail and forms the major part of the report.

The information provided clearly indicates that there are a number of significant activities though little outcome with respect to standardisation.

Current efforts have little focus on technical standards and do not sufficiently address security challenges of AI.

Based on this the report provides an initial analysis of the AI standardisation landscape.

The analysis suggests that there is a significant European share in group chairing but there is still opportunity for European experts to contribute to the work in progress.