



StandICT.eu 2023

ICT STANDARDISATION OBSERVATORY AND SUPPORT FACILITY IN EUROPE

FOLLOWING THE FELLOWS

IMPACT REPORT FROM
FUNDED APPLICANTS TO
THE STANDICT.EU 2023
FELLOWSHIP PROGRAMME

FIRST OPEN CALL

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Disclaimer

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About StandICT.eu

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Finally, we would like to thank our all **EUOS Technical Working Groups (European Observatory for ICT Standardisation)** chairs and members for the investment in gathering expertise and producing outstanding landscape reports of the standardisation status across different ICT sectors. We warmly thank the TWG chairs guiding this work: **Lindsay Frost, Ismael Arribas, Matthias Pocs, Dimosthenis Kyriazis, Jeroen Broekhuijsen, Joel Meyers and Fiona Delaney.**

■ Foreword

We are excited to publish this booklet, as the first of a series to be launched over the lifetime of the Coordination and Support Action StandICT.eu 2023, supported by the European Commission's H2020 Framework Programme, to illustrate the **tangible impacts** of the three Million Euro earmarked to support the participation of European ICT experts in international Standardisation Developing Organisations' Working Groups under the *StandICT.eu 2023 Fellowship Programme*.

Our goal through these regular publications is to focus on the fellows themselves and try to address how their work supports, through a demonstrable contribution that excellent research makes to both society and to the economy. We try and show through this criterion that encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes as a result of the ICT Standardisation efforts the fellows are working upon.

The Fellowship Programme is the first component of StandICT.eu 2023's dual mission, which uses the vehicle of a series of 10 Open Calls, to provide essential financial resources to boost European participation to global ICT standardisation activities in the priority areas of the Digital Single Market and aims to contribute its results to the efforts of the Multistakeholder Platform for ICT Standardisation. The second, is to deliver the "EUOS – Observatory for ICT Standardisation", an interactive platform that will monitor the global ICT Standardisation landscape, provide landscape analysis and gap analysis reports, through its technical working groups with the ultimate goal of providing the community of ICT experts with accurate coverage of relevant and timely ICT Standards into which the results of the fellowships will also feed and contribute.

We believe that this Report responds to the recommended approach under Horizon Europe to implement a more **evidence-based impact**, presenting the tangible results available from each activity in a timely fashion, as the result of careful and continuous monitoring of the impact that each successful applicant is making to European priorities and European contributions. Further liaison and ex post analysis with the National Standards Associations and contributions to other H2020 or from Horizon Europe projects will respond and document what share of implementation of European standards have been adopted as national standards by Member states as a result of the work carried out that will make up a final Monitoring Impact Report to serve also Standard Developing Organisations in understanding their priorities going forward through to 2022-2023.

Special thanks in putting together this booklet go to External Advisory Group who have provided high-level input to fine-tune the topics covered by the Open Calls, the dedicated work of our External Pool of Evaluators who have vetted the numerous applications received in response to the calls, to our Partners, Dublin City University and AUSTRALO key to the monitoring activities, our project officers at the European Commission of DG Connect for their continued support and, of course, to our fellows for the dedicated months of work behind each contribution and impact.

Silvana Muscella

StandICT.eu 2023 Project Coordinator



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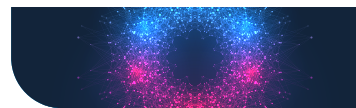


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■ Introduction

This report provides an immersion to user empowered outcomes of the StandICT.eu 2023 Open Call #1 from the perspective of fellows that were selected and funded in this call. Our team is proud to present the first series of StandICT.eu 2023 success stories of the funded fellowships detailing the addressed standards and landscapes, how these will fill in the identified gaps as well as impact the related stakeholders and society. Standardisation plays a vital role in creating a fair market-based competition and help ensure the interoperability of complementary products and services. Standards reduce costs, improve safety, and enhance overall competition. Their critical action in protecting health, safety, security, and the environment, make standards important to the public and consumers as well. One of the key-purposes of StandICT.eu 2023 is to support the activity of competent European ICT experts to contribute to the modernisation and consolidation of the European standardisation system, ensuring it is better oriented towards meeting the EU's main interests, policy priorities, core principles and values, notably towards a speedy and seamless green, digital and industrial transition, in a timely manner (as expected in the future “*European Standardisation Strategy Roadmap*”¹).

The primary purpose of this document is to share with you the results attained through the work carried out by the funded expert, and to showcase the most relevant outcomes, creating awareness of the potential impact and repercussions of such impact on commerce, industry, governmental policies and strategies and the society as a whole.

This Open Call is the first one of a series from 10 StandICT.eu 2023 Open Calls, and each call will have a dedicated impact report with the goal to share the timely key findings, contributions, and observations with StandICT.eu community, the European Commission, the Multi-Stakeholder Platform, the SDOS, and even beyond with all interested actors of our ever-growing StandICT.eu 2023 community. ***It should be noted that at the time of writing a few of the fellowships funded under the first Open Call are still underway.***

In this report, firstly, the Open Call #1 is presented with key facts and figures, then the fellowship outcomes are presented in the targeted technology areas addressed by the OC #1 fellows:

- ▷ Internet of Things
- ▷ Cybersecurity
- ▷ eHealth
- ▷ 5G
- ▷ Artificial Intelligence
- ▷ Blockchain
- ▷ Quantum Computing
- ▷ Big Data
- ▷ Other Vertical ICT Sectors

1 [Standardisation strategy \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/inline-2/attachment/112222/1.pdf)

■ Overview of the Open Call #1

The first StandICT.eu 2023 Open Call, from the 10 OCs series was launched on the 2nd of November 2020 and closed on the 04th of January 2021. The StandICT.eu Open Calls target European ICT standardisation experts contributing to the international SDOs, work groups and/ or technical committees at any of the priority topics, as taken from the Rolling Plan for ICT Standardisation.

This Open Call identified “**Health**” as its leading theme with a view to contribute to promote the tangible role of Standards in the safeguard of human health and well-being, diseases prevention and to decrease the burden of disabilities on people and communities, support the transformation of health care systems in their efforts towards fair access to innovative, sustainable and high-quality health care for everyone, and foster an innovative, sustainable and globally competitive European health industry. The Open Call was however completely open to a broad range of ICT domains and treated as equally valid

Fellowship profiles

This first Open Call totalled 96 eligible applications received out of which 35 have been selected for funding, with an overall 304,500 Euro granted. After the evaluation procedure by external experts, the selected projects rated a remarkable average quality score (the minimum threshold to access funding was 8,30 score in a 1 to 10 scoring scale).

The funded applications provided an extensive geographical coverage with 15 different EU countries represented, with a satisfying balance across the key technologies and priority topics of the first call, and with a wide spectrum of SDOs that will benefit of the competence and expertise of the applicants.



1st Open Call RESULTS & POPULAR TOPICS

35

Funded proposals for a total amount of 307k €

ORGANISATION TYPE



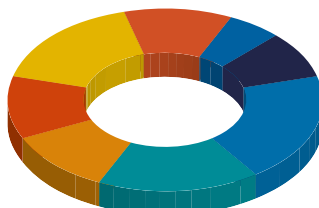
| | |
|------------------------------|--------------------|
| 14 SME | 1 Government |
| 10 Micro-business | 1 Large Enterprise |
| 4 Academia/Research | 2 Other |
| 2 SDO/National Standard Body | |

GENDER

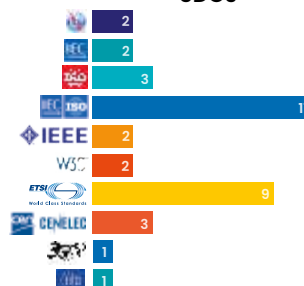
| | |
|--------|------|
| | |
| 11 | 24 |
| FEMALE | MALE |

MOST TARGETED TOPICS

| | |
|-------|-------------------|
| 8.6% | IoT |
| 20% | Cybersecurity |
| 17.1% | e-Health |
| 11.4% | Quantum Computing |
| 11.4% | AI |
| 17.1% | 5G |
| 11.4% | Blockchain |
| 5.7% | Other |



SDOs



As the figure shows, Cybersecurity turned out to be the leading topic accounting for 20% of the funded applications, followed by 5G and eHealth (17%), Quantum Computing, AI and Blockchain (11%) and IoT (almost 9%). Noteworthy to underline the increasing submission of applications related to arising ICT domains.

Engaged SDOs, Organisations and European Projects

63% of the fellows' effort will be devoted to work within Global SDOs, while the remainder will contribute to European SDOs. Another interesting observation that can be made on the basis of the statistics is the considerable number of fellows coming from SMEs (40%), or Independent IT Consultants: this is a tangible proof of how much European Enterprises are investing resources to ensure a full ICT Standards uptake in the market in view of a steady commercial and economic growth. 13 European funded research projects are related to the presented StandICT.eu fellowships, with a strong focus within the eHealth and Smart Grids domains.

Table 1 – European Research Projects related to StandICT.eu 2023 OC#1 Fellowships

| Research Project | Programme | Domain | Related Fellow |
|-----------------------------------|-----------|------------------------------------|-------------------------------|
| CogniViTra | AAL | eHealth, Autonomous robotics | João Leitão Quintas |
| FaceRehab | AAL | | |
| ROSIA | H2020 | | |
| Lifebots | H2020 | | |
| ACTIVAS | P2020 | | |
| SmartHealth-4-ALL | P2020 | | |
| InterConnect | H2020 | Smart Grids, Smart Metrics | Olivier Genest, Amélie Gyrard |
| GIFT | H2020 | | |
| MAESHA | H2020 | | |
| SENDER | H2020 | | |
| BRIDGE | H2020 | | |
| OPEN-DEI | H2020 | | |
| InterConnect | H2020 | Smart Grids | Galia Kondova |
| PharmaLedger | H2020 | eHealth | |

Now, we are delighted to share with you the very first insights from our granted fellows' work – and we truly hope that these results encourage you to follow even more closely all activities that the StandICT.eu 2023 initiative leads in the framework of the Open Calls and the fellowships but also on the European Observatory for ICT Standards (EUOS www.standict.eu/euos) - via the Technical Working Groups delivering up-to-date Landscape and Gap Analysis with the ultimate goal to shaping together and reinforcing European contribution to the international ICT standardisation ecosystem.

1. Internet of Things



IoT Semantic Interoperability - Specialization to Energy and relationship to AI



Amelie Gyrard

*Principal research and innovation consultant, Trialog
France*



ISO/IEC SC41 IoT and Digital Twin

ISO/IEC SC42 AI

IEC TC57 "Power systems management and associated information exchange" - JWG3 "IEC Smart Energy Roadmap"

Sector

IoT – Smart grids and Artificial intelligence

Addressed EU standardisation priorities and gaps

The objective of the proposed activity is to include European contributions on semantic interoperability ISO standards. My fellowship leverages European contributions carried out in European initiatives (AIOTI, BDVA, ECO), ETSI SmartM2M SAREF, OneM2M, and H2020 projects (e.g. IoT large-scale projects). The work will be carried out in ISO/IEC JTC1/SC41 IoT and digital twins as well as ISO/IEC JTC1/SC42 AI. They will impact at least 3 standards under development.

Concerned ICT Standards and contribution to the related landscape

My fellowship addresses several standardisation actions in different committees and standard developments:

- ▶ ISO/IEC (SC41) 21823-3 IoT Semantic Interoperability (Co-editor)
- ▶ ISO/IEC (SC 42) 5392 Reference architecture for knowledge engineering (Contributor)
- ▶ As well as a new work item on smart energy ontology in IEC TC57

As part of this project, I contribute to the standardisation of energy ontology by ensuring alignment with SAREF, to the standardisation of IoT Interoperability by ensuring integration of SAREF and other European contributions into ISO/IEC 21823-3 IoT semantic interoperability (as co-editor); ISO/IEC 21823-4 IoT Syntactic interoperability (as a contributor), and ISO/IEC 20924 IoT Definition and Vocabulary as well as to the standardisation of AI architecture by ensuring integration of European contributions on AI and interoperability (e.g. BDVA, IDSA, AIOTI, and H2020 projects) into ISO/IEC 5392 Reference Architecture of Knowledge Engineering Reference Architecture.

Impact

The number of connected devices is expected to exceed 20 billion by 2021. This market will be fostered by proper interoperability standards. Europe is strong in IoT innovation and has made significant technical contributions (AIOTI) including in some specific standardisation contexts such as OneM2M.

AIOTI now has a recognized presence at the ISO level, and it is now key to concretize this presence so that European innovation is well represented.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, to the following outcomes:

My company Trialog is the co-editor of JTC1-SC41/167/CDV - ISO/IEC 21823-3 ED1: Internet of Things (IoT) - Interoperability for IoT Systems – [Part 3: Semantic interoperability]. We have also sent contributions to ISO/IEC 5392 Knowledge Engineering Reference Architecture (KERA). Finally, we have contributed to IEC TC57 “Power systems management and associated information exchange” new work item on smart energy ontology (the work will be carried through contributions via the joint working group JWG3 “IEC Smart Energy Roadmap Managed by SyC Smart Energy” of SC41).

Have the standardisation activities in your project led to specific deliverables?

Yes, to the co-edition of JTC1-SC41/167/CDV - ISO/IEC 21823-3 ED1: Internet of Things (IoT) - Interoperability for IoT Systems - Part 3: Semantic interoperability.

What future efforts or activity are still necessary in your area of application?

I foresee more contributions to:

- ▶ ISO/IEC 5392 Knowledge Engineering Reference Architecture (KERA)
- ▶ IEC TC57 “Power systems management and associated information exchange” new work item on smart energy ontology (the work will be carried through contributions via the joint working group JWG3 “IEC Smart Energy Roadmap Managed by SyC Smart Energy” of SC41).

Online references related to the fellowship work

SAREF-Compliant Knowledge Discovery for Semantic Energy and Grid Interoperability. Amelie Gyrard, Antonio Kung, Olivier Genest, Alain Moreau. IEEE World Forum on Internet of Things (WF-IoT 2021).

 www.iec.ch/ords/?p=103:30:612641019650752:::FSP_ORG_ID,FSP_LANG_ID:2048634

Bridging the gap between EU R&I ecosystem and worldwide standardization on Smart Energy



Olivier Genest
*Director, Trialog
France*



IEC SyC Smart Energy JWG3 & CAG7
ISO/IEC JTC1/SC41 IoT & Digital Twins - AG6 & AG21

Sector

IoT applied for Smart grids and Smart Metring

Addressed EU standardisation priorities and gaps

My fellowship project addresses the integration of new challenges such as virtualisation, software-defined systems of named networks into the smart energy roadmap (IEC 63097). Considering the current European R&I work on IoT for energy, this project also contributes to update existing (outdated) standards such as ISO/IEC 30101.

Concerned ICT Standards and contribution to the related landscape

In my role of Co-Convenor of JWG3 between IEC SyC Smart Energy and ISO/IEC JTC1/SC41 Internet of Things and Digital Twin, I am currently working on the update of the following standards:

- ▶ IEC 63097: Smart Energy Roadmap
- ▶ ISO/IEC 30101: Sensor network and its interfaces for smart grid system

Moreover, the objective of the fellowship activity is to push European contributions, from EU research & innovation ecosystem (Horizon 2020, BRIDGE, ETIP SNET, OPEN-DEI, InterConnect), to IEC (SyC Smart Energy) and ISO (JTC1/SC41).

Impact

This project aims at contributing to Smart Energy standardisation roadmap in line with European priorities, as expressed by the European R&I ecosystem (H2020, BRIDGE, ETIP SNET etc.), including the identification of standardisation gaps.

My company Trialog is a SME, so we are directly impacted by my contribution. In addition, the standards under consideration will benefit to all the Smart Energy ecosystem, including SMEs.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

No, this action is only supporting the revision of standards already under development.

Have the standardisation activities in your project led to specific deliverables?

Not yet, but ISO/IEC 30101 is an International Standard and IEC 63097 is a Technical Report (Roadmap).

What future efforts or activity are still necessary in your area of application?

The cross-fertilization between European R&I ecosystem and worldwide standardisation on Smart Energy needs to be pursued. BRIDGE has launched in 2021 an action on "BRIDGE contribution to standardisation": the continuation of my work will allow to make this contribution possible, both by pushing EU R&I results to standardisation and by ensuring that European R&I is aware of worldwide standardisation activities and results.

Regarding the two on-going projects:

- ▶ Maintenance of ISO/IEC 30101: this work is still in its early phase and now needs to be performed by a group of committed experts.
- ▶ Update of IEC 63097: the work has started, and the writing of the updated content is on-going and will be continued.

Online references related to the fellowship work

 www.iec.ch/ords/?p=103:194:612641019650752:::FSP_ORC_ID,FSP_LANG_ID:11825,34

 www.iso.org/committee/6483279.html

USEIoT - Exemplar IoT use cases for health & well-being applications from current standards activities



Kate Grant

*Self-employed multimedia and accessibility consultant
United Kingdom*



IEC SyC (Systems Committee) Smart Manufacturing/ WG1
IEC SyC Comm Technologies and Architectures
IEC SyC Smart Cities /WG2 and AG 8/9
IEC SyC on Active Assisted Living (AAL)/ WG1
ISO/IEC JTC1 Information Technology
ISO/IEC JTC1 AG8 Meta Reference Architecture for Systems
Integration
ISO/IEC JTC1 SC41 / AG25 and WG6
IEC TC100 AGS Audio, video and multimedia systems and Equipment

Sector

IoT for connected health and well-being

Addressed EU standardisation priorities and gaps

My fellowship addresses the divergence in the use case templates and the level of description in the different groups. All are intending to provide input to IEC's UCMR (Use Case Management Repository) and the mapping tool under development. The various groups seem to have different approaches, and for example, in IEC SyC-AAL use cases have been analysed to identify a reduced number of representative use cases incorporating the key data flows and requirements. While Smart Cities provides a high-level description of the application area, the requirements and objectives with the various stakeholders are identified, together with their roles and responsibilities and the actions leading to use case scenarios. These can then be divided into detailed use cases where individual stakeholders are uniquely identified.

Concerned ICT Standards and contribution to the related landscape

This fellowship allows me to spend time participating in more standards committee meetings and helping to provide information to different committees about the work, particularly work on use cases, in other committees. I am working in IEC systems committees (SyC-AAL; SyC Smart Manufacturing, SyC Smart Cities) and JTC1 SC41 developing their use case SRDs and standards. Specifically, amendment to TS 63164, SRDs 63273, 63301, 63347 and the new PWI JTC1-SC41-6. In addition, JTC1 AG8 and SC41 AG25 work closely together and are preparing for a joint workshop.

Impact

Users can identify with use cases which relate to their business, and this can clarify the requirements for an implementation or provide additional background to issues for consideration. Where engineers/managers might not want full technical detail(s), the use cases can give a high-level description of a solution and provide guidance on key data flows and system requirements.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, work in IEC TC100 has led to a preparatory work item (PWI) being submitted for a technical report (TR) on Accessibility Goals and Needs with an exemplar of use with a household voice control system.

Have the standardisation activities in your project led to specific deliverables?

Not to specific deliverables but my fellowship has contributed to several ongoing activities, including discussions in several IEC systems committees on use cases, updates on activities of JTC1 SC41 for SyC SM and SYC Smart Cities, updates on Smart Cities use case work to JTC1 SC41 and of the work of JTC1 to IEC TC100 AGS. The exchange of such information is helpful to provide the context of complementary work.

What future efforts or activity are still necessary in your area of application?

To narrow down the differences in the use case templates among different standardisation committees, it is crucial to continue providing an information flow at a personal level between standardisation committees. It is also important to stay involved in the group (not just attend once or twice and not again) which makes significant time and cost issues for many experts needing support from employers or academic institutions. On the other hand, long term involvement leads to experts from other National Committees seeking advice, help and support for new activities and progression of projects.

Online references related to the fellowship work

 https://www.iec.ch/ords/?p=103:14:203211839647852:::FSP_ORG_ID.FSP_LANG_ID:25561,25

 https://www.iec.ch/ords/?p=103:187:203211839647852:::FSP_ORG_ID.FSP_LANG_ID:25824,34#5

 <https://www.iso.org/committee/6483279.html>



2.

Cybersecurity

Feasibility Study - Standards in support of consistent implementation of the CSA – Roadmap



Elzbieta Andrukiewicz

*Head of Cybersecurity Department and accredited IT Security Evaluation Facility (ITSEF), National Institute of Telecommunications
Poland*



CEN-CENELEC

JTC13 Cybersecurity and data protection/ WG3 Security evaluation and assessment

Sector

Cybersecurity - the Standardization in support of the Cybersecurity Act (CSA)

Addressed EU standardisation priorities and gaps

The New Work Item (NWI) that is partly a fruit of my contributions under the StandICT.eu 2023 fellowship, resulted from the concluded Feasibility Study that would answer to the need expressed in recital 86 of the Standardization in support of the Cybersecurity Act (CSA). This is going to request consistency with addressing assurance levels and security levels among the different sectorial domains where certification is applied.

Concerned ICT Standards and contribution to the related landscape

My fellowship focuses on editing a Feasibility Study about Standards in support of consistent implementation of the CSA – Roadmap. This list is not comprehensive, and identification of other relevant standards is part of the full Feasibility Study report:

- ▶ ISO/IEC 15408 and 18045;
- ▶ The ISMS family of standards (ISO/IEC 270xx)
- ▶ ISA/IEC 62443 series of standards
- ▶ ISO/IEC 27034;
- ▶ ETSI EN 303 645 and TS 103 701

The outcome of the Feasibility Study resulted in a new standardisation initiative. The objective of next focused Feasibility study is to gather sufficient information to launch NWI proposal with already established title and scope. This NWI proposal will be based on results of the project developed by ENISA concluded in November 2020 and continued with the pilot project aimed at practical implementation of proposed methodology within the context of 5G.

Impact

The NWI, being the outcome from Feasibility Study, would support the implementation of various cybersecurity certification schemes thus increasing the customer confidence in cybersecurity of ICT products or ICT services that would be subject to certification.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, a new Feasibility Study was established for developing NWI for new EN supporting consistent approach to security and assurance requirements for cybersecurity certification schemes.

Have the standardisation activities in your project led to specific deliverables?

Recommendations for new/revised standards (Technical Report).

What future efforts or activity are still necessary in your area of application?

CEN/CLC/JTC13 has decided to launch a new Feasibility Study aimed directly at gathering experts' contributions to the content of a NWI with defined title and scope.

Online references related to the fellowship work

 https://standards.cen.eu/dyn/www/f?p=204:7:0:::FSP_ORG_ID:2307986&cs=1E7D8757573B5975ED287A29293A34D6B

ISO/IEC 27005-upgrading from CD stage to DIS stage



Elzbieta Andrukiewicz

*Head of Cybersecurity Department and accredited IT Security Evaluation Facility (ITSEF), National Institute of Telecommunications
Poland*



ISO / IEC 27005

**JTC1 / SC27 Information security, cybersecurity, and Privacy Protection
WG1 Information security management systems**

Sector

Cybersecurity – Information Security Risk

Addressed EU standardisation priorities and gaps

New edition of ISO/IEC 27005 is a major update of the version from 2018. In particular, the revision will provide guidance on:

- ▶ Implementation of the information security risk requirements specified in ISO/IEC 27001:2013,
- ▶ Implementation of risk management guidance of ISO 31000 in the context of information security.

The standard contains annexes that extend the major text providing practical examples of the risk assessment activities.

Concerned ICT Standards and contribution to the related landscape

I am the editor of the 4th revision of *ISO/IEC 27005 Guidance on managing information security risks* with new title; ISO/IEC 27005 Information security risk management that is among the most popular ICT standard. The previous editions have been widely used in cybersecurity applications.

The ballot on ISO/IEC 2CD 27005 was approved by the SC 27 Plenary in April. New ballot on 3rd CD was opened April 20th, with the deadline June16th. The DIS version is expected in September 2021.

Impact

The standard is applicable to all types and sizes of organizations including SMEs. The intended recipients of the standard are persons that perform or are involved in information security risk management (e.g. ISMS professionals, risk owners, and other interested parties).

Moreover, managing information security risk is one of the most crucial challenges in the cybersecurity. Information security breaches affect not only organizations but customers as well. Great majority of population in Europe is doing their day-to-day activities in cyberspace, from entertainment and purchases through payments, contacts with public authorities till e-health. All users must be aware of risks related to their activities, how to assess these risks, how to protect from them and how to respond in case the risk would materialize.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, the result is this editorship is the revised ISO/IEC 27005.

Have the standardisation activities in your project led to specific deliverables?

Next version of Committee Draft (CD) of ISO/IEC 27005 ready for balloting.

What future efforts or activity are still necessary in your area of application?

It is necessary to do additional work by the editor to deal with results of the ballot on 3rd Committee Draft. Therefore, the initial official publication date expected on the 2nd quarter in 2022 will be delayed.

Online references related to the fellowship work

 www.iso.org/standard/75281.html

 www.iso.org/committee/45306.html

Contribution to ISO/IEC SC37 WG3 and editorship of ISO/IEC 39794-2 extensible finger minutiae format



Robert Mueller

*IT Consultant, Dr. Robert Mueller IT Consulting
Germany*



ISO/IEC
SC37 WG3 biometric data formats

Sector

Cybersecurity in biometric data formats

Addressed EU standardisation priorities and gaps

The standardisation landscape already includes biometric data formats, but the current XML definitions have several flaws and the working group decided to launch a new series of standards allowing extensible formats and backwards compatibility. This allows for better flexibility, less room for interpretation and results in future proof standards for superior interoperability and compliance.

Concerned ICT Standards and contribution to the related landscape

In this project, I am delegate for Standards Norway and editor of ISO/IEC 39794-2. My role concerns advancing the standard ISO/IEC 39794-2 extensible finger minutiae from the ISO/IEC 39794 series. In the framework of the StandICT.eu 2023 fellowship, I am taking care (as editor) of developing the Standard draft, of gathering comments and to produce a proposed disposition to advance inter-industry standards.

Impact

The extensible biometric data formats allow interoperability between different vendors and privacy for consumers. This is particularly important for small and medium enterprises who must rely on market access and fairness because they have no dominating position to deploy proprietary solutions like some of the large enterprises have.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, it has contributed to the advancement of standard which entails a 36 months workplan.

Have the standardisation activities in your project led to specific deliverables?

Yes, moved from working draft to committee draft stage and provided reference implementation.

What future efforts or activity are still necessary in your area of application?

The standard ISO/IEC 39794-2 extensible finger minutiae data is now at CD3 stage with a target promoting to DIS during the next cycle. In the role of the editor, I am implementing the approved disposition of comments to the base text document and will distribute to the working group SC37 WG3 via the secretariat. Then, collect comments from national bodies and draft a proposed disposition before the next meeting. Publication of ISO/IEC 39794-2 is targeted for H2/2022.

Online references related to the fellowship work

 www.iso.org/standard/72153.html?browse=tc

 <https://standards.iso.org/iso-iec/39794/-2/ed-1/en/>

Technical Study for Information Security

Evaluation criteria for connected vehicles on ISO/IEC 15408



Jose Pulido Carillo

*ICT Security Consultant, JTSEC Beyond IT Security
Spain*



ISO/IEC
JTC1 SC27 WG3 Security Evaluation, Testing and Specification

Sector

Cybersecurity in connected vehicles

Addressed EU standardisation priorities and gaps

Elaboration of a Technical Study in relation to the SC 27/WG 3 N1676 project: "Evaluation criteria for connected vehicle information security based on ISO/IEC 15408".

Concerned ICT Standards and contribution to the related landscape

The goal of my fellowship is to provide contributions to the WG as part of the technical study and to establish an evaluation method and process based on ISO/IEC 15408 for connected vehicles.

In this context, definition of testing and verification standards are being contemplated, considering ISO 26262 and ISO/SAE 21434, while cybersecurity requirement identification is being carried out for assurance activities related to this problem.

The preliminary work item (PWI) has been elaborated and presented. After this milestone, a NWIP has been presented to be approved first by SC 27 Member Body through the NWIP ballot to start briefly for a development of the ISO standard. In the meantime, I am processing the research and compilation of technical information and Common Criteria suitability to include in the ISO NWIP.

Impact

European companies and experts need to adopt a proactive role in the research and design of certification methodologies and their adaptations to emerging technologies. The massification of the connected vehicle market foreseen for the next few years makes it essential to have an evaluation and certification methodology that allows a safe and reliable usage of this type of technology for an activity as critical as driving, in which human lives are at stake.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, the project work is aligned with the scope of the ISO JTC 1/SC 27/WG 3, specifically collaborating with the Technical Study and Preliminary Work Item for the proposal of a new standard for security evaluation criteria for connected vehicles (based on ISO/IEC 15408).

Have the standardisation activities in your project led to specific deliverables?

Although the focus of the work is a technical study, it has served to assist in the creation of a New Preliminary Work Item (NWIP) in the path towards the standardisation of the related project.

What future efforts or activity are still necessary in your area of application?

Currently, the IS associated to the NWIP has addressed and met only a small part of those objectives, so further work is needed. The focus of my work has been the coverage of ISO/SAE 21434 requirements in the evaluation framework being defined, but there are several other standards and regulations that have not been addressed. Moreover, protection profiles and definitive security requirements need yet to be defined and included in the IS. Furthermore, the project faces an important risk: ISO/IEC 15408 does not play well with the risk-driven approach of ISO/SAE 21434 and this need further analysis and coordination between workgroups.

Online references related to the fellowship work

 www.iso.org/committee/45306.html

IEC 62351-9, Cybersecurity key management for power system equipment, second edition



Erik Andersen

Consultant, Andersen's L-Service
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IEC
TC 57 Power Systems WG15 Data & Communication Security

Sector

Cybersecurity for Power System Equipment

Addressed EU standardisation priorities and gaps

The first edition of IEC 62351-9 “*Cybersecurity key management for power system equipment*”, was published in 2017. The first edition has proved to be especially useful but requires substantial enhancements. A second edition has been decided by IEC TC 57 WG 15.

Concerned ICT Standards and contribution to the related landscape

I am the project editor and contributor for the second edition of IEC 62351-9 “*Cybersecurity key management for power system equipment*”. This specification has just been moved to the committee draft (CD) status. Development of the CD text together with a co-editor and the elaboration of an extensive set of comments with the intention to improve the quality of the specification has been performed as part of the StandICT.eu 2023 fellowship.

Impact

As the updated and expanded second edition of IEC 62351-9 will be issued as a European Norm, it will have impact on the European cybersecurity protection of the electric grid. Also, it will give European SMEs a tool to require specific cybersecurity features to be included in vendor products.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, the second edition of IEC 62351-9 has completed Committee Draft (CD) comment period and is now in the comment resolution phase. A substantial part of the comments was generated as part of this fellowship. I am now responsible for editing major parts of the new document, in collaboration with a co-editor. This process is expected to be completed beginning July this year (2021).

Have the standardisation activities in your project led to specific deliverables?

Yes, to recommendations for new/revised standards (Technical Report).

What future efforts or activity are still necessary in your area of application?

Subsequently, a Committee Draft for Vote (CDV) on the second edition of IEC 62351-9 will be issued. A final International Standard is expected to be released next year (2022).

Online references related to the fellowship work

 https://www.iec.ch/dyn/www/f?p=103:23:0::::FSP_ORG_ID,FSP_LANG_ID:1273,25s



Niall O'Reilly

*Senior Consultant, Tolerant Networks Limited
Ireland*



RIPE (Réseaux Internet Protocol Européens)
All WGs

Sector

Cybersecurity - network security

Addressed EU standardisation priorities and gaps

The current priorities in the RIPE's standardisation efforts are:

- ▶ Updating RIPE community governance processes, in particular the Policy Development Process and the Code of Conduct.
- ▶ Giving feedback from the RIPE community on standards-based services provided by the RIPE NCC; currently the RIPE Database (WHOIS) and the RIPE RPKI service are the main areas of interest.
- ▶ Addressing regulatory and legislative developments which may have operational impact on standards-based services.
- ▶ Supporting the work of the RIPE BCOP TF and IPv6 WG to address delays in deployment of, or migration to, IPv6.
- ▶ Giving eventual feedback from operational experience to IETF WGs.

Concerned ICT Standards and contribution to the related landscape

In the framework of this fellowship, my role as the RIPE Vice-Chair, together with the chair, is to support and facilitate efforts by others in the community to develop and enhance standards-based network operations. This supportive leadership is always guided by the bottom-up principle, which is a core value of RIPE. RIPE develops Policies which guide the services provided by the RIPE Network Coordination Centre (RIPE NCC) in its service area, and Best Current Operational Practices (BCOPs) which may be seen as guidelines or functional profiles for the procurement or deployment of infrastructure or services based on ICT standards developed in other organizations whose orientation is more strictly that of an SDO.

The following standards are of current operational interest in the RIPE community.

- ▶ WHOIS (IETF RFC 3912)
- ▶ Internet Numbers Registry System (IETF RFC 7020).
- ▶ RPKI (IETF RFCs 4271, 6480, 6482, 6811, 7128, 8897)
- ▶ IPv6 (IETF RFC 8200 (STD 86), and others)
- ▶ DNS (IETF RFC 1033,1034,1035 as updated; 4033,4034,4035 as updated)

In addition, I follow the work of several IETF WGs, including TLS, DHC, DNS-PRIVACY, DNSOP, V6OPS.

Impact

Note that while RIPE are not formally an SDO, the RIPE community do much Internet-related policy work, lead in early implementation, and feedback on Internet protocols and provide significant input on requirements to all Internet SDOs, in particular the IETF.

In addition, SMEs depend, whether directly or indirectly (via an ISP), on RIPE policies, guidelines, and BCOPs for co-ordination of their Internet infrastructure.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

No.

Have the standardisation activities in your project led to specific deliverables?

- ▷ Ripe-765: A Guide for New RIPE Working Group Chairs
- ▷ Ripe-764: Mailing List Guidelines for RIPE Working Group Chairs
- ▷ Ripe-763: RIPE Meeting Programme Committee: Appointment, Roles and Responsibilities
- ▷ Ripe-761: Review of Evolution of RIPE Policy Development Process
- ▷ Other (governance and procedural documents — jointly with RIPE Chair)

What future efforts or activity are still necessary in your area of application?

I will continue my role as vice-chair beyond this fellowship, and therefore the work continues. The RIPE Chair Team meets twice weekly to review current issues, and has additional meetings with RIPE WG Chairs, RIPE Task Force members, and the RIPE NCC Managing Team for coordination purposes. The Chair Team publishes monthly reports of its activities on the RIPE Labs website; as Vice-Chair, I am co-author of these reports. The RIPE Chair Team oversees the organization of the twice-yearly RIPE meetings, delegating as appropriate to the RIPE Programme Committee, the Chairs of the RIPE Working Groups, and the RIPE NCC Events Team.

Online references related to the fellowship work

 www.ripe.net/publications/docs/ripe-765

 www.ripe.net/publications/docs/ripe-764

 www.ripe.net/publications/docs/ripe-763

 www.ripe.net/publications/docs/ripe-761

■ Security and privacy of biometrics



Julien Bringer
CEO, Kallistech SAS
France



ISO/IEC JTC 1/SC 27/WG 5 Identity management and privacy technologies
ISO/TC 68/ WG 13 Security in retail banking
ISO/TC 68/ WG 18 Customer identification and authentication technologies

Sector

Cybersecurity in Privacy & Biometrics

Addressed EU standardisation priorities and gaps

Under the FinTech and RegTech standardisation priorities framework, EU has a strong position on privacy of personal data, and among those information biometrics are seen as the most sensitive ones. Based on GDPR and the standards developed in WG5 of SC27 (privacy standards, such as ISO/IEC 29100, ISO/IEC 24745 for biometric information, and authentication assurance standards, such as ISO/IEC 29115), it is important to ensure that the standards developed for a specific business/domain remain consistent with these principles, and even more, that they rely on up-to-date technologies. Additionally, ISO 19092 is closely related to PSD2 requirements and ISO 5158 has some connections with AMLD5.

Concerned ICT Standards and contribution to the related landscape

As a part of my fellowship, I comment and contribute to the on-going projects leveraging biometrics (and other personal information) for identification (e.g. eKYC), or for authentication. The primary goal is to ensure that both security and privacy of sensitive data (of biometrics) are taken in account, to ensure consistency with the best standards and taking into account recent advancements in privacy enhancing technologies. This will allow to be aligned with the high requirements from European market, at least, and even to reach additional protection by design.

There are currently the following standards under development:

1. One in SC27: ISO/IEC CD 27553 - Information technology - Security techniques - Security requirements for authentication using biometrics on mobile devices and ISO/IEC 24745
2. Two in financial area, by ISO/TC 68/SC2 Financial Services - security:
 - ▶ ISO/AWI 19092 Financial services -- Biometrics -- Security framework
 - ▶ ISO/AWI 5158 - Mobile financial services - customer identification guidelines

Impact

I consider that helping the development of EU-friendly solutions for biometrics-based services, employing strong privacy enhancing technologies (thus going further contractual/organizational requirements) is crucial to ensure privacy and security by design. Promoting the usage of the newest privacy enhancing technologies is particularly important as sharing or leaking biometric information without appropriate protection can be extremely critical. This will support innovation in EU market and a common approach between the member states. And it will help the EU providers to be ahead of the competitors internationally.

Furthermore, several of the mobile identification providers and biometrics providers for mobile authentication are based in Europe, and it would be a good support to leverage the efforts made in terms of security and privacy with respect to EU regulations & frameworks (e.g. GDPR, Cyber Act)

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, a PWI related to ISO/IEC 27553 has been initiated for the cases when biometrics are sent outside mobile devices (to ensure appropriateness of privacy requirements). I have been nominated as leader.

Have the standardisation activities in your project led to specific deliverables?

Not yet but expected to lead to a new IS soon on 24745 (revision of original version) as it is being submitted to FDIS stage.

Online references related to the fellowship work

 www.iso.org/committee/45306.html

 www.iso.org/committee/49670.html

3. eHealth

The background is a vibrant blue with abstract digital elements. It features a network of white dots and lines, a glowing white orb on the left, and a jagged white line resembling a heartbeat or data waveform. Faint, stylized binary code (0s and 1s) is visible in the background.

Ensuring consumers' rights and data protection in virus contact tracing systems



Rusne Juozapaitiene

*Certified data protection officer & consultant, ANEC
Lithuania*



ETSI TC Cyber

Sector

eHealth – data protection

Addressed EU standardisation priorities and gaps

In response to the global coronavirus pandemic, the new ETSI Industry Specification Group “Europe for Privacy-Preserving Pandemic Protection” (ISG E4P) has been established to provide a standardisation framework that will enable developers to build interoperable mobile apps for proximity detection and anonymous identification.

Concerned ICT Standards and contribution to the related landscape

In the context of tracing persons potentially infected with a transmittable virus such as SARSCoV-2, the ETSI ISG E4P is developing a framework and a consistent set of specifications for proximity tracing systems to enable the development of applications and platforms, and to facilitate international interoperability. ISG E4P works on the following deliverables:

- ▶ GR “Comparison of existing pandemic tracing systems”
- ▶ GS “Requirements for pandemic contact tracing systems using mobile devices”
- ▶ GS “Device-based mechanisms”
- ▶ GS “Back-end mechanisms”
- ▶ GS “Interoperability framework”

I am contributing to the set of specifications that will ensure the interoperability of COVID-19 tracing applications throughout Europe will be developed and provide for: a) a comparison of current existing digital pandemic contact tracing methods, and the applications that adopt them, b) a specification of the general requirements of this type of solutions, c) an analysis of the mechanisms related to the devices – essentially, smart phones – used in this type of solutions, d) a second similar analysis, but focused on the back-end systems mechanisms; and, finally, e) a reference framework for the interoperability of the different existing apps.

Impact

ICT standards establish implementation of such key legal rules related to ICT as the General Data Protection Regulation (GDPR). ICT standards are important for consumers as they ensure the use of safer ICTs, and a better protection of data subjects' rights.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, in total 4 new technical specifications have been developed.

What future efforts or activity are still necessary in your area of application?

There are proposals to develop additional related standards to be considered, e.g. "Presence aware function trigger framework for smart devices supporting protecting privacy of both visitors and host locations". The work item aims to describe the design of a multi-input privacy protected presence aware function triggering framework for use on smartphones and other IoT devices.

Online references related to the fellowship work

 www.etsi.org/deliver/etsi_gs/E4P/001_099/003/01.01.01_60/gs_E4P003v010101p.pdf

 www.etsi.org/deliver/etsi_gr/E4P/001_099/002/01.01.01_60/gr_E4P002v010101p.pdf

■ Support for Chair of ETSI EP eHEALTH



Suno Wood
Chairman, ETSI EP eHealth
United Kingdom



ETSI
Work Group / technical committee

Sector

eHealth

Addressed EU standardisation priorities and gaps

Direct cooperation by Chairs at strategic level and joint group meetings now address needs for analysis, cooperation in discussion and joint drafting at a time of societal anxiety and limited resources.

This cooperation is active with ISG e4P, ISG USER GROUP, TC SMARTM2M, TC SmartBAN, WG TG30, TC ATTN WG SDMC.

The challenge to maintain contact is further supported by my attendance at meetings of the OCG/ETSI BOARD and the OCG-AI group. I also attend other ETSI Meetings where the main subject concerns health-related issues:

- ▶ SmartM2M for discussions on ACT
- ▶ Member of the steering group for the annual IOT Event - 1 week of presentations where our group led a full day workshop on eHealth.
- ▶ Active work continues on the 'gaps' in Digital Contact Tracing, A-Synchronous (objects) and Synchronous (people)
- ▶ New concerns on ethics and societal concerns
- ▶ Privacy protected recording of health and infection issues
- ▶ Drafting of a 'Special report

Concerned ICT Standards and contribution to the related landscape

My fellowship aims at strengthening the ICT Standards landscape by supporting the Chair of ETSI EP eHealth. This is a strategic level body, actively monitoring and addressing the gaps in ICT standards relating to health. My role as Chair is important to the smooth coordination and creation of new joint groups and initiatives to enable a rapid response to the developing pandemic.

This fellowship has enabled a significant advance in active liaison with other technical groups. In our informal 'Hub for Health,' I am Chair of 'workshop-style' meetings enabling non-ETSI members to join discussions). These are arranged at short notice and formatted to provoke discussion. I am raising the profile of the group generally.

Also, the fellowship contributes to the writing of new proposals for standards for Digital Contact Tracing, and Vaccination documentation. I have also introduced an alternative to a White Paper, the 'Special Report,' appropriate to the current demand for strategic information on societal recovery.

Impact

Individual members and small companies are playing a significant role in EP eHealth. We provide a forum for discussion of ethics and human rights which may be impacted by possible new standards development. We are an inclusive group and welcome original thought, which can differ significantly from either a corporate or government view. The breadth of the health issue - the fact that we are all eHealth Use Cases means that we welcome a wide range of views from individual thinkers.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

My group has taken on responsibility for maintaining the work first published by ETSI ISG E4P:

- ▶ GR E4P 002 Comparison of existing pandemic contact tracing systems
- ▶ GS E4P 003 Requirements for Pandemic Contact Tracing Systems using mobile devices
- ▶ GS E4P 006 Device-Based Mechanisms for pandemic contact tracing systems
- ▶ GS E4P 008 Back-End mechanisms for pandemic contact tracing systems

We participate in drafting sessions of new standards for Asynchronous Contact Tracing; also continuing consultation on Work Items for Use Cases and Data sharing for health.

Have the standardisation activities in your project led to specific deliverables?

Work ongoing on 'ETSI Special Report' entitled "*eHealth - The role of ICT to enable Health crisis management and recovery; Responding to the 2019 SARS-CoV-2 Pandemic*".

What future efforts or activity are still necessary in your area of application?

All the undertaken actions should be continued, particularly the following ones:

- ▶ As Rapporteur of ETSI 'Special Report'; I initiated the writing of this report with New Work Item DSR/eHealth/0013 (SR003809) Status: Stable Draft approved 5 July 2021; Aiming for publication September 2021.
- ▶ White Paper now rescheduled to follow on from delivery of Special Report with Stable Draft progressing to Final Draft Q3, Q4. Both informative documents which are urgent to complete. The SR has created a heavy workload but is progressing well and is important for the direction of new standards in other groups with implications for health.
- ▶ New Work Item, 'DTR/eHEALTH-0015,' 'eHealth: Presence preserving proximity function trigger(3PFT)' now opened and early draft progressing. This needs more drafting and discussion to improve text and finalise.
- ▶ I have initiated discussion at Board level to raise the awareness of Health matters. I have drafted a document to support this. It now needs to be agreed and submitted.

Online references related to the fellowship work

📎 www.etsi.org/images/files/ETSIWhitePapers/etsi_wp33_eHealth_standard_role_pandemic.pdf

■ Contribution to finalize IEEE 1872.2 and use cases



João Manuel Leitão Quintas

*Principal Researcher of ICT for Health and Healthy Ageing,
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Portugal*



IEEE

Autonomous Robotics - Autonomous Robotics (AuR) Ontology

Sector

eHealth – Autonomous Robotics

Addressed EU standardisation priorities and gaps

Knowledge models constitute the basic component of knowledge-based approaches in fields such as Artificial Intelligence (AI) and Robotics. Until recently, there was a tendency to develop knowledge models that represent the knowledge in a way most suitable for performing a given task. The need of cooperation among different stakeholders motivated the development of knowledge models that represent a common view of the reality. Due to this, in the last years there has been an increasing adoption of ontologies since they are built for meeting these requirements. Challenges to be addressed include semantic heterogeneity of information in decision-making systems, combining static encyclopedic knowledge, common-sense knowledge, task descriptions, environment models, object information and information about observed actions, using knowledge in perception and actuation including human-robot interaction, grasping and manipulation of objects, navigation, etc.

Concerned ICT Standards and contribution to the related landscape

My fellowship supports additional commitment and the effective contribution to the development, and promoting adoption, of the IEEE P1872.2TM Standard for Autonomous Robotics (AUR) ontology standard, which intends to formulate a logical extension to the CORA ontology by defining additional ontologies appropriate for Autonomous Robotics (AuR).

I contribute as a European expert bringing in knowledge and perspective from the European RTD ecosystem related to robotics and automation but also with application domain of ICT for Health and Active and Assisted Living. From my fellowship perspective, it addresses “ICT for Healthcare” and “eHealth, healthy living and ageing”. This activity is expected to influence the preparation of a technology- oriented standard by sharing concerns and requirements that may be relevant for future adoption of the standard in concrete solutions targeting these sectors.

Impact

SMEs related with robotics can be impacted by this contribution, since the standard being developed aims to bring added value for integration and interoperability in robotic solutions.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes. My fellowship supports the development of the IEEE1872.2 standard proposal. It is an extension of IEEE1872-2015 and is currently being finalised in terms of revision of the text. This is a necessary step so it can be fully submitted for the balloting process according to IEEE process. The support given by StandICT.eu 2023 was important for me to have the resources to continue collaborating with the WG and to help me cover the costs required to be a member with voting privileges at the balloting process.

Have the standardisation activities in your project led to specific deliverables?

Yes, to development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

This IEE WG is identifying possible new WG to be proposed related to this standard, and within the time of the fellowship, and as part of impact generation activities, I have become a member of the IEEE EPPC for ICT, where I am chairing the AI sub-WG and I'm contributing with my vision of Robotics and applicable standardisation efforts. Similarly, as I am acting as contact point in euRobotics, on behalf of my organization.

Online references related to the fellowship work

 https://standards.ieee.org/project/1872_2.html

Secure protocol and information structure for telebiometrics



Erik Andersen

Consultant, Andersen's L-Service
Denmark



ITU-T Study Group 17 – Security

Sector

eHealth – Cybersecurity for Telebiometrics

Addressed EU standardisation priorities and gaps

The work Telebiometrics had ended in a blind alley. The attempt was to build different standards for different areas, like physical, psychological, medical, etc. There was a gap between the reality, where a monitoring involves several areas, and the standardization attempt. A careful evaluation by the chair of the working group and me as the editor resulted in a decision to develop a single, rather complicated specification being versatile enough to handle any type of data structure. The aim was also to ensure a maximum level of Cybersecurity by maximum use of the protection provided by the wrapper protocol defined by Rec. ITU-T X.510 | ISO/IEC 9594-11.

Concerned ICT Standards and contribution to the related landscape

The ICT standard I am dealing with has the code name: *X.b2m: Biology-to-machine protocol*. It is expected to be published as Rec. ITU-T X.1080.2 (2021), Biology-to-machine protocol, scheduled to be approved by ITU-T early September this year (2021).

The B2M protocol allows remote monitoring of patients by medical experts. It provides a versatile information model and an associated protocol allowing the medical team to control medical equipment at the patient site and to receive medical information from the patient site.

The main scope of this standard is to provide communications between gateways at the expert location and at the patient facility providing secure communications between the two locations by using the Rec. ITU-T X.510 wrapper protocol. It allows for migration to quantum-safe algorithms and it has two major components: a versatile data structure and the protocol itself.

Impact

It is expected that the proposed activity will add important capabilities to European health industry especially in the area remote monitoring, which is important to successfully tackle potential future pandemics. In addition, a high level of Cybersecurity is provided ensuring authentication of sender and integrity of data. Confidentiality may also be provided.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

My fellowship has resulted in the rather stable text for a new ITU-T Recommendation. It was presented at latest ITU-T Study Group 17 meeting and well received.

Have the standardisation activities in your project led to specific deliverables?

Yes, to recommendations for new/revised standards (Technical Report).

What future efforts or activity are still necessary in your area of application?

The ITU-T Recommendation is expected to be approved at the ITU-T meeting 24 August - 3 September 2021.

Online references related to the fellowship work

 www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx

International Patient Summary (IPS) - Cross-SDO project



Giorgio Cangili

Consultant and educational service provider for social and eHealth ICT

Italy



Cross-SDO project, involved in:
HL7 IPS project under the HL7 Patient Care WG
ISO/TC 215 WG1 ISO 27269 project team
CEN/TC 251 EN 17269 project team
IHE PCC IPS project team
IPS Cross-SDO coordination team

Sector

eHealth – interoperability, healthy living, and ageing

Addressed EU standardisation priorities and gaps

As a part of my fellowship, I assure the European participation and leadership in a strategic cross-SDO standardisation initiative by ensuring also the needed linkage between the IPS standardisation and the European piloting or operational eHealth initiatives (e.g., eHDSI, European EHRxF).

The relevance of the IPS is steadily growing at the global (see e.g., WHO vaccination card; or the IPS as work stream in the Global Digital Health Partnership); European (e.g., European EHR exchange format), and National level (among the others the German Corona Consensus Dataset - GECCO -; Argentina and New Zealand national programs).

Concerned ICT Standards and contribution to the related landscape

The International Patient Summary (IPS) is a cross-SDO effort involving ISO, CEN, HL7, IHE, SNOMED CT and JIC. These Standards Developing Organisations are working on a set of cooperating standards constituting the IPS ecosystem.

My role is also to facilitate the cooperation among different SDOs, promoting the development of a coherent ecosystem of IPS standards. This can be achieved assuring a cross-participation to these different projects. I am already involved in the CEN/TC 251; ISO/TC 215 and IHE project as team member, I am co-leading the HL7 IPS project as well as I am member of the IPS cross-SDO coordination team. My project also promotes the adoption of the IPS standards; expedites the collection of feedbacks from stakeholders as well as support the IPS continuous maintenance and improvement.

Impact

The IPS plays a relevant role in the global sharing of health data, recognized with the COVID pandemic as the interest of WHO on this standard and as the US co-leadership of the HL7 IPS project funded by ONC is demonstrating. An increasing number of relevant national and European eHealth projects are declaring to use the IPS standards (e.g. GECCO, InteropEHRate, SmartEHR, PanCareSurPass and many others).

Also, the European participation and a linkage between the IPS standardisation and maintenance activities and the main European eHealth cross-border initiatives (as eHDSI and the European EHR exchange format) aims at contributing to create the European Single market for Digital health.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, it aims at supporting the development or revision of a standard already under development. The International Patient Summary is a cross-SDO initiative, involving a set of different standards (ISO 27269; EN 17269; HL7 CDA and FHIR IPS; IHE IPS profile.). The main goal of this proposal is to enforce the European participation in this initiative.

Have the standardisation activities in your project led to specific deliverables?

Revised FHIR IPS IG guide (not yet published); Reports from testing events; Dissemination materials.

What future efforts or activity are still necessary in your area of application?

Even upon the completion of my fellowship, this project will be a continuous effort that include dissemination, cross-SDO coordination and maintenance work of the developed artefacts. Several supporting and standard artefacts have been and will be published: e.g. ISO 27269 and an interim version of the FHIR IPS IG will be likely published before the end of 2021.

Online references related to the fellowship work

 www.hl7.org/Special/committees/patientcare/

 www.iso.org/committee/54960.html

 https://standards.cen.eu/dyn/www/?p=204:7:0:::FSP_ORG_ID:6232&cs=18CA078392807EDD402B798AAEF1644E1

Standards for Autonomous Systems: Healthcare, Robots and Ethics



Paulo Goncalves

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IEEE

WG P1872.1 – Robot Task Representation

WG P1872.2 – Ontologies for Robotics and Automation

WG P7007 – Ontological Standard for Ethically Driven Robotics and Automation Systems

Sector

eHealth – Robotics and Autonomous Systems

Addressed EU standardisation priorities and gaps

During my fellowship, several actions are being performed to contribute to fill the gap in ICT standards, and pursue the challenges defined in the IEEE 1872 series and 7007 standards, as the following:

- ▷ Propose a systematic way of representing knowledge and a common set of terms and definitions, ranging from the ICT, ethics, healthcare, industrial, and autonomous systems domains.
- ▷ Propose an unambiguous knowledge transfer among humans, robots, and other artificial systems.
- ▷ Provide a foundational basis for the ethical application of AI technologies to autonomous systems.
- ▷ Obtain semantic interoperability between ICT autonomous systems.

Concerned ICT Standards and contribution to the related landscape

My fellowship work is related to the development of three standards:

1. IEEE WG P1872.2 for the Standard for Autonomous Robotics (AuR) Ontology
2. IEEE WG P1872.1 - Robot Task Representation;
3. IEEE P7007 - Ontological Standard for Ethically Driven Robotics and Automation Systems.

The activity in the first and second parts are related to IEEE standards, that are defined using ontologies for robotics and autonomous systems, e.g., that include basic definitions on autonomous systems, robot structures, tasks definition, autonomy. Those are tackled in the WG 1872.1 and 1872.2.

The third part of the activity is related to the wide usage of AI based autonomous systems that raise ethical issues. That is being tackled by the P7007 WG, to propose an ontological framework to ensure ethical concerns in autonomous systems.

Impact

Many renowned robotic companies are based in Europe. Robotics and autonomous systems use AI based systems to reasoning. Nowadays, AI raises ethical issues that are currently being regulated worldwide, to which European SMEs must also comply. As such, AI and ethics standards will have a huge impact on future robotic and autonomous systems developed by companies.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, I support the ongoing development of the three IEEE Standard projects:

1. IEEE WG P1872.2 for the Standard for Autonomous Robotics (AuR) Ontology;
2. IEEE WG P1872.1 - Robot Task Representation;
3. IEEE P7007 - Ontological Standard for Ethically Driven Robotics and Automation Systems.

Have the standardisation activities in your project led to specific deliverables?

Yes, to the development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

The standard IEEE P7007 is now in review phase for the balloting process to approve the standard. My contribution to the IEEE WG 1872.2 is ongoing. Since my duties of this IEEE 1872.2 and 7007 working groups are vice-chair and secretary, respectively, I have to provide further contributions during the balloting process for the standards approvals. In conclusion, my work on all the three Working groups is ongoing.

Online references related to the fellowship work

🔗 https://standards.ieee.org/project/1872_1.html

🔗 https://standards.ieee.org/project/1872_2.html

🔗 <https://site.ieee.org/sagroups-7007/>

The background is a dark blue field filled with a grid of small, glowing blue dots. Overlaid on this is a large, glowing circular pattern that resembles a stylized 'G' or a network node, composed of concentric rings of dots and lines. The overall effect is a high-tech, digital aesthetic.

4.

5G and Future Network Technologies

Standardise Gen Framework: X-Dom Federated ETSI GANA KPs for 5G E2E Autonomic Security Man & Control



Ranganai Chaparadza

Senior IT Consultant, Altran Capgemini
Germany



ETSI
Other involved SDOs: IEEE, ITU

Sector

5G and Security

Addressed EU standardisation priorities and gaps

My work is about guiding the industry to develop a Standardised Framework for addressing Security Challenges that should be addressed through automated orchestration of security mechanisms and services and usage for 5G network slices, network segments and services delivered by the E2E 5G network; and automated security policy computation and dynamic enforcement in various points in the network infrastructure using autonomics (closed control-loops) in response to new service instantiations, new intents and security SLAs supplied as inputs by the human network operator as well as to detected and predicted security attacks/threats/risks.

The Framework enables industry to implement solutions for self-protection and self-defence autonomic behaviours by 5G networks, their associated management and control systems without need for human operator involvement in the decisions and actions against detected and predicted security attacks/threats/risks.

Concerned ICT Standards and contribution to the related landscape

Security in 5G Networks is regarded a serious challenge that needs to be addressed through various means, including automated security policy computation and dynamic enforcement in various points in the 5G network infrastructure using autonomics (closed control-loops) in response to detected/predicted security attacks/threats/risks.

My work helps industry to address the challenge by developing a Standard for a Generic Framework for Cross-Domain E2E ETSI GANA Federated Knowledge Planes Platforms for E2E Autonomic Security Management & Control across Multiple Network Domains of the E2E 5G Network Architecture.

Impact

The work has significant impact in the broad scope of Standards for Network Automation in Emerging and Future networks (e.g. 5G and Beyond) that are intelligent and autonomous in the way they operate—thanks to the use of autonomics paradigm and associated Artificial Intelligence (AI) Algorithms

The ETSI GANA Framework has defined a Market Place Concept for Suppliers and Consumers of GANA Software for Autonomic Management and Control (AMC) of Networks called GANA Decision-making Elements (DEs), GANA Knowledge Plane (KP) Platforms and associated AI

Algorithms for AMC. ETSI White Paper No.16: different players (e.g. SMEs) can play the role of supplier of GANA Components for AMC for specific networks. GANA Market Place offers huge opportunities for SMEs to be suppliers of GANA software.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes. The Project is about guiding the industry to develop a Standardised Framework for addressing Security Challenges that should be addressed through automated orchestration of security mechanisms and services and usage for 5G network slices, network segments and services delivered by the E2E 5G network; and through automated security policy computation and dynamic enforcement in various points in the network infrastructure using autonomies (closed control-loops) operations in response to new 5G service instantiations, new intents and security SLAs supplied as inputs by the human network operator and/or in response to detected and predicted security attacks/threats/risks.

Have the standardisation activities in your project led to specific deliverables?

Yes, to development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

Future efforts/activities should be in then applying the Framework being standardised in ETSI Work Item DTR/INT-00900 through more Industry PoCs to help find gaps in Standards for End-to-End AI-powered Autonomic Security Management & Control Across Multi-Domain 5G Networks.

Online references related to the fellowship work

 https://intwiki.etsi.org/images/ETSI_5G_PoC_White_Paper_No_6.pdf

 https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63106

 <https://futurenetworks.ieee.org/conferences/future-network-security-workshop>

 <https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20210316/Pages/default.aspx>

■ ITU SG13 1H-2021



Alojz Hudobivnik

CEO – AH.TS, Alojz Hudobivnik S.P.
Slovenia



ITU SG13 – Future Networks

Sector

5G Infrastructure for vertical sectors

Addressed EU standardisation priorities and gaps

I am addressing IMT-2020 (5G) and beyond network aspects: Studies on the requirements and capabilities for networks based on the service scenarios of IMT-2020 and beyond. This includes development of Recommendations on the framework and architecture design, also including network-related aspects of reliability, quality of service (QoS) and security.

Furthermore, it includes interworking with current networks including IMT-Advanced. Standardisation work continues with the integration of new technologies, new insights, and new requirements of different verticals. It is especially important that European science, industry, and users are well represented and engaged in this process.

Supplement 59 to ITU-T Y.3100 “IMT-2020 standardisation roadmap” (3/2020) presents a good snapshot of the current situation regarding 5G standards in the field of 5G core (fixed part of the network).

Concerned ICT Standards and contribution to the related landscape

As ITU-T SG13 WP1 vice-chairman “IMT-2020 (5G) and beyond network aspects” I have due to prolonged mandate into the year 2021 (postponed WTSA -20 in the year 2022 due to Covid measures) important obligations (management activities, presence on virtual/live meetings in Geneva, active involvement in decisions, steering the work of Questions) and big opportunities to influence the content of outcomes (final documents, the work plan for 2020-2024, new WI decisions). As a recognized and experienced ITU-T expert, I personally contribute to align the SG13 plan, content, and standardisation objectives with EU objectives and to contribute and promote European solutions. I am contributing to the fulfilment of EU Rolling Plan 2021. Inside FG AN, I will influence the formulation of all aspects of “Autonomous Networks”.

Impact

The EU Rolling Plan for ICT (2021)² clearly define importance of 5G infrastructure for verticals (where Healthcare is at the top of targeted verticals) and needed actions. “The Communication on ICT standardisation priorities for the digital single market” proposes priority actions on 5G.

² <https://joinup.ec.europa.eu/collection/rolling-plan-ict-standardisation/rolling-plan-2021>

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, ITU-T SG13 WP1 is finalising the following standards: ITU-T Y.3178 (formerly Y.ML-IMT2020-serv-prov) ITU-T Y.3179 (formerly Y.ML-IMT2020-MODEL-SERV) ITU-T Y.2623 (formerly Y.IIN-Req).

Have the standardisation activities in your project led to specific deliverables?

Yes, recommendations for new/revised standards (Technical Report).

What future efforts or activity are still necessary in your area of application?

Telecommunications are developing extremely fast due to rapid technological progress and improved advanced organisational models. The current 5G network (fixed, mobile, satellite) will therefore be developed in the direction of new connected versions and beyond. The usability of telecommunications depends on the global connectivity of operators with various complex equipment and its management. It is necessary to create global trust (technical and organisational) and to write-down identified good practices in standards in a timely manner. For the EU to be at the frontline of global ICT standardisation (which takes place in ITU-T), a very intensive cooperation of experts working in different professional fields and different SDOs/ forums is needed. StandICT.eu 2023 is therefore an especially important connecting and supporting enabler.

Online references related to the fellowship work

 www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/default.aspx

 www.itu.int/md/T17-SG13-R-0042/en

Standardisation of location-based spectrum sharing requirements



Octavian Popescu

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ETSI TC Reconfigurable Radio Systems (RRS)

Sector

5G – local-enabled radio interfaces

Addressed EU standardisation priorities and gaps

Standardisation will offer the possibility for regulators to exercise better control of the radio activity and electromagnetic radiation due to the radio activity. A standardised set of requirements to be implemented in the radio interface of devices complying with the Harmonised Standard will give the radio interface developers a clear path for creating products that can share the spectrum without interfering in the protected areas. Such requirements will also be defined for a geographic accuracy that regulators consider to be adequate, and that the radio interface developer can implement and test for conformity with the standard.

Concerned ICT Standards and contribution to the related landscape

Standardisation of location-enabled radio interfaces may play a significant part in offering manufacturing companies adequate means of compliance with requirements formulated by regulators. Currently this topic is discussed in the Reconfigurable Radio Systems (RRS) technical committee (TC) in ETSI: TC RRS, under WI 'RTS/RRS-0153' it will result in a Technical Report. In the framework of my fellowship, I am able to finalize the contributions to the WI, thus helping publication of the TR and TS.

Impact

Smart cities and communities using technologies and services for smart and efficient energy use are enabled by devices equipped with radio interfaces for their communication needs. Currently the commercialisation of radio devices may be allowed but their use in the country may be limited to specific frequencies.

Mobile IoT devices equipped with radio interfaces, which play an important supporting role in a successful 5G deployment, often use radio interfaces enabling data communications using different unlicensed frequency bands. Due to specific national circumstances the frequencies used globally or even in the EU, may not be available in all member states. Manufacturers must ensure that their devices can be controlled by national regulators in a reliable manner, well understood and trusted by regulators across the European Union.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

My fellowship project is the study of possibilities for standardisation of location-based spectrum sharing, based on a set of requirements that are technology neutral. Location-based enabling of certain features of the radio interface is necessary for allowing the regulators to control the use of the radio spectrum in their country in a more granular manner. Standardising this feature in a European Harmonised standard context would provide the regulators with a uniform and trustworthy way of allowing the use of such devices in their respective state.

Have the standardisation activities in your project led to specific deliverables?

Reference material (Technical Report).

What future efforts or activity are still necessary in your area of application?

The main goal of this fellowship is to contribute to standardise the means for location-based enabling of the radio interface of devices using radio communications. The standardisation work on this topic is far from finished and the technical report that I initiated in Technical Committee ETSI RRS will be concluded in 2022 – and further studies are needed to produce a fully-fledged standard. Such studies are currently under way in ETSI TC RRS, aimed at documenting use cases, with possible use case scenarios, and the possibilities of incorporating the set of requirements in the functionality of the radio interface engine. However, this effort needs to be continued.

Online references related to the fellowship work

 <https://www.etsi.org/committee/1408-rrs>

Standardisation of a Reference Model for Federated Testbeds for 5G and Beyond & Proposing a Use Case



Muslim Elkotob

*Principal Solutions Architect, Vodafone
Germany*



ETSI TC INT (Core Network and Interoperability Testing),
ETSI TC INT WG AFI (Autonomic Management and Control
Intelligence for Self-Managed Fixed & Mobile Integrated Networks),
IEEE INGR SBB (Standardisation Building Blocks),
IEEE INGR SysOpt (System Optimization)

Sector

5G – Federated testbeds

Addressed EU standardisation priorities and gaps

Currently, there is a lack of standards for Federated Testbeds across verticals: closing this gap has utmost priority to allow CSPs, Vendors, Integrators, SMEs, etc. to leverage the benefits from all assets in their eco-system and to monetise on own asset. Also, we would need a reference model for Federated Testbeds which would then allow all stakeholders in an end-to-end ecosystem to interact, open their assets (testbeds) to each other. In line with this, the priority would be to enable a reference model for the industry in order to interconnect stakeholders; this model will support E2E operations and several use cases that address current needs (e.g. high-QoS requirements on slices for low latency and high reliability to deal with tele-therapy, tele-working, and other COVID-19 induced pandemic effects).

However, the challenges are to find a balance between specification depth for the reference model for Federated Testbeds (e.g. APIs, reference points, interfaces, etc.) and the generic nature to maximize ubiquitous pervasive usability.

Concerned ICT Standards and contribution to the related landscape

There is urgent need for an Ecosystem enabling Sustainable Testbeds Development, evolutions, and Federations, especially in this era of automation and emerging impacts of pandemics like COVID-19. Standards based Frameworks for Testbeds Federation also enable to realize New Business Models for Testbeds Suppliers/Providers such as “Testbed as a Service” (TaaS).

ITU-T SG11, ETSI TC INT and IEEE held a workshop in March 2021 (www.itu.int/go/BTF4-5G) on Federated Testbeds.

Reference Work Items in ITU-T SG11 and ETSI TC INT mutually contributing to this project work are:

- ▶ ITU-T SG11 Q.API4TB on Open APIs for Interoperable Testbed Federations
- ▶ ETSI TC INT TR 103 763: Test Requirements and Approach for E2E Federated Testbeds,
- ▶ ETSI TC INT AFI TR 103 747: Implementing Federated GANA Knowledge Plane (KP) Platforms for Autonomic Management and control of Slices in 5G NGMN E2E Architecture (EU SliceNet Project)

Impact

The standardised reference model for Federated Testbeds has an inclusive purpose to leverage and enable collaboration and monetisation among all stakeholders in the eco-system. Many SMEs in this domain are integrators and they become testbed suppliers, and they join the service and business cycle through the reference model. The Testbed-as-a-Service (TaaS) concept is important and instrumental resulting from the ongoing work, which enables SMEs to better expose and monetise on their assets.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, several Standards have been positively impacted and further advanced.

Among those are: ETSI TC INT AFI TR 103 747 Work Item on Federated GANA Knowledge Plane Autonomics in 5G E2E Architecture, and ETSI TC INT TR 103 763 Ref.Nr D-TR/INT-00181 Work Item: Test Requirements and Approach for E2E Federated Testbeds, with an Example Use Case of Testing Federated Autonomic Management and Control (AMC) operations (e.g. by GANA) Components Within and Across Multiple 5G Network Operators.

Have the standardisation activities in your project led to specific deliverables?

Yes, to the Development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

The topic of a standardised reference model for federated testbeds is gaining momentum and taking shape through my work across several SDOs (ITU, ETSI, IEEE, and others). Besides one flagship event among 3 SDOs on this subject (ITU, ETSI, IEEE) where I was an organiser, steering committee member, presenter, and moderator of panels, I am working on aligning several activities and threads in this area. There is still a lot of work to do beyond the scope of this funded project. I am focusing on making the work within this project as modular and extendable as possible, to pave the way for further work to build on it and use it as a foundation.

Online references related to the fellowship work

 www.etsi.org/newsroom/blogs/entry/tc-int-working-group-int-afi-published-white-paper-in-frame-of-5g-poc-project

 www.itu.int/en/ITU-T/Workshops-and-Seminars/20210316/Pages/programme.aspx

Preparation of Materials for OGC GeoPose standard Implementers and Reviewers' Guides



Christine Perey

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Open Geospatial Consortium
GeoPose Standard Working Group

Sector

Edge computing

Addressed EU standardisation priorities and gaps

The OGC GeoPose 1.0 specification is nearly final and stable, however, very few in the target communities are aware of the emerging specification and the value it will provide. This activity supports the development of accurate, objective, and high-quality information in support of education and adoption of the new OGC standard.

The materials being developed for reviewers and users of the GeoPose 1.0 standard are developed by SWG members, in conjunction with the standard and through consensus. These need to be widely accessible to the communities and answer specific questions without the need for a reader to be an OGC member or expert in all aspects of the specification. Therefore, the results of my fellowship are designed for distribution on the Web and will be both visual and written.

Concerned ICT Standards and contribution to the related landscape

Standards are only valuable when they meet the needs of target audiences and are widely adopted. The process of making target audiences aware of a new standard and supporting their review and adoption of a new standard requires development and dissemination of information materials. The Open Geospatial Consortium's GeoPose SWG members have been working on the first GeoPose specification since December 2019. The specification is nearly final and stable.

My role, as coordinator, writer, and editor, supports the development of high-quality materials to be published in GeoPose Users and Reviewers Guides. With the materials this project develops, those who lack expertise in 3D graphics and geospatial principles will be able to assess the GeoPose specification for suitability in a wide range of potential use cases. The materials will also permit the SWG to receive meaningful feedback from those reviewing and seeking to implement the draft standard.

Impact

Due to lack of international standards to encode a position on earth and orientation in 6 deg of freedom of an object, every platform/solution that uses geographically anchored poses must have its own framework. This places a high cost and engineering effort burden on SMEs who publish/use geographically anchored poses in any software or service. This standard will permit European SMEs greater geospatial data portability and interoperability of solutions than without GeoPose.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, my fellowship project supports a standard already under development in the OGC. The materials for OGC GeoPose guides will accompany the standard. It explains use cases, key concepts/terminologies, how GeoPose fits in the landscape of standards, proprietary solutions and open source projects. It also will support developers/engineers by providing examples, tips and best practices.

Have the standardisation activities in your project led to specific deliverables?

Yes, to Reference material (Technical Report).

What future efforts or activity are still necessary in your area of application?

The supporting information materials for the GeoPose reviewers and users' guides has advanced significantly because of the support of this fellowship, however, the guides have not yet been published and much remains to be done. In collaboration with geospatial subject matter experts and members of the GeoPose SWG, the material for the guides continues to develop. In addition, there will need to be outreach and promotion done to ensure that the impacts of GeoPose are widespread and benefit all communities of adopters.

Online references related to the fellowship work

 www.ogc.org/projects/groups/geoposeswg

Participation in SA WG4 and Contributions to Augmented Reality in 3GPP Mobile AR Report TR26.998



Christine Perey

*President and Principal Analyst, PEREY Research and Consulting
Switzerland*



3GPP - Technical Specification Group Service and System Aspects TSG SA WG4 (SA4)

Sector

5G - Augmented Reality features

Addressed EU standardisation priorities and gaps

The 3GPP SA4 experts have deep knowledge of MPEG and media, but prior to fellowship, there were very few Augmented Reality (AR) experts participating. Low expertise in current AR practices and use cases is a handicap. SA4 members were unfamiliar with work of the ETSI ISG AR Framework in their system architecture and were lacking enterprise use cases.

In addition, the 3GPP SA4 deliverable TR26.998 and standards users would benefit highly from integrating inputs about trends in distributed spatial computing that will shape future of the commercial AR on 5G offers.

My project is to ensure that one of the key contributors to development of the ETSI AR Framework, a thought leader active in multiple AR communities and international standards organisations, and an expert about emerging technology and focusing on AR is involved and directly contributes to TR26.998.

Concerned ICT Standards and contribution to the related landscape

To ensure that 5G services will be delivered consistently to users regardless of display device they choose and network equipment manufacturers the 5G operators deploy, 3GPP SA4 Video is developing standards for AR-enabled features. The 3GPP TR26.998, entitled "**Support of 5G Glass-type Augmented Reality / Mixed Reality (AR/MR) devices**" specifies AR use cases and requirements and architectures to meet those identified.

In the framework of this fellowship, my participation in SA WG4 has:

- ▶ Ensured that SA4 members are fully aware of ETSI AR Framework and its value for the design of open and interoperable AR systems and services.
- ▶ Ensured AR use cases and requirements for mobile (and wearable) AR devices in the TR26.998 are consistent with prior work in this field and reflect the needs of all users in Europe as well as other geographies.
- ▶ Improved the architecture of large-scale spatial computing systems described in the report which will guide standardisation of 5G features for AR devices and use cases.

Impact

This activity impacts SMEs indirectly. 3GPP TR26.998 will define architectures for AR on 5G in three systems. By contributing validated architectures for AR, not previously included, and supporting spatial computing as one of the AR Functions in 5G, European SMEs will have greater opportunities to build content and services for new customers adopting 5G. SMEs will be able to publish 3D spatially-registered data sets for AR experiences. SMEs will also build/use spatial computing for local services for 5G subscribers.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, the fellowship supports the development of TR26.998 in the 3GPP SA4 Video WG.

Have the standardisation activities in your project led to specific deliverables?

Yes, to the development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

The Technical report was already under development when I joined 3GPP. While there are still a few meetings remaining, so far, I have contributed substantially to the revision of the system architecture to better align it with the functional architecture of ETSI ISG ARF GS 003 Framework and to the development of a new 5G service scenario called AR Spatial Computing. There will be additional contributions.

Online references related to the fellowship work

 www.3gpp.org/specifications-groups/sa-plenary/sa4-codec

5.

Artificial Intelligence



Trustworthiness and AI: definition, concept, and reference architecture



Patrick Bezombes

Consultant, Independent

Vice-chair of the CEN-CENELEC JTC 21 (Artificial Intelligence)

Convenor of the JTC 21 Strategic Advisory Group

France



ISO-IEC/JTC1/SC42/WG1: Artificial Intelligence - Concepts and terminology

ISO-IEC/JTC1/SC 42/ WG13: Trustworthiness

Sector

Artificial Intelligence and Trustworthiness

Addressed EU standardisation priorities and gaps

For some time now, standardisation activities in the Artificial Intelligence domain are referring to “Trustworthy AI”. This curious association is from now on linking technological concerns (AI) with societal concerns (Trust). It is therefore fundamental to have a clear understanding of what is behind both terms (AI and Trustworthiness) standardisation-wise and to unfold the consequences of this association. Therefore, my fellowship aims at covering simultaneously both topics, while being addressed in two different ISO-IEC/JTC1 WGs.

Concerned ICT Standards and contribution to the related landscape

The definition and characterisation of Trustworthiness is addressed by ISO-IEC/JTC 1/WG 13 in a horizontal effort to unify and bring perspective to the Trustworthiness term usage in more and more ISO-IEC Sub-Committees, and in many regulations and standardisation fora. A Study Phase for Preparatory Work Item (PWI) on “Trustworthiness Reference Architecture” (PWI 5951) has been initiated and will be key at introducing a comprehensive picture of what should be done. One of the challenges is to introduce the notion of “eco-system of trust” which is largely used within the EU but rarely mentioned in standardisation activities. On the longer term a Standard on “Trustworthiness” will have all its place in the ICT standards landscape.

“Artificial Intelligence Concepts and terminology” is being addressed by SC42/WG1 (Foundational standards) under the 22989 project. The final publication is expected to be issued by March 2022.

Impact

These actions are supporting the EU strategic vision of the place of AI in the digital activities of our world. It clarifies the terminology that is used and helps setting up the foundations of a strong European industrial base that will be able to compete in a worldwide environment. More specifically, a proper terminology with concepts definition will help operationalising the future AI regulation, hence supporting innovation and European SMEs.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, recommendations on a specific PWI on “Trustworthiness - concept and overview”.

Have the standardisation activities in your project led to specific deliverables?

Yes, recommendations for work item (Trustworthiness – Overview and concepts) and CEN-CENELEC Workshop on Digital Sovereignty.

What future efforts or activity are still necessary in your area of application?

“AI Terminology and concepts” are now very mature, and the publication of an ISO/IEC International Standard is due for early 2022. On the long term, we may have to ensure that this terminology is effectively used in sector-specific standardisation

Regarding Trustworthiness and ecosystem of trust, definitions and concepts are just at the beginning and I suggest the continuation of the action within ISO-IEC/JTC 1/ WG 13 and the proposed PWI on “Trustworthiness – Overview and concepts”.

Online references related to the fellowship work

 www.iso.org/committee/6794475.html

Support AI standardisation in CEN/CEN-CENELEC, ISO/IEC



Adam Smith

CTO of Dragonfly and board member of ForHumanity Spain



ISO / IEC - JTC1/ SC42 / WG3 - Artificial Intelligence – Trustworthiness

Sector

Artificial Intelligence

Addressed EU standardisation priorities and gaps

Technical Report (TR) 24027 allows industry to understand sources of bias and treatment strategies and starts to formulate standard terms and definitions. 25059 Software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Quality model for AI-based systems standardises the terminology used to describe the quality of AI systems, that will enable other projects around quality assurance. These are both important projects that are truly relevant to the implementation of the proposed EU AI Regulations. Additionally, my work in WG 3 ad-hoc contributed to a new approved work item about quality evaluation guidelines in relation to AI.

Concerned ICT Standards and contribution to the related landscape

In the framework of this fellowship, I have continued to be a Project Editor leading the *24027 project - Information technology — Artificial Intelligence (AI) — Bias in AI systems and AI aided decision making*. This project passed ballot through national bodies into DTR stage. 297 comments were provided from national bodies, and are only 30 remain unresolved. These are on track for resolution during July (2021) so the report can be submitted for publication. The funding has covered the time required to develop a proposed disposition for each comment, to plan a series of resolution meetings, and to get buy in on principles with key experts.

I have continued as Project Editor leading *25059 project - Software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Quality model for AI-based systems*. This is expected to reach Committee Draft in 2021.

I have co-convoked and contributed to a significant number of SC 42 / WG 3 ad-hoc discussing future work relating to quality and testing, as well as acted as formal liaison on this to SC 7.

Impact

This work progresses international understanding of issues in AI around quality, bias, and testing. This is important to operationalise these processes for SMEs, especially considering increasing regulatory focus.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

No.

Have the standardisation activities in your project led to specific deliverables?

Whilst the TR and IS that I am editing have not yet been published, they have made significant progress under this project.

What future efforts or activity are still necessary in your area of application?

Whilst only a few more weeks work is necessary on the Bias TR (24027), the quality model (25059) requires several additional months. I would recommend that further work is necessary to support a normative standard on bias, either at the EU or international level. I am keen to participate in the JTC 21 ad-hoc group on conformity assessment to identify the best SDO to take forward.

Online references related to the fellowship work

 www.iso.org/committee/6794475.html

 <https://socialcdt.org/aiethics/>

 <https://link.springer.com/article/10.1007/s43681-021-00069-w>

 <http://ceur-ws.org/Vol-2800/>

Consolidation of Belgian contributions to AI standardisation in ISO/IEC and CEN/CENELEC



Francisco Medeiros-Filho

*Managing Director, FM Tech Consult BV
Belgium*



ISO/IEC JTC1/SC42
WG1 Foundational standards and WG3 Trustworthiness
CEN/CENELEC JTC21 Artificial Intelligence

Sector

Artificial Intelligence

Addressed EU standardisation priorities and gaps

In the framework of my fellowship, I am addressing the establishment, within CEN/CENELEC, of a European equivalent of ISO/IEC JTC1/SC42. The priority is to analyse the current work of ISO/IEC JTC1/SC42 and identification of the necessary work to be done at European level.

And the key challenge is to define what work should be done at ISO/IEC international level and what should be done at European level (the European specificity).

Concerned ICT Standards and contribution to the related landscape

As the Head of the Belgian delegation, I have been following the drafting of ICT standards (artificial intelligence) in the context of ISO/IEC JTC1/SC42, in WG1 and WG3.

- ▷ ISO/IEC 42001 AI management systems.
- ▷ ISO/IEC 22989 Concept & terminology.
- ▷ ISO/IEC 23053 Framework for AI using ML.

As from 1st June 2021, I will be also involved in CEN/CENELEC JTC21 work as Head of the Belgian delegation. I have contributed to the preparatory activities to launch JTC21 and coordinated the Belgian mirror committee of SC42 and JTC21 since early March 2021.

Impact

The proposed AI Regulation of 21 April 2021 is expected to become European law by the end of 2022. Industry, including SMEs will have a transition period (possibly 2 years) to abide to the AI Regulation. Harmonized standards (hEN) will then be required so that AI providers, including SMEs, demonstrate compliance with the AI Regulation. The Commission will put forward Standardisation Requests to CEN/CENELEC JTC21 and hENs will build upon the work done by JTC21, influenced by ISO/IEC JTC1/SC42.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

The project has not directly led to a recommendation or proposal for the development of new or revised standards. However, it has consolidated joint Belgian responses to a first ballot on ISO/IEC DIS 22989 Artificial Intelligence Concepts and Terminology. A new ballot on the DIS 22989 is now open until 22 August 2021.

Have the standardisation activities in your project led to specific deliverables?

Yes, to a Draft International Standard (DIS).

What future efforts or activity are still necessary in your area of application?

The new CEN/CENELEC JTC21 kicked off on 1st June 2021 and it decided to launch a Strategic Advisory Group (SAG) where I was appointed as Vice Chair. The first SAG meeting was in July 2021. SAG will provide strategic advice to the JTC21 Chair (Sebastian Hallensleben, also member of External Advisory group of StandICT.eu 2023). The next SAG meeting will take place in September 2021.

Online references related to the fellowship work

 www.iso.org/committee/6794475.html

 www.cencenelec.eu/news/brief_news/Pages/TN-2021-013.aspx

■ Standards for the AI Assisted Smart PV



Agnieszka Rządkowska

*Chair & Co-founder, European Solar Network
Belgium*



EITCI Smart Energy Standards Group (SESG) - Smart-PV WG
Work Group / technical committee

Sector

Artificial Intelligence – Smart Grids

Addressed EU standardisation priorities and gaps

The main gap in the current standardisation efforts is lack of defining standards on how to directly applying AI to smart photovoltaic (PV) systems. According to the the EU Rolling Plan for ICT Standardisation 2020, standards in energy are focused on smart grid management, grid-balancing, and devices interfacing. The dynamically growing smart PV market sees however a lot of AI based innovation for solar cells from multiple vendors.

The relevance of my StandICT.eu 2023 fellowship is in an extended answer to this rolling plan, overviewing needs for digital standards in support of EU policy for Smart Grids and Smart Metering in a direct focus put on AI enabled smart PV solar systems. The work aims at identification and initiation of standardisation efforts for many possible domains of AI applications to PV systems (in terms of AI assisted optimisation of solar cells designs and production phases, planning of optimal solar cells systems deployments, optimisation of solar cells operation in smart power grids systems).

Concerned ICT Standards and contribution to the related landscape

With the fellowship, I am at initiating ICT reference standards development combining recent progress in Artificial Intelligence based on neural networks and machine learning with management of renewable energy generated in grid-connected photovoltaic (PV) systems along with their operation-and-maintenance (O&M) and their smart on-grid integration and control.

The standardisation effort in smart PV assisted by AI is expected to contribute to a growing digital energystandardsinventoryandsupportuptakeofAIassistedsmartenergytechnologies of crucial importance for the EU climate and energy policy framework, especially in view of recent emphasis on joining digital agenda and green agenda as two major pillars for the EU development strategy. In particular this early standardisation effort aims at defining higher level of abstraction for possible domains of the state-of-the-art AI applications in smart PV systems of all scales (from residential installations to PV power plants).

Impact

Smart energy is currently not only an important market trend of dynamic growth and rapid technological development, but also a central axis in the EU's Green Deal strategy joining ICT and energy sectors as main pillars for EU development & COVID-19 recovery. The European Commission strategically plans to secure leading global position in smart energy, transforming the global warming challenge into a growth opportunity. SMEs driving European innovation focus on smart energy and standardisation will support them.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

The project involves development of new standards in AI enabled smart PV systems and consolidation of AI and smart energy experts upon the Smart Energy Standards Group hosted by EITCI Institute. The project involves 2 phases. The first one already concluded involved conceiving RFC drafts for AI enabled smart PV definitions, concepts, architectures and use cases, as well as on AI Smart PV technical specification of processes and devices. In the second ongoing phase, experts working in SESG reiterate RFCs towards new reference standards (RS) accepted in voting on AI enabled smart PV. The accepted RS documents will be disseminated among international SDOs for further consolidation of efforts towards setting internationally accepted standards for AI smart PV devices.

Have the standardisation activities in your project led to specific deliverables?

Yes, to the development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

Efforts in initiation of ICT reference standards development on aiding PV systems with Artificial Intelligence have a considerable potential and should be continued and consolidated with an emphasis set on use cases and common frameworks, achievable by extending cooperation between international SDO workgroups engaged in smart energy standardization with focus on synergy of green & digital technology.

The Smart PV Workgroup of EITCI SESG established under my coordination in engagement (supported by the StandICT.eu 2023 project) identified several areas in which AI can significantly support PV systems development, deployment & operation. Areas such as AI assisted modelling of solar cell devices design & fabrication, insolation forecasting for geotargeting of PV deployments, smart-grid PV integration and awareness, automatic PV operation & maintenance, power forecasting, intelligent inverters and AI assisted MPPT all have significant potential for increasing AI assisted PV standardisation levels towards support in market adoption of technological solutions in these areas. The Smart PV WG of the EITCI SESG will seek to continue efforts in this regard.

Online references related to the fellowship work

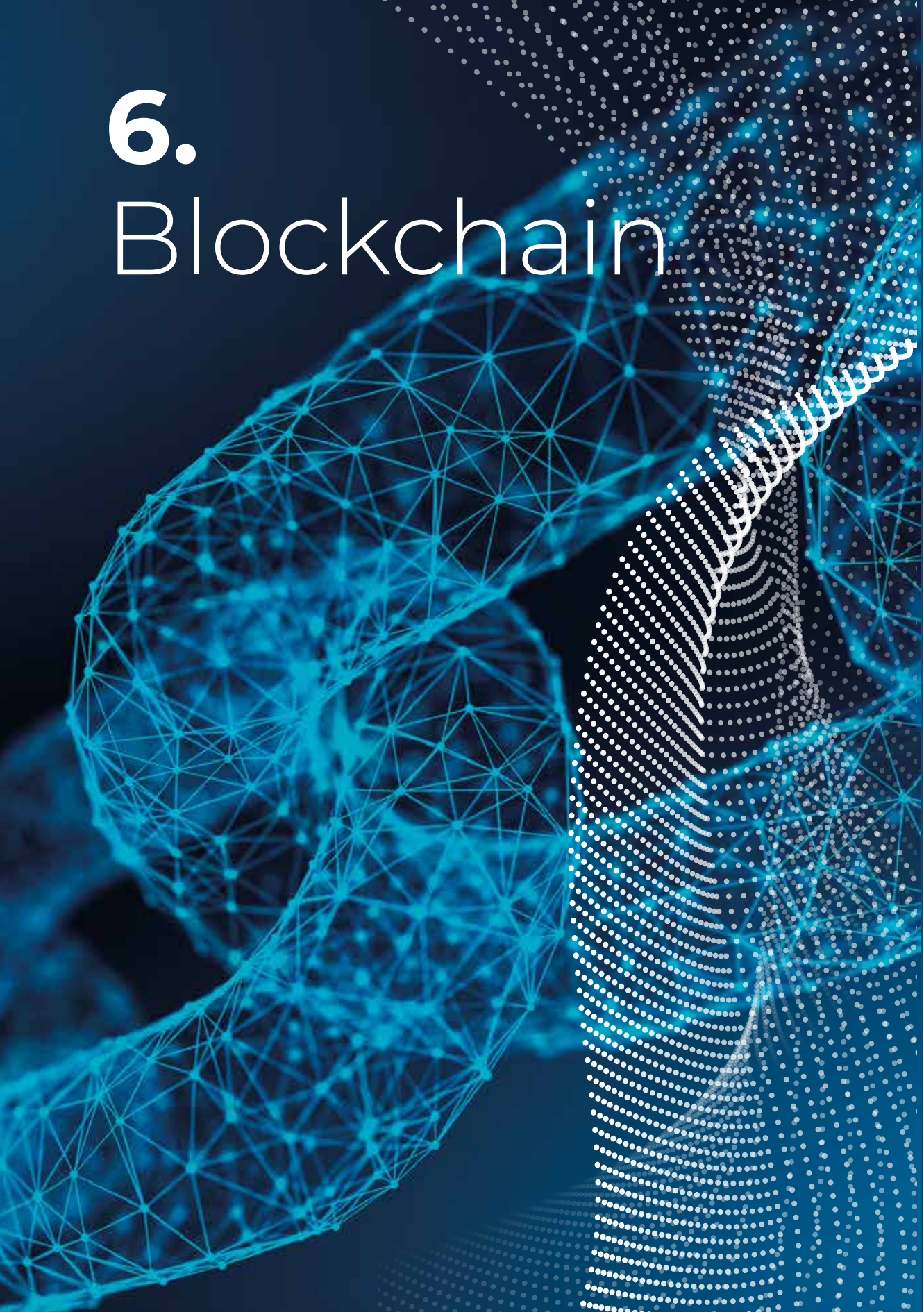
🔗 <https://eitci.org/technology-certification/sesg/smart-pv>

🔗 <https://eitci.org/technology-certification/sesg/smart-pv/eitci-sesg-smart-pv-concepts>

🔗 <https://eitci.org/technology-certification/sesg/smart-pv/eitci-sesg-smart-pv-technical>

6.

Blockchain



■ Blockchain and digital identity



Paolo Campegiani
Head of Innovation, Bit4id
Italy



ISO / IEC
TC 307/JWG4 - Security, privacy and identity for Blockchain and DLT

Sector

Blockchain – Digital Identity

Addressed EU standardisation priorities and gaps

The main gap is that there are many different initiatives based on using DLTs for providing digital identity following the SSI paradigm, but there is not a general reference architecture, nor a shared terminology. The Technical Report, by its very own nature, does not try to fix all of these, but it allows the experts to be aligned on the same page (exchanging their views and getting acquainted with different approaches). Then, from this informal alignment, a standard will take place. The standard will address elements like which are the functional characterisations of a SSI system, the role of the different actors, the interaction with the underlying electronic ledger.

Concerned ICT Standards and contribution to the related landscape

I am the Project Leader of the ISO Technical Report TR 23249 “*Overview of DLT systems for identity management*”. This document acts as a report for all the relevant experiences, projects, frameworks, and standards dealing with digital identity as implemented with blockchains and DLTs. It is the first document of its kind from ISO and it will be the foundation for the future Technical Specification in the same matter.

The Technical Report TR23249 describes the relevant experiences, frameworks, and standards for the Self-Sovereign Identity (SSI) systems mediated with a blockchain or DLT system. It is the first of its kind report from ISO. My fellowship allowed me to work as a project leader, which means integrating contributions from the experts, analysing their comments on the different drafts of the document, managing the discussions, applying the comments resulting from these discussions. It is an iterative process, which happened twice during this fellowship, resulting in a TR that is now due to be published.

Impact

Digital identity is a foundational building block for cybersecurity, which is a relevant topic for European SMEs and an EU priority as well. On top of that, in the recent (proposal for the) revision of the eIDAS Regulation, a cornerstone element is the possibility of having a “digital identity wallet” used to access online services. This wallet will employ a Self-Sovereign Identity (SSI) approach. The definition of a global standard for SSI (and DLTs) will be beneficial for all the participants.

Moreover, identity is a fundamental right of a citizen, and digital identity is foundational in any online transaction. The EU wants to provide a digital identity to all of its citizens and organisations, with stricter privacy than many current solutions (e.g. provided by Facebook, Google, ...). This work will contribute to better positioning, alignment, and exchange of good

practices between the EU stakeholders in charge of creating such systems for the European market and society. A safe, privacy-aware and universal digital identity for EU citizens and organisations significantly contributes to the Digital Single Market.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, for the development of a new standard: TR23249 in ISO is the Technical report on blockchain and digital identity, paving the way for the future Technical Specification.

Have the standardisation activities in your project led to specific deliverables?

Yes, these result to reference material (Technical Report).

What future efforts or activity are still necessary in your area of application?

Now that the eIDAS Regulation is based on the SSI paradigm, it is essential that SSI systems based on DLT systems are strictly followed by more EU experts, as the result will impact many possible (national) implementations of the digital identity wallets foreseen by the eIDAS Regulation. This could also usefully happen in the context of CEN CENELEC JTC 19.

Online references related to the fellowship work

 www.iso.org/committee/6266604/x/catalogue/p/0/u/1/w/0/d/0

Standardising Nomenclature for Blockchain Governance and Interoperability (StandBlock)



Soumya Datta

CEO & Standardisation Manager, Digiotech
Estonia



IEEE
P2145 Blockchain Governance Standards Working Group (WG)

Sector

Blockchain and interoperability

Addressed EU standardisation priorities and gaps

The blockchain state-of-the-art on governance and interoperability recognises the challenges stemming from non-uniform nomenclature. Industrial alliances like Enterprise Ethereum Alliance have developed their own nomenclature and naming scheme - Ethereum Name Service (ENS). It is a distributed, open, and extensible naming system based on Ethereum and maps human-readable names like 'alice.eth' to machine-readable identifiers such as Ethereum addresses, other cryptocurrency addresses, content hashes, and metadata. ENS also supports reverse resolution, making it possible to associate metadata such as canonical names or interface descriptions with Ethereum addresses. But ENS does not readily enable governance or interoperability with other blockchains or the WWW. StandBlock works towards standardising a common nomenclature and framework for describing and building blockchain governance paving way for interoperability among blockchains. This corresponds to IEEE P2145 Lexical Standard 1.0.

Concerned ICT Standards and contribution to the related landscape

Blockchain, a Next Generation Internet (NGI) Focus Area, is rapidly evolving into a fragmented space. The principal objective of my fellowship, entitled the "StandBlock project", is to standardise a common nomenclature and framework for describing and building blockchain governance and interoperability across all use cases and contexts, including public, private, permissioned, permission-less, and hybrid ones. StandBlock contributes to IEEE P2145 Blockchain Governance Standards Working Group (WG).

Impact

By creating a uniform lexicon, the standard shall reduce Blockchain ecosystem fragmentation, promote interoperability, and improve governance design patterns. Thus, European SMEs will not be locked into one specific blockchain network, rather be able to interoperate with other networks, share a common governance design pattern. This will result into reduced time to market for blockchain solutions and encourage SMEs to adopt such solutions.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

My project is leading to a recommendation for common terminology in IEEE P2145 WG.

Have the standardisation activities in your project led to specific deliverables?

Common Terminology (Technical Report).

What future efforts or activity are still necessary in your area of application?

Blockchain is an emerging technology, and standardisation of Blockchain governance is in its infancy. Large Enterprises, SMEs, and start-ups commercialising Blockchain solutions must be made aware of IEEE P2145 Standard for Framework and Definitions for Blockchain Governance Future to accelerate its market uptake. European Blockchain communities and ecosystems are key players for such awareness and uptake among stakeholders.

Online references related to the fellowship work

 <https://digiotouch.medium.com/digiotouch-leads-the-way-to-blockchain-interoperability-76f9b56fd9b0>

■ Finalise W3C DID Core standard



Markus Sabadello

CEO, Danube Tech GmbH
Austria



WC3 / ECRIM

W3C Decentralized Identifiers Working Group

Sector

Blockchain

Addressed EU standardisation priorities and gaps

Decentralised Identifiers (DIDs) will be the basis for a growing number of technologies and use cases around decentralised identity - which give individuals full control over their digital self, without any dependencies on central authorities or intermediaries. In the EU context, the European Blockchain Service Infrastructure is a prominent initiative that incorporates DIDs. We just need to finish the standard for these projects to be fully ready for production use.

Concerned ICT Standards and contribution to the related landscape

I am working as co-editor of the W3C Decentralized Identifier Working Group. The standard will be DID Core 1.0. There are also several associated outputs of the Working Group, such as DID Spec Registries, a DID Method Rubric, and DID Implementation Guide.

Impact

The expected impact of the activity is to complete an important technical specification for next-generation decentralised identity infrastructure, which will promote European values in general, help to establish Europe as a global leader in decentralised digital identity, as well as advance the EBSI/ESSIF project, which heavily depends on this technology and will be a key enabler of the European Digital Single Market.

Moreover, from the point of view of SMEs, many European start-ups exist that build solutions for Self-Sovereign Identity (SSI). Almost all of those are working with technologies that use the DID Core specification.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

My fellowship supports a standard already under development.

Have the standardisation activities in your project led to specific deliverables?

Technical Specifications.

What future efforts or activity are still necessary in your area of application?

The DID Core 1.0 specification at W3C is close to be completed. We still need to finish a few supplementary documents and conclude the actual formal standardisation process in our Working Group. After that, we will continue to maintain a test suite, a registry of extensions, and potentially work on future versions of the specification, depending on implementation experience and market adoption.

Online references related to the fellowship work

 <https://www.w3.org/TR/did-core/>

Submission of a Use Case to ISO and UN/CEFACT and Contribution to Blockchain Standards Development



Galia Kondova

Senior Lecturer & Researcher, University of Applied Sciences and Arts Northwestern Switzerland (FHNW) Switzerland



ISO TC 307 Blockchain Technologies - WG 6 Use Cases
UN/CEFACT Chain Project « Recommendation for Cross-border Interoperable Blockchain infrastructure 4.0 » - WG 5 Use Cases

Sector

Blockchain Use Cases

Addressed EU standardisation priorities and gaps

My fellowship addresses the following priorities:

- ▶ Blockchain Interoperability.
- ▶ Blockchain-enabled trusted data management.
- ▶ Security and Privacy.
- ▶ IoT.
- ▶ Trusted Data Management.

Concerned ICT Standards and contribution to the related landscape

My fellowship project supports the EU 2020 Rolling Plan on ICT Standardisation in its Policy Area on Innovation for Digital Single Market, Blockchain and Distributed Digital Ledger Technologies, Action 3 Identify use cases which are relevant for EU and submit them to relevant standardisation bodies.

Impact

The drafted Use Cases on blockchain applications concern the energy sector and the healthcare sector.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

The use cases help provide solutions to be considered in the current development process of standards for blockchain applications.

Have the standardisation activities in your project led to specific deliverables?

Yes, to two dedicated use cases in Horizon 2020 research and innovation projects:

- ▶ Use case of Horizon 2020 Project “InterConnect”
- ▶ Use case of Horizon 2020 Project “PharmaLedger”

What future efforts or activity are still necessary in your area of application?

The standardisation efforts are underway.

Online references related to the fellowship work

 www.iso.org/committee/6266604.html

 <https://unece.org/sites/default/files/2021-04/eDATA-ManagementDomain.pdf>

7. Quantum Computing



OQP: One-Qubit Pad - quantum cryptography standardisation beyond QKD



Jacak Witold

Chair of the Board of Directors, European Information Technologies Certification Institute (EITCI)

*Associate Professor, Department of Quantum Technology, Wrocław University of Science and Technology
Belgium*



EITCI
OQP Workgroup of the Quantum Standards Group (QSG)

Sector

Quantum Cryptography

Addressed EU standardisation priorities and gaps

While QKD standards are already mature (cf. www.etsi.org/committee/1430-qkd) there are not yet technical reference drafts nor workgroups pursuing more general quantum cryptography – applicable in contrast to QKD to encryption of quantum and not just classical communication.

In 2019, the European Commission launched the Quantum Communication Infrastructure (QCI), as a testbed for quantum internet. The QCI main objective is to allow international QKD deployment, but an extended scenario of connecting quantum computers calls for general quantum cryptography directly encrypting streams of qubits instead of bits (as is QKD).

In view of the European Commission recognising potential of the QIPC technology and allocating considerable resources in the quantum race (cf. <https://qt.eu>), it is important that such crucial prospective application as a generalised encryption of quantum communication is technically discussed and standardised with EU securing a role in this field.

Concerned ICT Standards and contribution to the related landscape

My fellowship supports the uphold of a European leading role in international quantum communication technology commercialisation by undertaking gap-filing initiatives in international standardisation. Many quantum technologies are in early TRL levels, and mature ones (reaching TRL 7) are quantum cryptographic systems targeted at securing classical information transmission (known as Quantum Key Distribution, QKD). Europe is a world-leader in QKD. The landscape of the standards this action contributes to encompass is quantum cryptography, however going beyond a standard scheme of the Quantum Key Distribution, initiating international work on technical standardisation of general quantum cryptography extending beyond QKD, stemming from the One Qubit Pad (OQP), a general quantum encryption scheme (quantum cryptography primitive), simultaneously supporting Europe's position on international SDOs/SSOs.

Impact

With progress in quantum computation, increasing investments are allocated in quantum technologies, especially in QIPC. Programs such as the Quantum Flagship in Europe have counterparts globally allocating billions of dollars in R&D. SMEs play a crucial role in development of innovation and with QT it is no exception. Standards for basic quantum infrastructures such as quantum information encryption in future quantum networks can support innovation in quantum technology and accelerate its uptake.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

The first (concluded) phase of the project resulted in publication of two technical standards drafts in the form of Request for Comments documents in scope of generalised quantum cryptography, including RFC for OQP protocol (definitions, key theoretical concepts and use cases for qubits encryption) and RFC for OQP implementation (technical specification of processes, devices and operative parameters for qubits encryption).

Have the standardisation activities in your project led to specific deliverables?

Yes, to technical specifications.

Online references related to the fellowship work

 <https://segre.net/commercialization>

Introduction of Cross-SDO Harmonisation for Future Quantum Networks



Richard Pitwon

CEO, Resolute Photonics UK Ltd
United Kingdom



IEC TC86 JWG9 – Optical functionality for electronic assemblies
ISO/IEC JTC1 WG14 Quantum Computing
CENELEC - FG Quantum Technologies (GT)
ITU-T – FG on Quantum Information Technology for Networks (FGQIT4N)

Sector

Future Quantum Networks

Addressed EU standardisation priorities and gaps

The main priority of this project is to introduce quantum interconnect standards to the mainstream International Electrotechnical Commission Technical Committee 86 Fibre Optics (IEC TC86) as well as to establish liaisons between CENELEC FGQT, ITU-T FGQIT4N and IEC TC86 to harmonise terms and definitions at an early stage. As TC86 is a mainstream standards organisation, recognition by TC86 of the need to address quantum networks will be the crucial first step achieved by this project.

Concerned ICT Standards and contribution to the related landscape

In the framework of my fellowship, I prepared and presented a proposal at the IEC TC86 JWG9 meeting for a new Technical Report entitled “*Introduction to Quantum Technologies*”. The proposal was accepted, and I am preparing the first draft. I am in discussions with ITU-T, ISO and CENELEC on securing contributions from ITU-T FGQIT4N, ISO/IEC JTC1 WG14 and CEN/CENELEC FGQT to this TR and I am investigating routes within IEC to formalising it as a cross-SDO document.

Impact

I organised and chaired the first IEC/ITU/IEEE Joint Symposium on Standards for Quantum Technologies including an extended panel discussion between representatives of IEC, ITU, ISO, IEEE SA, ETSI, BSI, NIST. I also organised and co-chaired the ITU/IEC/IEEE Joint Symposium on Quantum Transport on addressing explicitly the requirements for quantum interconnect and hear from industry leaders including DT, BT, China Telecom, ESA.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes - I made a proposal in IEC/TC86/JWG9 for a "*Technical Report on Quantum Technologies*" to introduce quantum technologies to a mainstream standards committee. The proposal was accepted and I was invited to prepare a draft New Work Proposal (NWP) for the IEC General Meeting in October 2021.

Have the standardisation activities in your project led to specific deliverables?

Yes, to the Joint ITU/IEC/IEEE Symposium on Standards for Quantum Technologies held on 23rd March 2021.

What future efforts or activity are still necessary in your area of application?

During my fellowship project on harmonisation of quantum technologies, I organised and ran several joint symposia on quantum technologies on behalf of multiple standards development organisations. These were instrumental in establishing the first channels of collaboration between the different mainstream standards development organisations (SDO) on quantum technologies.

My ultimate intention is that this will lead to the formation of a cross-SDO working group or joint task force on quantum technologies, but this will certainly require many intermediate steps and strong engagement with each of the mainstream SDOs to justify the formation of such a group.

Online references related to the fellowship work

 www.itu.int/en/ITU-T/Workshops-and-Seminars/2021/0323/Pages/default.aspx

 www.itu.int/en/ITU-T/webinars/20210428/Pages/default.aspx

 www.itu.int/en/ITU-T/webinars/20210623/Pages/default.aspx



8.

Big Data

■ Big Earth Datacube Service Standardisation



Peter Baumann

Founder & CEO, rasdaman GmbH
Germany



ISO
TC211 Geographic information / WG6 Group for Ontology Maintenance (GOM)
OGC (Open Geospatial Consortium)

Sector

Big Data - Geographic information

Addressed EU standardisation priorities and gaps

The existing ISO 19123 is outdated (ISO was searching for someone to undertake renovation since several years): crafted before 2000, it is technically not up to date, it is in places unclear, unnecessarily complex, or even plainly wrong. However, being the basis for all other coverage standards in ISO, OGC, INSPIRE, DGIWG, etc. there is an urgent need for a reliable conceptual basis. This is accomplished with the successor specification, ISO 19123-1.

Concerned ICT Standards and contribution to the related landscape

My work is on ISO CD 19123-1 "Coverage Fundamentals". Coverages abstractly are "space-time varying phenomena", practically speaking regular and irregular spatio-temporal grids ("datacubes"), point clouds, and meshes. As such, coverages represent the unifying paradigm for all Big Earth Data. 19123-1 establishes the conceptual framework for coverage data and, hence, is the basis for a series of implementation standards, such as ISO 19123-2; OGC Coverage Implementation Schema; OGC Web Coverage Service; OGC Web Coverage Processing Service; INSPIRE WCS; DGIWG WCS.

Impact

Establishing clear definitions and modular services supports SMEs in finding a niche next to the large players offering monolithic take-or-leave-it products. This allows products to be interoperable while still allowing ingenuity and creativity in developing "the better product".

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, ISO 19123-1 ready for DIS ballot. Also, OGC has announced to adopt verbatim, too.

Have the standardisation activities in your project led to specific deliverables?

Development of a new standard (Technical Report).

What future efforts or activity are still necessary in your area of application?

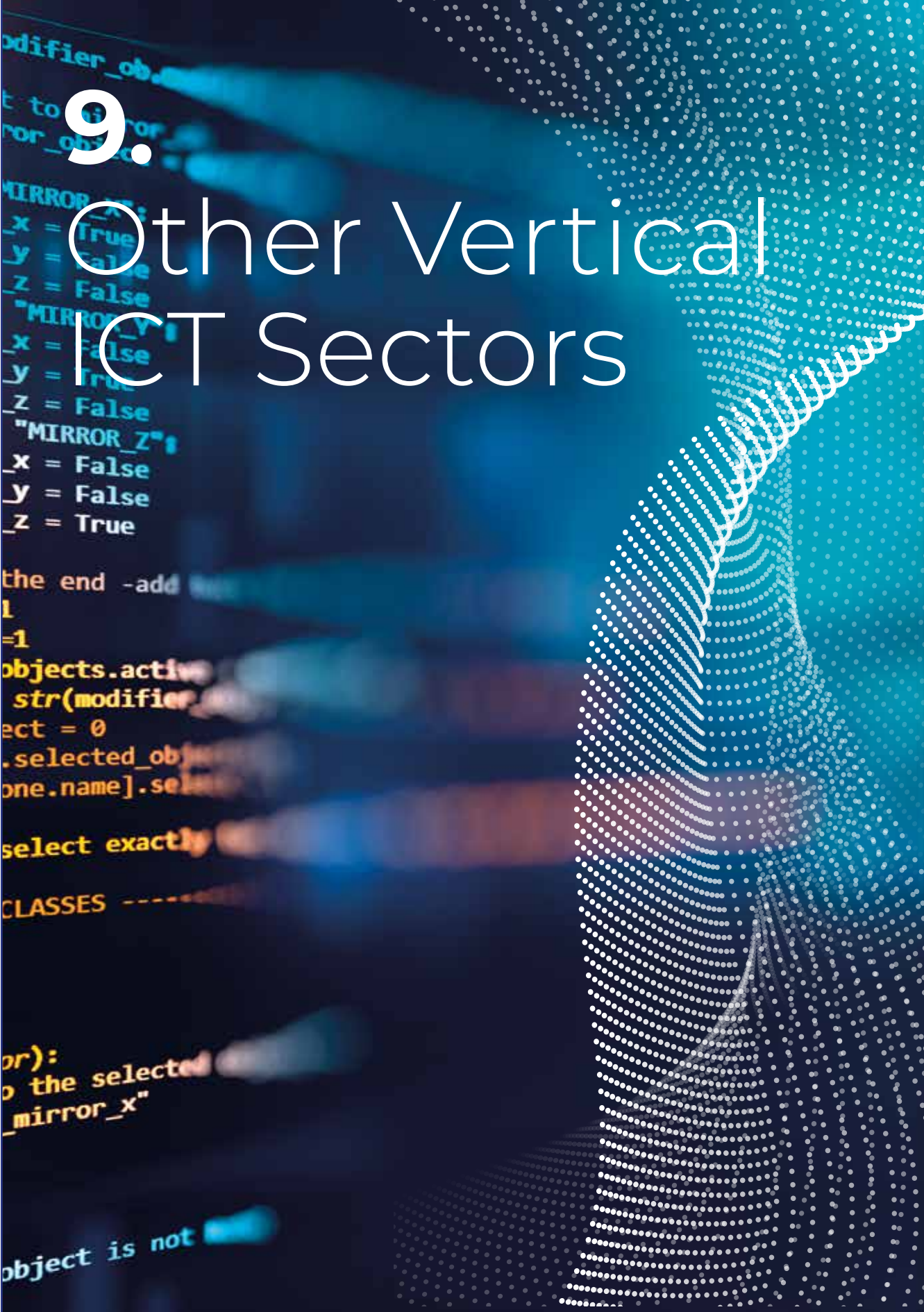
Currently, an NWIP (New Work Item Proposal) is under preparation in ISO which aims at establishing a twin standard, Coverage Processing Fundamentals, complementing the Coverage Data fundamentals. This will be instrumental for coverage services, in particular: data cube analytics.

Online references related to the fellowship work

 www.sciencedirect.com/science/article/pii/S1364815221001390

9.

Other Vertical ICT Sectors



■ W3C Accessibility Education and Outreach



Victoria Menezes Miller

*Director, CONCEPTIVITY Sarl
Switzerland*



W3C
WAI – Web Accessibility Initiative

Sector

ICT Accessibility

Addressed EU standardisation priorities and gaps

The European Commission stresses the importance and requirement to conform to accessibility standards. Since COVID-19, this is even more critical given the reliance on digital media and services.

However, some of the continuous challenges encountered is the general perception that accessibility is “hard to implement”, “not a priority” or “costly”. The EO WG develops free of charge resources to support WCAG (2.0 and above) to raise awareness of the issues, provide guidance and resources so that different audiences can address the issues within their realm of activity.

Furthermore, the resources to support implementation of WCAG are mainly available in English.

Concerned ICT Standards and contribution to the related landscape

My work in the framework of this fellowship contributes to the ICT Standards landscape with respect to accessibility of information and services, specifically WCAG 2.0, 2.1 (Web Content Accessibility Guidelines). The resources developed by the Education and Outreach WG of W3C Web Accessibility Initiative are a valuable support to users, thereby making the standard easier to understand and comply with. The mission of this WG is “to develop strategies and resources to promote awareness, understanding, implementation, and conformance testing for W3C accessibility standards; and to support the accessibility work of other W3C Groups”. Given my knowledge in several languages, I was solicited to work on translations of current resources related to WCAG. This is an extremely useful contribution since increasing the educational resources in other languages increases wider knowledge, understanding and implementation of WCAG.

Impact

Time and cost are priorities for SMEs. Engaging consultants on accessibility could be costly. The resources produced by the EO WG are aimed at ensuring that accessibility can be easily and progressively implemented by all, free of charge.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

No, since the focus is in making better available the existing standards.

Have the standardisation activities in your project led to specific deliverables?

Wider dissemination of the standard and resources through translation.

Online references related to the fellowship work

 www.w3.org/WAI/EO/charter-current

Standardisation actions towards the safety of EU citizens on roads and during emergency situations



Michelle Wetterwald

*Senior mobile networks expert, Netellany
France*



ETSI
ITS WG1 Application Requirements and Services
SC EMTEL.WG / TC Emergency Telecommunications

Sector

IoT, ITS/automated driving, Emergency Telecommunications

Addressed EU standardisation priorities and gaps

Regarding the ITS VRU standard, as the standardisation project ended, discrepancies could be noted between its different parts. The proposed action is to revise and align the content ensuring a consistent and unambiguous set of documents. Furthermore, explanations on the content of the standard to ITS stakeholders could help its take-over by the industry and increase the chance for this new service to take its part in the reduction of VRU accidents and fatalities.

Regarding the EMTEL standard, it provides guidelines for resilience and preparedness of emergency communication networks and is crucial for public safety, but dates to 10-2006. Communication means, architectures and technologies used by emergency services have evolved since. The proposed action is to analyse the standard, to evaluate how it could be revised.

Concerned ICT Standards and contribution to the related landscape

This work will enhance the capability of ETSI standards to improve European citizens' safety and prevent injuries and fatalities on roads (ETSI TC ITS) and during emergency situations (ETSI SC EMTEL). The following ICT standards have been worked upon: (a) ETSI TS 103 300 (ITS; Vulnerable Road Users (VRU) awareness; and (b) ETSI TR 102 445 (EMTEL; Emergency Communications Network Resilience and Preparedness): evaluation of its potential revision, as the standard was published in October 2006.

Additionally, as part of this fellowship, I made a change request to another standard from TC ITS: TS 103 248 (ITS; BTP port numbers) and supported harmonisation between TS 103 300-3 and TS 103 324 (ITS; Collective Perception Service).

Impact

SMEs are indirectly impacted by these actions as they may be able to develop new services complying with these standards. In addition, even if not directly addressing healthcare, all the actions in this fellowship bring the capability to ETSI to improve European citizens' safety and prevent injuries and fatalities. The VRU standards will improve the protection of pedestrian, bicyclist, motorcyclist, and animals when travelling on roads. The EMTEL analysis has the potential to prevent and fasten the resolution of emergency network failures.

Has your project directly involved or led to a specific recommendation or proposal for the development of new or revised standards?

Yes, a revised standard.

Have the standardisation activities in your project led to specific deliverables?

Yes, to 1 revised Technical Report, to 2 revised Technical Specifications and to recommendations for the revision of a standard accepted by the TC.

What future efforts or activity are still necessary in your area of application?

As I have been contributing to two different groups, the answer is rather finalized for what is related to TC ITS and to be continued for what is related to SC EMTEL. There, the conclusion of my analysis was to revise the subject deliverable, with a specific standardisation project that needs to be established.

Online references related to the fellowship work

 www.etsi.org/deliver/etsi_ts/103300_103399/10330003/02.01.02_60/ts_10330003v020102p.pdf

 www.etsi.org/deliver/etsi_ts/103300_103399/10330002/02.02.01_60/ts_10330002v020201p.pdf

 www.etsi.org/deliver/etsi_tr/103300_103399/10330001/02.02.01_60/tr_10330001v020201p.pdf



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