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**Project Full Title:** Safe and Trusted Human Centric Artificial Intelligence in Future Manufacturing Lines
**Project Coordinator:** Netcompany-Intrasoft

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# DELIVERABLE

# D8.6 – Report on Pre-Normative and Standardization Activities

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# Executive Summary

STAR has produced a very rich set of research and innovation outcomes regarding trustworthy AI systems for production lines and industrial use cases. Some of these results have been based on existing industrial standards that have been taken into account during the design and implement of the STAR prototypes. To this end, the project has produced a detailed report on standards that bear relevance to the STAR outcomes. At the same time, some of the STAR developments can give rise to the development of new standards or to the enhancement of existing standards and policies. This potential has been identified by STAR partners based on the collaboration of the project with other projects, project clusters, and organisations that engage in pre-normative standardisation activities.

In this context, the present deliverable is devoted to the presentation of the pre-standardisation activities of the STAR project, which can be classified as follows:

- Standards adoption and use activities towards producing the STAR research results.
- Identification of STAR outcomes with standardisation potential, including information about what is to be standardisation and what is a suitable standardisation body and process.
- Collaboration with other projects (e.g., the projects of the AI4Manufacturing Cluster and the projects of the DMP cluster) in sharing standardisation related best practices and experiences.
- Use of exploitation support services such as the HSBooster of the European Commission.

Overall, STAR has produced results with standardisation potential, which have been communicating to pre-standardisation initiatives and working groups such as industrial associations and the AI4Manufacturing cluster. Nevertheless, the project has not achieved a significant impact on standards, as most of its standards' related results have been produced during the latest stages of the project. Furthermore, the STAR consortium did not include any SDO (Standards Development Organisation) that could accelerate the project's liaisons and provision of contributions to standardisation working groups.

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| **Reviewers:** | SUPSI |
| **Approved by:** | Charalampos Ipektsidis, John Soldatos |

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| 0.7 | 23/02/2024 | INTRA | Final version incorporating comments from partners |
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# Definitions, Acronyms and Abbreviations

| Acronym/ Abbreviation | Title |
|---|---|
| **AAS** | Asset Administration Shell |
| **AI** | Artificial Intelligence |
| **AI4Manufacturing** | AI for Manufacturing |
| **CEN** | European Committee for Standardisation |
| **CENELEC** | European Committee for Electrotechnical Standardisation |
| **CSA** | Coordination and Support Action |
| **CPS** | Cyber Physical System |
| **DLSDR** | Distributed Ledger Services for Data Reliability |
| **DoA** | Description of Action |
| **EC** | European Commission |
| **ENISA** | European Network and Information Security Agency |
| **EU** | European Union |
| **ETSI** | European Telecommunications Standards Institute |
| **HLEG** | High Level Expert Group |
| **HRB** | Horizon Results Booster |
| **H2020** | Horizon 2020 |
| **IEC** | International Electrotechnical Commission |
| **IIRA** | Industrial Internet Reference Architecture |
| **IISF** | Industrial Internet Security Framework |
| **ISO** | International Organisation for Standardisation |
| **JSON** | JavaScript Object Notation |
| **JTC** | Joint Technical Committee |
| **ML** | Machine Learning |
| **NIST** | National Institute of Standards and Technology |
| **OASIS** | Organisation for the Advancement of Structured Information Standards |
| **RA** | Reference Architecture |
| **RAMI 4.0** | Reference Architecture Industrie 4.0 |
| **SAFe** | Scaled Agile Framework |
| **SDO** | Standards Developing Organisation |
| **WP** | Work Package |

# 1 Introduction

## 1.1 Purpose and Scope

STAR has produced a very rich set of research and innovation findings related to trustworthy AI systems for production lines and industrial use cases. Some of these outcomes have been influenced by existing industrial standards, which were considered during the development and implementation of STAR prototypes. As a result, the project has produced a detailed report on the standards relevant to the STAR outcomes (Deliverable D2.3 "Review of Applicable Standards and Regulations").

The purpose of this deliverable is to report on the project's standardisation activities. In fact, some of the STAR developments can give rise to the development of new standards or to the enhancement of existing standards and policies. This potential has been identified by STAR partners based on the collaboration of the project with other projects, project clusters, and organisations that engage in pre-normative standardisation activities. All these activities are described in this deliverable.

Figure 1 provides a high-level overview of the different types of standardisation activities of the project, which include:

- Review, adoption and use of existing standards as part of STAR's development.
- Production of outcomes with standardisation potential, including an analysis of this potential in terms of the use of the results, the candidate standardisation body (or SDO) and the process to be followed.
- Collaboration with other projects and initiatives (e.g., AI4Manufacturing cluster) in joint identification of standardisation opportunities and sharing of experiences.
- Engagement with experts from the standardisation services of the EC like the HRB.

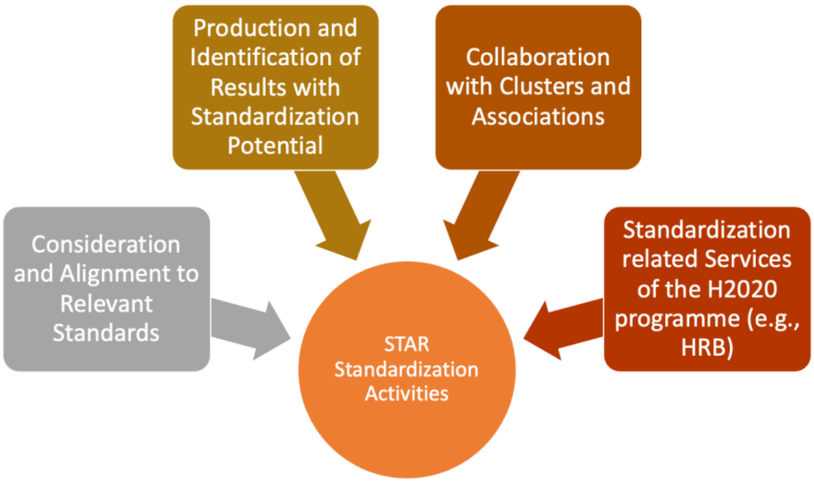


*Figure 1: STAR's Standardisation Related Activities Overview*

## 1.2 Document Structure

The present deliverable is devoted to the presentation of the pre-standardisation activities of the STAR project. In this the deliverable is structured as following:

- Section 1 is the current introductory section.

- Section 2 summarized the adoption and use of standards within the project, with emphasis on standards that boosted the production of the STAR research results.
- Section 3 presents that STAR outcomes with standardisation potential, including information about what is to be standardized and what could be a suitable standardisation body and process.
- Section 4 presents the collaboration with other projects (e.g., the projects of the AI4Manufacturing Cluster and the projects of the DMP cluster) in sharing standardisation related best practices and experiences, as well as the project's use of standards-development services such the Horizon Results Booster (HRB) service.
- Section 5 is the final and concluding section of the deliverable.

# 2 Standards Relevant to STAR

The landscape of AI standardisation is still evolving, with various initiatives from organisations such as ISO/IEC, CEN/CENELEC, IEEE, ITU, ETSI, NIST, AIST, and SAE. In the EU, efforts to harmonize standards have been pursued through CEN/CENELEC, ISO/IEC, and ETSI, with projects like STAR closely following these developments. The initiatives cover a broad spectrum of strategies and regulations, including risk-based approaches and transparency in AI systems. At the same time the European Union has proposed the AI Act, which classifies AI systems by risk and mandates various development and use requirements.

AI-driven systems can be considered from various perspectives. In the manufacturing industry, AI-enabled systems are being used to improve operations and worker performance. The standards presented below offer valuable concepts, recommendations and guidelines, which need to be sufficiently taken into account when evaluating AI-enabled systems in manufacturing, especially human-centric ones.

STAR is an Industry 5.0 project that has put human factors and human centricity at the heart of its developments. Table 1 lists the project's standards that relate to human factors and which has been considered in the development of the project's human centred technologies. Some of these standards are directly related to methodologies for the development of human centred systems.

*Table 1: Standards related to human factors that are of interest to STAR*

| Standard | Description | Relevance to Manufacturing Industry and Relevance to STAR |
|---|---|---|
| ISO 6385:2019 | Ergonomic principles in the design of work systems | The standard is interesting in its consideration of various aspects of the work environment that impact ergonomics, including technical and non-technical factors such as worker breaks and multitasking. Considering the ergonomics principles of this standard can improve the usability of the project's systems. |
| ISO 9241-11:2018 | Ergonomics of human-system interaction Part 11: Usability: Definitions and concepts | Design decisions are often made based on developers' personal preferences or perceptions of what might be in the user's best interest. Having a collection of recommendations from experts in the field allows the industry to have a frame of reference and a set of documents to rely on in order to develop ergonomic interfaces and improve the usability and performance of human-machine interaction.<br>For STAR it was of interest to use some of the software related standards as best practices. |
| ISO 10075-3 | Ergonomic principles related to mental workload — Part 3: Principles and requirements | In STAR there are pilots related to the collaboration of humans with the machines and robots in the |

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|---|---|---|
| | concerning methods for measuring and assessing mental workload | surroundings, pilots with short cycle time inspections. The knowledge of the mental workload and its impact on the worker is relevant when designing the spaces for carrying out proof of concept trials and even defining the tasks that operators have to perform. |

The STAR architecture has been developed in-line with standards-based architectures for industrial systems. Table 2 illustrates some of the main standards-based architectures that have been considered, while more information and a broader list of related standards are also illustrated in the architecture-related WP2 deliverables (i.e., D2.6 "STAR Reference Architecture and Blueprints – Initial version" and D2.7 STAR Reference Architecture and Blueprints – Final version").

*Table 2: Standards Considered in the Development of the STAR Architecture*

| Standard | Description | Concepts Used in STAR Architecture |
|---|---|---|
| Industrial Internet Reference Architecture (IIRA) | Framework developed to guide the design and implementation of Industrial Internet systems | Concept of Functional Domains; Cloud/Edge Views for Implementation and Deployment |
| Industrial Internet Security Framework (IISF) | Provides guidance, best practices, and security controls for securing industrial systems and critical infrastructures | The concept of cybersecurity functions as a cross-cutting layer to industrial capabilities has been considered in the specification of STAR's AI security modules |
| Reference Architecture Industrie 4.0 (RAMI 4.0) | Provides a structured approach for integrating digital technologies into manufacturing processes | Concepts of structuring of industrial processes within Industry 5.0 systems |
| BDVA Reference Architecture | Provides Structuring Principles for BigData Systems | Concept of data-driven workflows, including data analytics and machine learning pipelines |
| ISO/IEC 30141, "Internet of Things (IoT) - Reference architecture" | Defines standards, characteristics, and models for well-defined and functional IoT architectures | Modules and structuring principles for the STAR architecture |

Table 3 illustrates other standards that have been used in the scope of the project's developments. As a prominent example, the STAR partners have extensively used Asset Administration Shell (AAS), JSON, and JSON data interchange syntax in its developments.

*Table 3: Other standards*

| Name | Name of Standard |
|---|---|
| ICS - TC | Asset Administration Shell |
| Purpose | Standardized digital representation of an asset |

| | |
|---|---|
| How it is supported /implemented/used in STAR | SUPSI extended the traditional factory digital twins by incorporating human characterisation in Asset Administration Shell (AAS). The extension lays the basis for human-centred control and management, as demonstrated by employing a prototype of the extended AAS in two proposed use cases. |
| Relevance to Manufacturing Industry | Referred to Industry 5.0, an accurate digital representation of humans as a basis of the data-based decision support to improve operators' well-being and resilience. The AAS is extended to include dedicated digital models accommodating a set of properties to describe the human operators and its interactions with the surrounding shop-floor resources. |
| Link | *Web links* |

| **Name** | **JSON and JSON data interchange syntax** |
|---|---|
| ICS - TC | ISO/IEC 21778:2017, STD 90 (RFC 8259), ECMA-404, |
| Purpose | Data interchange. Human readable and easily processable file format |
| How it is supported /implemented/used in STAR | WTP uses Python and JavaScript JSON libraries for different uses: The main ones are:<br>• Pre-process the course data. A collection of training courses was provided in excel files, in order to process it first were converted to JSON.<br>• Save and cache some database queries. Some queries to the database are resource intensive, so in some cases it was beneficial to cache some queries to provide faster results.<br>• Prepare job data for being easily managed in the web platform. Pass data from the backend to the front-end for representation |
| Key implications | JSON is a well-known and massively used data interchange format. It has not huge implications as it is well supported by different libraries and solutions, is human readable, and widely used in software solutions across industry. |
| Relevance to Manufacturing Industry | JSON is a widely used solution in different sectors, including manufacturing industry |
| Link | https://www.json.org/json-en.html<br>https://www.iso.org/standard/71616.html |

# 3 STAR Results with Standardisation Potential

## 3.1 The STAR RA (Reference Architecture)

The STAR RA presents a set of structuring principles for the development, deployment and operation of the trustworthy AI system for manufacturing lines and industrial use cases. It is described in detail in STAR deliverable D2.7 "STAR Reference Architecture and Blueprints - Final version". Its development has considered a variety of standards-based architecture such as the RA of the BigData Value Association (BDVA), the ISO/IEC JTC 1/SC 42 – Artificial intelligence architecture, as well as the Industrial Internet Reference Architecture (IIRA) and its accompanying Industrial Security Framework (IISF). Based on this architecture the STAR RA has defined:

- A high-level conceptual model and taxonomy of trusted AI functionalities in different domains in-line with the functional domain concept of the IIRA and the IISF.
- A logical architecture that provides the structuring principles of AI-based Industry 5.0 system, which is followed by the STAR systems as well.
- More specific Industry 5.0 architectures for STAR systems like the Active Learning systems and the Human Digital Twin (HDT).

These systems can be potentially standardized through organisations like ISO in order to serve as blueprints for the design and development of AI-based Industry 5.0 systems. Relevant papers published by the consortium (e.g., [Rožanec23]) are already receiving considerable attention in the research and scientific community (e.g., over 40 citations in 1 year).

## 3.2 The STAR Regulatory Compliance Blueprints

As already outlined, the STAR-RA is accompanied by a number of blueprints that provide guidance about the development of specific aspects of trustworthy AI systems. These include blueprints that help solution integrators develop and deploy systems compliant to the AI Act [COM/2021/206], leveraging STAR systems and technologies. Even though AI Act was at proposal stage during the project implementation i.e., 2021-2023, STAR has acknowledged the importance of developing compliant systems and introduced regulatory compliance blueprints. The blueprints cover three main risk levels specified in the AI Act, including high risk AI systems, medium risk AI systems and low risk AI systems. These blueprints can be provided as guidelines to developers' communities and could be standardized as part of ISO/CEN processes. For instance, considering regulatory compliance as a dimension of system quality, the ISO/IEC/IEEE 9000 family of standards is very relevant.

## 3.3 The STAR Trustworthiness Auditing Framework

As part of deliverables D7.6 "Safety and Security Certification Programme for AI Services in Manufacturing – Initial version" and D7.7 "Safety and Security Certification Programme for AI Services in Manufacturing – Final version" STAR has specified a quantitative framework for scoring the trustworthiness of industrial AI systems. The framework leverages information about the trust-related aspects, features, and functionalities of an AI system and calculates a trustworthiness score for the system, while at the same time providing feedback for improving the system's trustworthiness. STAR has also provided a publicly available, on-line implementation of the service, which is accessible through the STAR market platform (Figure 2). The framework bears some similarities with the ALTAI assessment tool of the HLEG (High level Expert Group) on AI, yet it is quantitative and much more technical i.e., it evaluates the quality and adequacy of specific technical and technological measures taken to increase the trustworthiness of an AI system. It also includes some quite strong cybersecurity aspects, including aspects relating to the trustworthiness of the training data of the AI systems. Most importantly, STAR deliverable D7.7 has described the structure of an AI systems certification program based on the auditing framework. This program could be standardized by a certification organisation (e.g., similar to ISO certifications for the 27001 and 9000 family of standards) or even a standards-development organisation like ENISA (European Network and Information Security Agency).

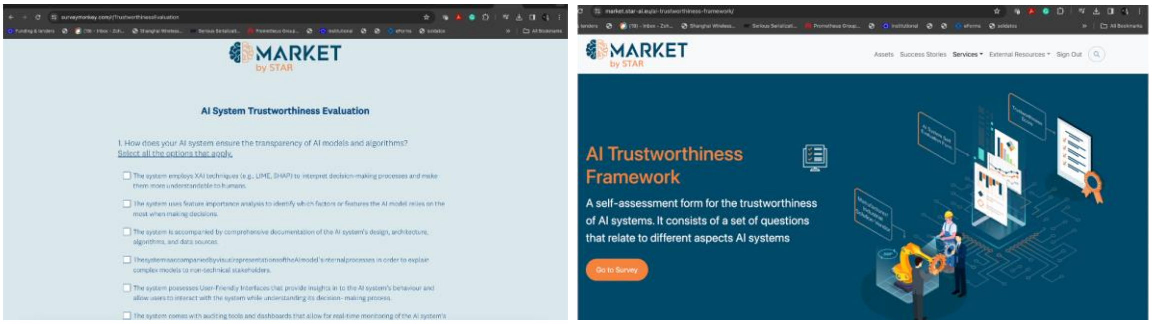


*Figure 2: On-line implementation of the Quantitative Trustworthiness Auditing Framework of the Project*

## 3.4 STAR Data Models

To support the collection, pre-processing, and use of industrial data within the STAR systems a JSON/XML schema has been specified and implemented. It is used as the main format that is handled by STAR probes of the project's blockchain infrastructure for data provenance and traceability as part of the so-called DLSDR (Distributed Ledger Services for Data Reliability). This model is extensible and can accommodate raw industrial data, AI models (meta)data, as well as AI analytical results. As such it is a very useful outcome for integrators of industrial systems that are concerned with data and metadata collection for reliability. It is a result that could be standardized in the scope of organisations that standardize data models and data schemas such as OASIS (Organisation for the Advancement of Structured Information Standards).

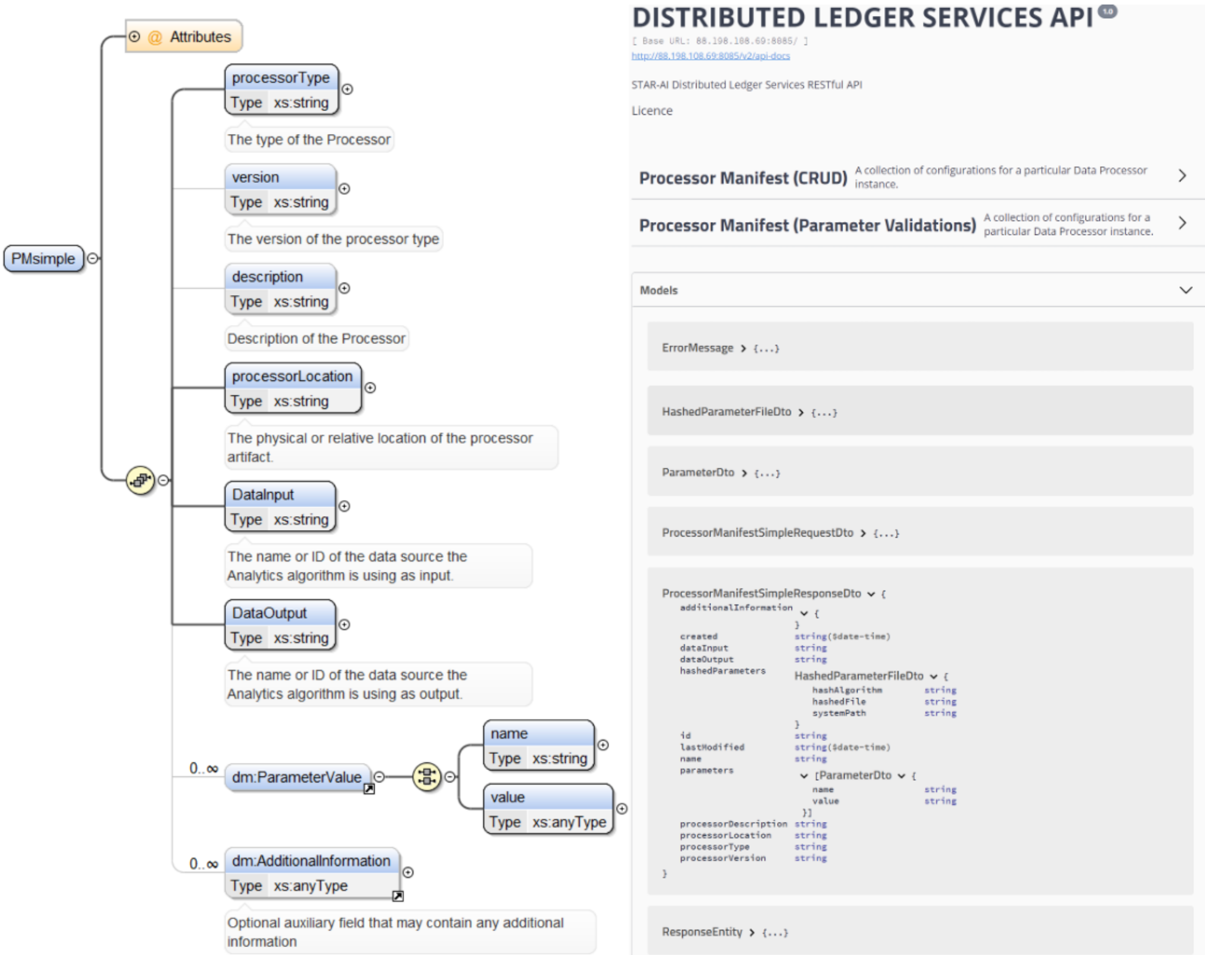


*Figure 3: Snapshot of the Data Model of the Distributed Ledger Services for Data Reliability*

## 3.5 STAR Co-Creation Methodology

STAR has specified a novel co-creation methodology for the development of human-centric AI systems. The methodology specified different steps and activities (including co-creation workshops) that foster the design of systems that emphasize Human-AI collaboration, notably systems where this collaboration yield a system that is much better than the sum of its parts. It would be contributed as a set of guidelines that can enhance existing methodologies for software systems (e.g., Agile, SAFe (Scaled Agile Framework)).

# 4 Pre-Standardisation Activities within the AI4Manufacturing Cluster

## 4.1 Collaboration Framework and Main Activities

The standardisation related collaborations of the projects of the AI4Manufacturing cluster was based on the following framework and main activities:

- Standardisation and pre-normative activities were identified as one of the primary areas of collaboration between the different projects back in 2023.
- All cluster meetings/workshops included a slot to discuss standards-related progress.
- The projects have shared best practices, knowledge and information (e.g., information about events) during the cluster meetings and through the cluster mailing list.
- A dedicated standards-related workshop was organized on December 20th, 2023, where the final outcomes of five different projects were presented, along with lessons learnt.

## 4.2 The AI4Manufacturing Standardisation Workshop

The workshop was held December 20th, 2023 based on the agenda that is illustrated in Figure 4. Five projects (namely STAR, Teaming.AI, AI PROFICIENT, Knowledge, XMANAI) gave presentations of their standards-related activities, including their results with standardisation potential. 40 people registered for the workshop and 25 participants were active during the entire duration of the event. During and after the event the projects shared relevant information and documentation (e.g., their standardisation deliverables).

The workshop was joined by stakeholders outside the project's including consultants working in the support services of the HRB (Horizon Results Booster)[1] and representatives of the Stand4EU[2] project that provides standardisation support services and activities. Stand4EU has reinforced and leverages the mapping of research initiatives carried out by the European Factories of the Future Association (EFFRA) as part of EFFRA's innovation portal. Hence, during the workshop, the experience of the project from their collaboration with HRB and Stand4EU was shared, while the support services of HRB and Stand4EU were discussed.

[1] https://www.horizonresultsbooster.eu
[2] https://stand4eu.eu/


*Figure 4: Banner and Agenda of the AI-MAN (AI4Manufacturing) Cluster Standardisation Workshop*

Overall, the tangible standardisation outcomes of the projects of the AI4Manufacturing cluster have been quite limited, which led the project to share experienced from their standards-related activities, but also insights on what could have been done better. This was also the case for STAR, which shared information about its own lessons learnt that are summarized in the following paragraph. Note that in many case the project's shared common concerns and opinions on how to boost standardisation outcomes for future projects.

## 4.3 Meetings with HSBooster

During the execution of the STAR project, we have undertaken also activities to benefit from the HSBooster and the expertise of Ms. Isabel Caetano who is President of the NSB Technical Committee for AI. HoD and Expert in ISO/IEC JTC1/SC42 "Artificial Intelligence", Liaison Member with TC 279 (Innovation Management), CEN-CENELEC JTC 21 "Artificial Intelligence", IEEE working group on Transparency and also works in Research in AI Ethics and is Expert Evaluator on H2020 and Horizon Europe.

We have organised 2 Meetings and Ms Caetano also participated in the workshop organised under AI4Manufacturing.

*Table 4: Meetings Organised with HSBooster service*

| Date | Meeting |
|---|---|
| 3 November 2023 | 1st Meeting with HSBooster expert |
| 20 December 2023 | Participation of expert at the AI4Manufacturing webinar |
| 23 February 2023 | Follow up meeting with Expert |

The first meeting took place on November 3rd and focussed on discussion with the expert about relevant standards as also for providing an update in relation to the AI Guidance & Conformity Assessment IEEE standards. Specifically, ISO 42001, ISO 25058 and ISO 42005 that is in development were discussed.

*Table 5: Standards discussed with HSBooster service expert*

| Standard | Fields | Relevance to STAR |
|---|---|---|
| ISO 42001 | Information technology — Artificial intelligence — Management system | ISO/IEC 42001 is an international standard that specifies requirements for establishing, implementing, maintaining, and continually improving an Artificial Intelligence Management System (AIMS) within organisations. It is designed for entities providing or utilizing AI-based products or services, ensuring responsible development and use of AI systems.<br><br>Although the scope of the standard is broad it is of interest to STAR for operational deployments. |
| ISO 25058 | Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Guidance for quality evaluation of artificial intelligence (AI) | For STAR it is of interest as it provides guidance for the evaluation of artificial intelligence (AI) systems using an AI system quality model. |
| ISO 42005 | Information technology — Artificial intelligence — AI system impact assessment | The standard will be of interest as it provides guidance for organisations performing AI system impact assessments for individuals and societies that can be affected by an AI system and its intended and foreseeable applications. It includes considerations for how and when to perform such assessments and at what stages of the AI system lifecycle, as well as guidance for AI system impact assessment documentation. |

Other standards that were shared by Ms. Caetano the HSBooster expert and relate to AI Guidance & Conformity Assessment IEEE standards include:

| Standard | Name |
|---|---|
| IEEE 7000™ | IEEE Standard Model Process for Addressing Ethical Concerns during System Design |
| IEEE 7001™ | IEEE Standard for Transparency of Autonomous Systems |
| IEEE P7002™ | IEEE Standard for Data Privacy Process |
| IEEE P7003™ | Algorithmic Bias Considerations |
| IEEE P7004™ | Standard for Child and Student Data Governance |
| IEEE P7004.1™ | Recommended Practices for Virtual Classroom Security, Privacy and Data Governance |
| IEEE 7005™ | IEEE Standard for Transparent Employer Data Governance |

| | |
|---|---|
| IEEE 7007™ | IEEE Ontological Standard for Ethically Driven Robotics and Automation Systems |
| IEEE P7008™ | Standard for Ethically Driven Nudging for Robotic, Intelligent and Autonomous Systems |
| IEEE P7009™ | Standard for Fail-Safe Design of Autonomous and Semi-Autonomous Systems |
| IEEE 7010™-2020 | IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-Being |
| IEEE P7010.1™ | Recommended Practice for Environmental Social Governance (ESG) and Social Development Goal (SDG) Action Implementation and Advancing Corporate Social Responsibility |
| IEEE P7011™ | Standard for the Process of Identifying and Rating the Trustworthiness of News Sources |
| IEEE P7012™ | Standard for Machine Readable Personal Privacy Terms |
| IEEE P7014™ | Standard for Ethical considerations in Emulated Empathy in Autonomous and Intelligent Systems |
| IEEE P7015™ | Standard for Data and Artificial Intelligence (AI) Literacy, Skills, and Readiness |

## 4.4 STAR's Lessons Learnt Regarding Standardisation

STAR lessons learnt regarding standardisation can be summarised in the following points:

- **Timing of Standardisation Activities**: The standardisation processes are generally complicated and quite lengthy. Hence, it is important to start the standardisation efforts of an EU-funded projects during the first couple of months of its lifetime. Most projects (including STAR) wait for the moment when they have some tangible outputs to be standardized, which happens quite late in the project's workplan. Most importantly, by the time these results are available there is very limited time to produce considerable standardisation outcomes.
- **Consortium Composition**: Effective standardisation requires the engagement of SDOs (Standardisation Development Organisations) and standardisation experts. Such stakeholders must be therefore included in the consortium. It is highly unlikely that a consortium organisation will be able to follow and participate in the activities of an SDO during the course of project, if it is not already part of the process independently of the project. It is even more difficult to start a new standardisation activity, especially when this has to be completed within a limited timeframe. Hence, it is recommended that standards development organisation is included as partner in the project, in order for a project to be able to produce tangible standardisation outcomes.
- **EU's Standardisation Support Services**: Services like the HRB can act as catalysts for the standardisation processes of EU projects. Nevertheless, they must also respect the previous two guidelines i.e., they must start early in the project and engage SDOs or SDOs' representatives in the process.
- **Projects Collaboration:** The collaboration of different projects that work on the same areas can be very positive for the standardisation process. This is because it can create critical mass for carrying out effective standardisation. For instance, it can help fulfil the above-listed requirements/guidelines such as the engagement of standardisation expert in the project. Most importantly, it can help projects deliver more outputs within a given timeframe.

# 5 Conclusions

Throughout its lifetime, the STAR project has carried out different types of standardisation related activities, including:

- Identification of standards with direct or indirect relevance to the STAR research and outcomes.
- Alignment to and use of the identified standards as part of the project's research and development activities. This has boosted the technological longevity and popularity of some of the technical results of the project.
- Identification of STAR's foreground outcomes with standardisation potential, including analysis of potential standardisation bodies and processes.
- Collaboration and engagement with standardisation support services such as the HBR.
- Collaboration with other projects and initiatives on standardisation issues.

Despite these activities and results, the overall impact of the project on standardisation is quite limited. This is due to the considerable time and resources required towards pushing results to standardisation, but also due to that most STAR results with standardisation potential took shape during the last year of the project's lifetime. STAR could have greatly benefit from a direct collaboration with a relevant SDO as consortium member, which is a lesson learnt for future collaborative research activities of the partners. Moreover, while the project acknowledges the merit of the standardisation support services and the expertise of the participants to these services, it also believes that these services provide guidance and orientation rather than tangible links to SDOs.

The project partners will continue to pursue development and standardisation activities for STAR's outcomes during the post project exploitation phase. In fact, the STAR project has looked into the potential to influence and benefit from new IEEE standardisation activities. Specifically, there has been engagement from Christos Emmanouilidis, University of Groningen in two working groups that seek to develop standards as follows:

- IEEE P3395 - Standard for the Implementation of Safeguards, Controls, and Preventive Techniques for Artificial Intelligence (AI) Models
- IEEE P3396 - Recommended Practice for Defining and Evaluating Artificial Intelligence (AI) Risk, Safety, Trustworthiness, and Responsibility

Along with effort to raise the TRL level of the results, the partners will attempt to increase their level of standards compliance, while at the same time pursuing opportunities to influence Industry 5.0 and AI standardisation processes.

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