



[ISO/IEC JTC 1/WG 13](#)

Trustworthiness

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Secretariat: DIN

Call for participation and contribution on Trustworthiness Assessment Ontology

Date of document 2020-02-10

Expected action Comment
Due Date 2020-03-06

Source Claire Vishik

Background

Below is a call for participation and contribution on ISO/IEC TS 24462 "Ontology for ICT Trustworthiness Assessment"



Call for Participation & Contribution

Background: In accordance with the JTC 1 resolution 20 adopted at the Delhi meeting, the work on the specification on ICT Trustworthiness Assessment Ontology has been transferred to the newly created JTC1 WG13. The NWIP was originally developed and approved in JTC1 SC27 WG3, where participants from several National Bodies committed to participate in this work. It was transferred to WG13 before the work formally started. JTC1 WG13 intends to set up a liaison with JTC1 SC27 WG3, in order to enable these experts to continue their participation in this work.

Call for participation and contribution: JTC1 WG13 hereby is issuing a call to interested experts to express interest in participation in the development of the specification described in (N 16). Expressions of interest and contributions are accepted until (2020-03-06). We welcome experts with interest in the concept of trustworthiness, ontology design and building, ICT assessment frameworks, ICT resilience requirement, SDL, privacy preserving technologies and privacy by design, security evaluation schemes, risk analysis, emerging technologies, and related issues.

FYI, the full text of the NWIP on this subject is provided below and in N 16.

Form 4: New Work Item Proposal

Circulation date: Click here to enter text. Closing date for voting: Click here to enter text.	Reference number: Click here to enter text. (to be given by Central Secretariat)
Proposer (<i>e.g. ISO member body or A liaison organization</i>) ISO/IEC JTC 1/ SC27	ISO/TC JTC/SC 27 <input type="checkbox"/> Proposal for a new PC
Secretariat DIN	N Click here to enter text.

A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, an organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

IMPORTANT NOTE: Proposals without adequate justification risk rejection or referral to originator.

Guidelines for proposing and justifying a new work item are contained [in Annex C of the ISO/IEC Directives, Part 1](#).

☒ The proposer has considered the guidance given in the Annex C during the preparation of the NP.

Proposal (to be completed by the proposer)

Title of the proposed deliverable.

English title:

Ontology for ICT Trustworthiness Assessment

French title (if available):

Titre manque

(In the case of an amendment, revision or a new part of an existing document, show the reference number and current title)

Scope of the proposed deliverable.

We consider ICT trustworthiness assessment as a subject associated with various types of best practices and assessments, such as governance, secure development lifecycle, security evaluation, risk assessment. **The proposed Technical Specification defines an inventory of building blocks conceptually associated with different types of assessments, an ontology (i.e., a meta-model) that organizes the building blocks, and guidelines for using the inventory of building blocks and the ontology.**

Relevant areas include assessments related to governance, risk management, security evaluation, Secure Development Lifecycle (SDL), supply chain integrity, privacy, etc.

The ontology will cover the domain of ICT trustworthiness assessment and define a consistent view in this space. It will not edit or propose to edit existing standards in this area.

Formalizing the types, categories, and structural characteristics of building blocks in the area of trustworthiness assessment will increase efficiency and improve harmonization in standards development and their use.

Building blocks can refer to structural components as well as semantic components. These components can be related to a variety of concepts and activities related to trustworthiness assessments, including process related, such as traceability or elements of assessment methodologies.

For the purposes of this document, we use the following provisional terms and definitions.

Trustworthiness

Demonstrable likelihood that the system performs according to designed behavior under a typical set of conditions as evidenced by its characteristics, such as safety, security, privacy, reliability and resilience (from NIST CPS Framework v1.0).

Trustworthiness assessment

Techniques, mechanisms, and approaches used to evaluate trustworthiness of a system, environment, organization, technology or products. The approaches include, but are not limited to risk analysis, SDL (Secure Development Lifecycle), governance, deterministic testing, and other.

Building block

A component that fits with others to form a whole.

Ontology

A set of concepts and categories in a subject area or domain that shows their properties and the relations between them (Oxford Dictionary). In computer science, an ontology is associated with a standardized format that facilitates exchange of information.

Individual

The basic, "ground level" components of an ontology. The individuals in an ontology may include concrete objects such as people, animals, tables, automobiles, molecules, and planets, as well as abstract individuals such as numbers and words (although there are differences of opinion as to whether numbers and words are

Purpose and justification of the proposal*

The purpose of this proposal is to provide a consistent view of the ICT trustworthiness assessment space by creating a meta-model that defines structural and semantic building blocks and organizes them in an ontology. This meta-model will provide a formal view for those who administer, those who plan, and those who use assessments to understand and streamline their activities, thus improving efficiency and adoption of various types of assessments and assessment frameworks.

Background: In the past two decades, a significant body of knowledge has been developed with regard to standards relevant to different types of trustworthiness assessments and diverse assessment techniques. Work was done in such areas as evaluation criteria for IT security, testing methodologies, architectural and design principles, impact assessment, privacy assessments, SDL for various classes of systems, and many more areas.

The body of knowledge created in ICT trustworthiness assessment is extremely valuable, but it is of a considerable size. The standards in this area are connected to each other, reference each other, and are used in adjacent environments. They have similar structural and semantic elements.

Market need: the size and diversity of the trustworthiness assessment related space negatively affects the efficient operations of this area and may constitute an obstacle to faster adoption. Due to the size of the body of knowledge associated with different types of assessments, a model of structural and semantic elements (an ontology) is expected to foster a consistent view across different areas of trustworthiness related assessments, contribute to an increased adoption rate of assessment-related standards, and potentially achieve a greater degree of harmonization. It is proposed to build this model by creating an inventory of structural and semantic building blocks conceptually associated with different types of assessments and organizing the inventory in an ontology.

Problems this proposal solves: at this time, no meta-model of the trustworthiness assessment space exists, making it more difficult to obtain a consistent view of this area. The proposed technical specification is expected to create such a meta-model. In addition to the benefits already mentioned, product and technology developers are expected to be able to increase awareness of their assessment options and have a better understanding of relevant assessment components. The meta-model will allow them to make planning more efficient. Governments may be able to improve understanding of broadly applicable ICT assessment schemes for different environments, objectives, market segments, and context. As a result of the availability of the meta-model, the number of assessed technologies may increase, and there may be better premises for the participation of SMEs and non-profit organizations in various assessment schemes.

The proposed technical specification is expected to enhance the value and visibility of the trustworthiness assessment standards to end users and thus increase their adoption.

In addition to the descriptive content and diagrams, we propose to define the building blocks in XML and to define the ontology in OWL. Availability in machine-readable formats is expected to support the inclusion of this model in various decision-support, planning, and requirements-related tools, an option that may promote the use of trustworthiness assessment standards.

To summarize, various benefits are expected to be derived from a standard meta-model of the trustworthiness assessment space, e.g.:

- Obtaining a comprehensive view of the ICT trustworthiness assessment

Please select any UN Sustainable Development Goals (SDGs) that this deliverable will support. For more information on SDGs, please visit our website at www.iso.org/SDGs ."

- ☐ GOAL 1: No Poverty
- ☐ GOAL 2: Zero Hunger
- ☐ GOAL 3: Good Health and Well-being
- ☐ GOAL 4: Quality Education
- ☐ GOAL 5: Gender Equality
- ☐ GOAL 6: Clean Water and Sanitation
- ☐ GOAL 7: Affordable and Clean Energy
- ☐ GOAL 8: Decent Work and Economic Growth
- ☒ GOAL 9: Industry, Innovation and Infrastructure
- ☐ GOAL 10: Reduced Inequality
- ☐ GOAL 11: Sustainable Cities and Communities
- ☐ GOAL 12: Responsible Consumption and Production
- ☐ GOAL 13: Climate Action
- ☐ GOAL 14: Life Below Water
- ☐ GOAL 15: Life on Land
- ☐ GOAL 16: Peace and Justice Strong Institutions
- N/A GOAL 17: Partnerships to achieve the Goal

Preparatory work (at a minimum an outline should be included with the proposal)

- ☐ A draft is attached ☒ An outline is attached ☐ An existing document to serve as initial basis

The proposer or the proposer's organization is prepared to undertake the preparatory work required:

- ☒ Yes ☐ No

If a draft is attached to this proposal,:

Please select from one of the following options (note that if no option is selected, the default will be the first option):

- ☒ Draft document will be registered as new project in the committee's work programme (stage 20.00)
- ☐ Draft document can be registered as a Working Draft (WD – stage 20.20)
- ☐ Draft document can be registered as a Committee Draft (CD – stage 30.00)
- ☐ Draft document can be registered as a Draft International Standard (DIS – stage 40.00)

- ☐ If the attached document is copyrighted or includes copyrighted content, the proposer confirms that copyright permission has been granted for ISO to use this content in compliance with clause 2.13 of the ISO/IEC Directives, Part 1 (see also the Declaration on copyright).

<p>Is this a Management Systems Standard (MSS)?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>NOTE: if Yes, the NP along with the <u>Justification study</u> (see Annex SL of the Consolidated ISO Supplement) must be sent to the MSS Task Force secretariat (tmb@iso.org) for approval before the NP ballot can be launched.</p>
<p>Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal.</p> <p><input type="checkbox"/> International Standard <input checked="" type="checkbox"/> Technical Specification</p> <p><input type="checkbox"/> Publicly Available Specification</p>
<p>Proposed development track</p> <p><input type="checkbox"/> 18 months* <input type="checkbox"/> 24 months <input checked="" type="checkbox"/> 36 months <input type="checkbox"/> 48 months</p> <p>Note: Good project management is essential to meeting deadlines. A committee may be granted only one extension of up to 9 months for the total project duration (to be approved by the ISO/TMB).</p> <p>*DIS ballot must be successfully completed within 13 months of the project's registration in order to be eligible for the direct publication process</p>
<p>Draft project plan (as discussed with committee leadership)</p> <p>Proposed date for first meeting: October, 2019</p> <p>Dates for key milestones: DIS submission 2023/04/30 Publication 2023/11/30</p>
<p>Known patented items (see ISO/IEC Directives, Part 1 for important guidance)</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If "Yes", provide full information as annex</p>
<p>Co-ordination of work: To the best of your knowledge, has this or a similar proposal been submitted to another standards development organization?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If "Yes", please specify which one(s):</p> <p>Click here to enter text.</p>
<p>A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables. The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized.</p> <p>We are not aware of duplication. The proposed technical specification will not impact existing work and work in progress. It is complementary to these efforts.</p>

A listing of relevant existing documents at the international, regional and national levels.

ISO/IEC TR 20943-6:2013 Information technology — Procedures for achieving metadata registry content consistency — Part 6: Framework for generating ontologies

ISO/IEC 1325 – Topic Maps

ISO/IEC CD 21838- Information technology -- Top-level ontologies

RDF (Resource Description Framework) Specification v. 1.1 – Feb 2014, W3C

OWL (Web Ontology Language) specification v.2 – Dec 2012, W3C

Please fill out the relevant parts of the table below to identify relevant affected stakeholder categories and how they will each benefit from or be impacted by the proposed deliverable(s).

	Benefits/impacts	Examples of organizations/companies to be contacted
Industry and commerce – large industry	<ul style="list-style-type: none"> -- Improved ability to define assessment requirements -- Improved ability to target assessments quickly to emerging or complex technology environments -- Improved ability to analyze assessment needs -- Access to the inventory of structural and semantic components used in different assessments -- Increased harmonization -- Decreased effort needed to collect best practices for new technology and standardization areas -- Shorter assessment times -- Decreased assessment costs -- Greater connection between product development and assessments 	IBM Lenovo Infineon Amazon Alibaba GE SAP Samsung Embraer Other
Industry and commerce – SMEs	<ul style="list-style-type: none"> -- Potentially improved ability to plan assessments -- Better ability to understand assessment requirements -- Less expensive assessments -- Greater ability to participate in various assessment schemes due to better visibility. -- Most of the items applied to industry and commerce above 	Guardtime Green Hills
Government	<ul style="list-style-type: none"> -- Better ability to analyze existing assessment schemes, including gap analysis -- Improved ability to anticipate assessment and certification needs -- Better ability to harmonize national and international requirements -- Better ability to provide more flexible assessment schemes for different contexts of use. 	All countries that pursue assessments and certifications China, France, Germany, UK, US, Canada, Australia, Malaysia, and others
Consumers	<ul style="list-style-type: none"> -- Increased trust in ICT products and services -- In the future, greater harmonization of features in 	Click here to enter text.

<p>Liaisons:</p> <p>A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s).</p> <p>Click here to enter text.</p>	<p>Joint/parallel work:</p> <p>Possible joint/parallel work with:</p> <p><input type="checkbox"/> IEC (please specify committee ID) Click here to enter text.</p> <p><input type="checkbox"/> CEN (please specify committee ID) Click here to enter text.</p> <p><input type="checkbox"/> Other (please specify) Click here to enter text.</p>
<p>A listing of relevant countries which are not already P-members of the committee.</p> <p>Not Applicable</p> <p>Note: The committee secretary shall distribute this NP to the countries listed above to see if they wish to participate in this work</p>	
<p>Proposed Project Leader (name and e-mail address)</p> <p>Sun Yan (sunyan@cesi.cn)</p> <p>Claire Vishik (claire.vishik@intel.com)</p> <p>Marcello Balduccini (mbalducc@sju.edu)</p> <p>Click here to enter text.</p>	<p>Name of the Proposer (include contact information)</p> <p>Sun Yan (sunyan@cesi.cn)</p> <p>Claire Vishik (claire.vishik@intel.com)</p> <p>Marcello Balduccini (mbalducc@sju.edu)</p>
<p>This proposal will be developed by:</p> <p><input checked="" type="checkbox"/> An existing Working Group (please specify which one: WG3)</p> <p><input type="checkbox"/> A new Working Group (title: Click here to enter text.)</p> <p>(Note: establishment of a new WG must be approved by committee resolution)</p> <p><input type="checkbox"/> The TC/SC directly</p> <p><input type="checkbox"/> To be determined</p>	
<p>Supplementary information relating to the proposal</p> <p><input checked="" type="checkbox"/> This proposal relates to a new ISO document;</p> <p><input type="checkbox"/> This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;</p> <p><input type="checkbox"/> This proposal relates to the re-establishment of a cancelled project as an active project.</p> <p>Other:</p> <p>Click here to enter text.</p>	

Maintenance agencies and registration authorities

☐ This proposal requires the service of a **maintenance agency**. If yes, please identify the potential candidate:
[Click here to enter text.](#)

☐ This proposal requires the service of a **registration authority**. If yes, please identify the potential candidate:
[Click here to enter text.](#)

NOTE: Selection and appointment of the MA or RA is subject to the procedure outlined in the [ISO/IEC Directives](#), Annex G and Annex H, and the RA policy in the ISO Supplement, Annex SN.

☒ Annex(es) are included with this proposal (give details)

Detailed outline of the proposed document.

ISO #####-#:####(X)

ISO TC JTC/SC 27/WG 3

Secretariat: XXXX

Title Information Security – Security Techniques –Ontology for
ICT Trustworthiness Assessment

WD/CD/DIS/FDIS stage

Warning for WDs and CDs

This document is not an ISO International Standard. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an International Standard.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

*To help you, this guide on writing standards was produced by the ISO/TMB and is available at
<https://www.iso.org/iso/how-to-write-standards.pdf>*

*A model manuscript of a draft International Standard (known as "The Rice Model") is available at
<https://www.iso.org/iso/model document-rice model.pdf>*

Additional information/questions

This appendix shows the XML representation of the ontology from Fig. 2. The representation was generated by the WebProtégé tool.

```
<?xml version="1.0"?>

<rdf:RDF xmlns="http://webprotege.stanford.edu/project/uiqsMk9z3Tzexx0FZiECd#"

  xml:base="http://webprotege.stanford.edu/project/uiqsMk9z3Tzexx0FZiECd"

  xmlns:webprotege="http://webprotege.stanford.edu/"

  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"

  xmlns:owl="http://www.w3.org/2002/07/owl#"

  xmlns:xml="http://www.w3.org/XML/1998/namespace"

  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"

  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">

  <owl:Ontology
rdf:about="http://webprotege.stanford.edu/project/uiqsMk9z3Tzexx0FZiECd"/>


  <!--

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  //

  // Object Properties

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////////

-->
```

