IEEE SA STANDARDS ASSOCIATION

The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS)

Industry Connections Activity Initiation Document (ICAID)

Version: 2.0, 23 September 2020

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Instructions

- Instructions on how to fill out this form are shown in red. It is recommended to leave the instructions in the final document and simply add the requested information where indicated.
- Shaded Text indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
- Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE-SA) Industry Connections Committee (ICCom) Administrator at the following address: industryconnections@ieee.org.
- The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

Name: Meeri Haataja
Email Address: meeri@saidot.ai
Employer: Saidot Ltd
Affiliation:

2. Participation and Voting Model

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

Specify: Entity Based

3. Purpose

3.1. Motivation and Goal

Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

The global market for autonomous and intelligent systems (A/IS) globally is exploding. Market research companies estimate that A/IS solutions revenues will grow from $19 billion in 2018 to more than $52 billion in 2021[1]. Already today AI/S' potential value in industries amounts to between $3.5 trillion and $5.8 trillion annually[2]. A/IS is heavily taken into use in life critical areas such as healthcare, defense or mobility, and great parts of business-critical applications across all industries will rely on A/IS solutions. Access to A/IS defines the prospects of these businesses now and in the future.

While A/IS is gaining traction in all areas of life, a growing number of both A/IS experts and society at large is concerned about A/IS ethics and accountability. Trust will be a critical enabler for A/IS business value realization and market uptake, especially in life critical applications. Responsibility of A/IS operations is being evaluated by customers, partners, authorities and media alike, and becoming an essential part of corporate responsibility.

Intelligent applications will increasingly operate and make decisions and transactions without human intervention. People are accountable for their decisions– every A/IS application should be as well. The technology ecosystem calls for solutions that will secure fair and transparent development of A/IS. In order to meet these demands, future A/IS needs certifiable processes vetted by a trusted organization to establish easily identifiable marks providing their reliability and safety to the general public.

In the current atmosphere of A/IS development, there are a number of companies, organizations and academic institutions providing impact assessments or other similar tools to help identify when a product, service or system is accountable, trustworthy or beneficial.

At the moment, however, there is no trusted SDO (standards development organization) offering any form of certification Initiative that an organization utilizing an A/IS impact assessment on their products, services or systems could approach to receive a badge or mark to demonstrate to their customers, stakeholders and society at large that they were *formally and publicly validated* to be accountable, trustworthy or beneficial by a trusted expert body of peers.

The goal of The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS)ECPAIS is to provide the world's first (based on our research) specification and body of its kind to enable a badge or mark for A/IS products, services and systems. Specifically, ECPAIS will enable evaluation based on the processes and outcomes of an organization's products/services and systems using a risk-based approach.

The value of this certification process in the marketplace and society at large cannot be underestimated. The proliferation of systems in the form of smart homes, companion robots, autonomous vehicles or any myriad of products and services that *already exist*

today desperately need to easily and visually communicate to consumers and citizens whether they are deemed "safe" or "trusted" by a globally recognized body of experts providing a publicly available and transparent series of marks.

A secondary goal of this Initiative is to highlight the work found in IEEE's landmark paper, *Ethically Aligned Design* and the developing efforts of the IEEE P7000 Standards Series. While it is recognized work from any standardization working group cannot be used until a project is approved, ECPAIS will develop compatible certification criteria by working with IEEE P7000, P7001, and P7003 volunteers to ensure alignment with working groups' key themes and ideals. As much of the work of ECPAIS will be publicly available as case studies , this work will be immediately shared with IEEE P7000 working groups to improve their efforts with direct feedback from real-world scenarios of A/IS products, services and systems being utilized in practice. Moreover, ECPAIS will have an important role as a sounding board for industry while building best practices for A/IS transparency, accountability and check for bias and taking into use A/IS certifications.

3.2. Related Work

Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

This work is directly related to the output of the Industry Connections Group called The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems. ("The IEEE Global Initiative"). The IEEE Global Initiative has created a landmark paper called *Ethically Aligned Design* which provided the inspiration for the creation of the IEEE P7000 standards series which now has fourteen approved standardization groups in development.

In terms of organizations offering impact assessment type tools or services that would be directly relevant to the certifications ECPAIS would create, organizations have initiated offerings along these lines, while academic institutions also are working in this space.

3.3. Previously Published Material

Provide a list of any known previously published material intended for inclusion in the proposed deliverables of this activity.

Ethically Aligned Design, First Edition.
ECPAIS CTA/CTT document, V1.

3.4. Potential Markets Served

Indicate the main beneficiaries of this work, and what the potential impact might be.

Focus industries:

- Governmental offices
- Cities
- Public safety
- Health
- Mobility
- Education
- Telecommunications
- Financial services

- Retail
- Potential AI certification service providers
- Manufacturing
- Justice

3.5 How will the activity benefit the IEEE?

The AI Ethics oriented certification criteria are intended to enable cities and public and private organizations in diverse vertical industries, such as healthcare and medical devices, financial services, automotive, manufacturing and elder services, to identify themselves as being trustworthy and beneficial in their use of A/IS products, services and systems they develop or operate. This helps keep IEEE at the forefront of AI Ethics as one of the first SDOs to implement a values-based, ethical, risk-based approach for autonomous and intelligent systems, reinforcing IEEE's trusted brand, and expanding IEEE's reach by engaging with communities and industry verticals. In addition, development of ethical transparency, accountability, and privacy criteria for Contact Tracing Applications/Contact Tracing Technology (CTA/CTT) is fully aligned with IEEE's aim to advance technology for the benefit of humanity. The ECPAIS works link to the ICAP program and offers an additional mechanism for ICAP to apply its expertise in a relevant and necessary marketplace.

4. Estimated Timeframe

Indicate approximately how long you expect this activity to operate to achieve its proposed results (e.g., time to completion of all deliverables).

Expected Completion Date: 10/2022

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the IEEE-SA Standards Board. Should an extension be required, please notify the ICCom Administrator prior to the two-year mark.

5. Proposed Deliverables

Outline the anticipated deliverables and output from this IC activity, such as documents (e.g., white papers, reports), proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

ECPAIS operates in an industry driven and iterative process for developing certifications / marks for A/IS. ECPAIS's goal is to enable work in cycles of development and industry validation, and has developed the following outcomes:

- Criteria and process for a Certification / mark focused on Transparency in A/IS (Completed)
- Criteria and process for a Certification / mark focused on Accountability in A/IS (Completed)
- Criteria and process for a Certification / market focused on Algorithmic Bias in A/IS (Completed)
- Criteria and process for a Certification/Mark focused on ethical Privacy in A/IS
- Customised suites of above criteria tailored for the requirements and priorities of specific industry and application sectors

To support rapid testing and feedback loop with the industries as well as involvement of potential certifying bodies, ECPAIS will develop:

- Industry Vertical sub-working groups contextualizing ECPAIS Criteria for

industry-specific use cases

- Continuous refinement of existing criteria and expansion into new areas
- Whitepapers providing support and rationale for ECPAIS and ECPAIS applications
- Webinars within scope in partnership with The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems and Digital Inclusion, Identity, Trust and Agency (DIITA) programs
- Recommendations on an implementation process to qualify and guide assessors and other bodies engaged in a certification process

5.1 Open Source Software Development

Indicate whether this IC Activity will develop or incorporate open source software in the deliverables. All contributions of open source software for use in Industry Connections activities shall be accompanied by an approved IEEE Contributor License Agreement (CLA) appropriate for the open source license under which the Work Product will be made available. CLAs, once accepted, are irrevocable.

Will the activity develop or incorporate open source software (either normatively or informatively) in the deliverables?: Not at this time.

6. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICCom.

Initially, the general operation of ECPAIS will rely on IEEE SA resource support of ECPAIS volunteers. We are looking to leverage the ICAP program and governance for launching and initiating certification program operations.

7. Management and Procedures

7.1. IEEE Sponsoring Committee

Indicate whether an IEEE sponsoring committee of some form (e.g., an IEEE Standards Sponsor) has agreed to oversee this activity and its procedures.

Has an IEEE sponsoring committee agreed to oversee this activity?:
No.

If yes, indicate the sponsoring committee's name and its chair's contact information.

Sponsoring Committee Name:
Chair's Name:
Chair's Email Address: who@where
Chair's Phone: Number, including country code

Additional sponsoring committee information, if any.

7.2. Activity Management

If no IEEE sponsoring committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc).

The ECPAIS Executive Committee is Chaired by Meeri Haataja of Saidot with Vice Chair Ali Hessami of Vega Systems Ltd. The Executive Committee may be expanded based on consensus of program participants.

7.3. Procedures

Indicate what documented procedures will be used to guide the operations of this activity; either (a) modified baseline *Industry Connections Activity Policies and Procedures,* (b) Sponsor policies and procedures accepted by the IEEE-SA Standards Board, or (c) Working Group policies and procedures accepted by the Working Group's Sponsor. If option (a) is chosen, then ICCom review and approval of the P&P is required. If option (b) or (c) is chosen, then ICCom approval of the use of the P&P is required.

A modified baseline Industry Connections Activity Policies and Procedures is used to guide the operations of this activity.

8. Participants

8.1. Stakeholder Communities

Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity, and will be invited to participate.

Stakeholders include entities developing A/IS based products and services, academic institution experts in A/IS, and government organizations involved with AI/S policy and/or regulations.

8.2. Expected Number of Participants

Indicate the approximate number of entities (if entity-based) or individuals (if individual-based) expected to be actively involved in this activity.

Approximately 30 entities participate in this effort.

8.3. Initial Participants

Provide a list of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

Use the following table for an entity-based activity:

Entity	Primary Contact	Additional Representatives
Saidot	Meeri Haataja	
Vega Systems, London-UK	Prof. Ali Hessami https://VegaGlobalSystems.com	
UN HLPDC	Amandeep Gill	
Ethics for AI and Automated Decision Making	Aurelie Jacquet	
Treasury Board of Canada Secretariat	Benoit Deshaies	
City of Vienna	Sandra Heissenberger	
EY	Ansgar Koene	
Nell Watson Inc	Eleanor Watson	
Accenture	Erica Haybron	
Verses	Gabriel Rene	
Nokia	Gilbert BUTY	
Symbiotica LLC	Gisele Waters, Ph.D	
PNNL	Jonathan Barr	
Kela	Juuso Rahkola	
Future Design Station	Liza Lichtinger	
Population Register Centre	Marko Latvanen	

EFOSS Consulting, Trade and Industrial Corp.	Necati Doruk Ozulu	
H5	Nicolas Economou	
Ministry of Finance (Finland)	Niko Ruostetsaari	
Birmingham City University	Ozlem Ulgen	
City of Espoo	Päivi Sutinen	
Sorbonne University	Raja Chatila	
C-DOT	Shikha Srivastava	
Sitra	Riitta Vanska	
Accenture	Rumman Chowdhury	
VERSES Foundation	Steven Swanson	
UNICEF	Steven VOSLOO	
NEC Corporation	Takashi Egawa	Takashi TABE
Pacific Northwest National Lab	Theodore Nowak	
NYCEDC	Toby Childs	
eSOL Co., Ltd.	Tsuyoshi Sakurai	