

The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems Industry Connections Activity Initiation Document (ICAID)

Version: 4.0, 3 February 2022

IC16-002-04 Approved by the CAG 14 March 2022

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.

Executive Director: John C. Havens
Email Address: j.c.havens@ieee.org
Employer: IEEE
Affiliation:

Chair: Raja Chatila
Email Address: raja.chatila@gmail.com
Employer: Sorbonne University, Paris, France
Affiliation: Sorbonne University

Vice-Chair: Kay Firth-Butterfield
Email Address: kay.firth-butterfield@weforum.org
Employer: World Economic Forum (WEF)
Affiliation:

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

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).

Individual-Based

Multiple Committees including an Executive Committee, 13 content-oriented Committees and supporting Committees have been developed and are active. Voting modalities and approval thresholds within the subgroups and at the level of the Steering Committee are specified in the P&Ps.

3. Purpose

This ICAID requests a renewal of IC16-002 for a continuation of the work in progress by the volunteers of this activity. Accomplishments of the group to date, and plans for future work are described in the subsequent sections of this document

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.

Technologies, methodologies, and systems that aim at reducing human intervention in our day-to-day lives are evolving at a rapid pace and are poised to transform the lives of individuals in multiple ways. However, there are concerns and confusion surrounding such technologies and their societal impacts (e.g., self-driving cars, drones, automation in relation to the future of work, and intelligent personal assistants). Competing tensions fuel a dialogue that is often polarized and filled with misconceptions. Overly optimistic advocacy on the positive impacts compete with legitimate concerns on the emerging harms related to privacy, discrimination, job losses, security of critical infrastructure and other concerns.

In the public perception, long-term issues, such as the [possibility of a technological “singularity”](#) and the associated threat of loss of agency for humanity, are overblown and bring fear versus solutions. The need for regulation of autonomous and intelligent machines that are already “out there” (drones, driverless cars, Lethal Autonomous Weapons, etc.) is urgently needed now, along with a direct focus on how to empower all individuals to have access to and control over the data that represents their identity in the digital and virtual arenas. Another significant debate that has been raging is the undesirable effects of automation and its impact on jobs. While [there has been a great deal of varying research](#) on the future of jobs in light of automation, a balanced and objective treatment on this subject has been sorely lacking.

Thus, there is an urgent need for a more defined and productive dialogue and debates around the ethical and social implications of the related technologies, both at local/regional and international/global level. These debates must be informed by technologists, ethicists, policymakers, business leaders, civil society and end-users alike to arrive at new adaptive frameworks that address the complexity of these issues yet still provide pragmatic and clear-cut steps. Emphasis should also be placed on important factors such as environmental, cultural, political and socio- economic and resource constraints to address humanitarian issues holistically both in developed and developing economies.

IEEE, the global organization bringing together hundreds of thousands of scientists and experts worldwide, is well positioned to offer all these voices a variety of platforms, bringing together experts in fields relating to autonomous and Intelligent systems (A/IS) and their ethics, including but not limited to: Robotics, Artificial Intelligence, Control Systems, Computational Intelligence, Machine Learning, Deep Learning, Cognitive Computing, Affective Computing, and in general algorithmically based program. Experts will also span fields relating to engineering, science, economics, ethics, politics, and health. Our Initiative is global, open and

inclusive, welcoming all individuals or representatives of organizations dedicated to advancing technology for humanity by prioritizing the use of ethical considerations in autonomous systems design.

Since the issues are in very different degrees of maturity, various environments and methods are necessary, spanning from conferences and events to debate and document different opinions, to identifying key issues and related research fields, as well as – for the more mature matters – to creating consensus around recommended guides, standards and codes of conduct. This would all take place in an open, inclusive and transparent way, using IEEE’s principles for open and democratic dialog and formal consensus building platforms wherever possible.

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.).

There are a number of organizations dealing with ethical issues related to autonomous and intelligent systems, including the OECD, The EU Parliament and Commission, and various governments including Japan, Singapore, several countries in Europe, and the United States. To date, The IEEE Global Initiative is still one of the earliest movers in this space, where Ethically Aligned Design has been utilized in the creation of dozens of other AI Principles around the world. While the number of organizations creating AI Principles and weighing in on A/IS issues has increased tenfold since 2015, IEEE and The IEEE Global Initiative are still unique in their efforts compared to the organizations below in that it is:

- **Global in nature** – Besides North America and Europe, the Initiative features a growing number of Members from China, South Korea, Africa, India, Brazil, and other regions. This is important to create our publication, *Ethically Aligned Design* in a truly “global” way, where eastern and other ethical traditions (beyond western) are considered in our work.
- **Cross-disciplinary in nature** – many organizations focus only on academics from one or two disciplines whereas The Initiative features Members from the realms of economics, science, engineering, ethics, philosophy, and policy making, among other areas.
- **Corporate and non-corporate** – while some organizations (like the Partnership on AI) are focused on creating principles or codes for the corporate world alone (or that focus on corporate issues) The Initiative includes corporate members as they’re so critical to A/IS ethical issues but can also provide recommendations that balance corporate and non- corporate, NGO, or perspectives beyond market issues.
- **From Principles to Practice** – while some organizations are focused solely on reporting or commenting on the AI or A/IS environment, The IEEE Global Initiative has directly inspired the creation of over 14 Standards Working Groups (at least two of which are scheduled to launch in early 2020), the OCEANIS standards community, The Council on Extended Intelligence (a partnership between IEEE-SA and MIT) and ECPAIS, a certification focused program designed to drive revenue, additional thought leadership, and a large influx of new volunteers to IEEE / The IEEE Global Initiative / IEEE-SA community.

We do wish to note, however, that the organizations listed below all contain representatives who are members of The Initiative. We are not, in any way, trying to say, “The Initiative is ‘better’” than any of these fine organizations, but rather the unique need and niche we fill.

Partner/ Related Organizations beyond IEEE focusing on similar work:

- The Partnership on AI
- The Future of Life Institute
- The British Standards Institute
- ISO
- Harvard Berkman Klein (Harvard University)
- The Alan Turing Institute

At the time of writing IEEE-SA’s P7000 Series (for which the standards PARs originated based on the work of this activity) is the largest global suite of Standardization Projects by far focused on the intersection of A/IS and ethics.

These approved IEEE-SA approved Standardization Projects and completed standards include:

- **IEEE 7000™** - 2021- Model Process for Addressing Ethical Concerns During System Design
- **IEEE P7001™** - Transparency of Autonomous Systems
- **IEEE P7002™** - Data Privacy Process
- **IEEE P7003™** - Algorithmic Bias Considerations
- **IEEE P7004™** - Standard on Child and Student Data Governance
- **IEEE 7005™** - 2021 - Standard on Employer Data Governance
- **IEEE P7006™** - Standard on Personal Data AI Agent Working Group
- **IEEE P7007™** - Ontological Standard for Ethically driven Robotics and Automation Systems
- **IEEE P7008™** - 2021 - 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- Wellbeing Metrics Standard for Ethical Artificial Intelligence and Autonomous Systems
- **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 Emulated Empathy in Autonomous and Intelligent Systems

Other working groups pending approval at the time of ICAID Submission:

- **IEEE P2863** - Recommended Practice for Organizational Governance of Artificial Intelligence

PARS accepted at time of ICAID Submission include:

- IEEE P7030: [Recommended Practice for Ethical Assessment of Extended Reality \(XR\) Technologies](#)
(Potential new series of standards)
IEEE P7010.1: Recommended Practice for Environmental Social Governance (ESG) and Social Development Goal (SDG) Action Implementation and Advancing Corporate Social Responsibility

P3119: [Standard for the Procurement of Artificial Intelligence and Automated Decision Systems](#)
(Potential new series of standards)

PARS Under Discussion at time of ICAID Submission include:

- A Standard focused on the Ethics of Quantum Computing

3.3 Previously Published Material

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

The IEEE Global Initiative has now published three versions of its document, *Ethically Aligned Design*:

- [Version 1 can be found here.](#)
- [Version 2 can be downloaded here.](#)
- [EAD First Edition can be found here.](#)
- The Initiative also recently completed a report entitled, *Measuring What Matters in the Era of Global Warming and The Age of Algorithmic Promises* written with Lord Nicholas Stern as part of a global AI Governance project in conjunction with the Australian Minderoo Foundation. [The report can be found here.](#)
- The EAD for Business paper launched and [is available here.](#)

3.4 Potential Markets Served

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

In terms of the general audience and stakeholders for the work of The IEEE Global Initiative, our Mission statement says the following:

To ensure every stakeholder involved in the design and development of autonomous and intelligent systems is educated, trained, and empowered to prioritize ethical considerations so that these technologies are advanced for the benefit of humanity.

By “stakeholder” we mean anyone involved in the research, design, manufacture, or messaging around intelligent and autonomous systems, including universities, organizations, governments, and corporations making these technologies a reality for society.

Our goal is that *Ethically Aligned Design* will provide insights and recommendations that provide a key reference for the work of technologists in the related fields of science and technology in the coming years.

3.5 How will the activity benefit the IEEE, society, or humanity?

Describe how this activity will benefit the IEEE, society, or humanity.

To date, the work of The IEEE Global Initiative, with the publication of every version of *Ethically Aligned Design*, has brought global attention to IEEE in key policy, media, corporate, and engineering arenas. The Chair of The IEEE Global Initiative, Raja Chatila, is one of less than 60 members of the EU’s High-Level Experts Group which is

creating foundational precedents for law and regulation not only for the EU but for the entire planet. Raja, John Havens, and Konstantinos Karachalios have also spoken at dozens of events since 2015 specifically about this work, including at the United Nations, the OECD, EU Parliament, The World Government Summit in Dubai, and in global locations including China, Thailand, Japan, India, South Korea and multiple EU countries. Corporate organizations now collaborating with IEEE based on the work of the Initiative include VISA, Google, Mastercard, Capital One, Salesforce, Tencent (Tik Tok) and many more. EAD along with our newer publications continue to position IEEE as a key global thought leader not only in ethical / policy aspects of AI / Autonomous and Intelligent Systems, but also in technical realms regarding areas within the AI realm including health, AI for cities, data governance (sovereign data) and economics. The creation of our AI Expert Ethics Bureau (see below) will also provide the equivalent of a global speaker's bureau not only for The Initiative but for any area within IEEE looking for subject matter experts or speakers for various events.

This Initiative also inspired the [IEEE CertifAIEd program](#), which was [highlighted by a partnership in Vienna featured in this press release](#).

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: March 2024

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICom and the responsible committee of the IEEE SA Board of Governors. Should an extension be required, please notify the ICom 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.

Five new Committees were added in 2019 focusing on highlighting aspects of *Ethically Aligned Design* for specific verticals outside of academia and engineering. These include EAD (*Ethically Aligned Design*) for Parenting, EAD for Health, EAD for the Arts, and EAD for Business. Plans are in the works for additional committees including EAD for Climate, and EAD for Advertising.

We are also working with contacts in Mexico, India and Africa to translate portions of *Ethically Aligned Design*, First Edition while also creating new, cultural / regional relevant material to be added to an updated version of *Ethically Aligned Design* to be released in 2021.

Committees have been updated / refined and now include (active participation): EAD for Business (same committee working on a new paper) EAD for the Arts, Power & Technology, AI Ethics for Education, Trust & Agency for AI, Diversity, Equity and Inclusion for AI.

Moving forward, The Initiative will be producing the following:

- **Multiple EAD for...Committee articles / publications.** As stated above, EAD for Business will launch a new paper in Q2 of 2022. EAD for the Arts will launch their first paper in Q1 of 2022.

Multiple EAD “Toolkits” based on industry verticals. A toolkit focused on the finance sector is currently underway which will provide an opportunity for thought leadership plus direct relevance for IEEE-SA’s ECPAIS certification efforts. This was produced and is available here - [The IEEE Trusted Data and Artificial Intelligence Systems \(AIS\) Playbook](#) for Financial Services (this evolved from a paper to become an Industry Connections Program).

- **The creation of an AI Ethics Experts Bureau.** By identifying 45-50 subject matter experts in our larger Initiative community, we will establish a simple ‘go-to’ resource for anyone in IEEE-SA or IEEE to quickly identify speakers for events or experts to be utilized in consultative-oriented engagements. By certifying / validating these experts and providing specifics about their location/region, expertise, and abilities, this Bureau will save massive amounts of time, resources and money for IEEE staff in identifying speakers on a regular basis while also driving revenue, thought leadership, and media amplification when these experts identify themselves as being part of the IEEE expert ecosystem. This is still in development and will be designed to potentially support all of IEEE SA and eventually IEEE.

Plans for a large-scale event to update *Ethically Aligned Design*. Our Executive Committee is currently in discussion to update EAD1e, either by providing new content to existing Committees and/or adding new Chapters. As stated above, a key goal of this work is to invite members from underrepresented regions (from EAD1e) including South America, India, and Africa. A key goal of this meeting is to invite young people and encourage diversity as much as possible. This has evolved to become a new process focused on Sustainability being driven by [The IEEE Sustainable Infrastructures and Community Development program](#).

- **Multiple Workshops based on our success in Canada.** As a way to drive education focused activities for corporate partners and audiences, we are currently planning for future workshops not only in the finance sector, but in health and social media (Tik Tok). There will be two of these in 2022, managed by SICDP but supported by this Initiative.

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. Industry Connections Activities shall comply with the IEEE SA open source policies and procedures and use the IEEE SA open source platform for development of open source software. Information on IEEE SA Open can be found at <https://saopen.ieee.org/>.

Will the activity develop or incorporate open source software (either normatively or informatively) in the deliverables?

We are very open to the creation of open source software but don’t have specific plans for anything along these lines at this time. We are still working on our A/IS Glossary which is freely provided as a creative commons document.

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 ICom.

The Industry Connections/Initiative will be largely self-funded, with IEEE-SA administrative support and support for the Executive Director.

Revenue to offset investment in the Initiative will come from Workshops based on our successful Proof of Concept with Scotiabank in Canada, along with revenue from the AI Ethics Experts Bureau.

7. Management and Procedures

7.1 Activity Oversight Committee

Indicate whether an IEEE Standards Committee or Standards Development Working Group has agreed to oversee this activity and its procedures.

Has an IEEE Standards Committee or Standards Development Working Group agreed to oversee this activity?

No.

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

IEEE Committee Name: Committee Name

Chair's Name: Full Name

Chair's Email Address: who@where

Additional IEEE committee information, if any. Please indicate if you are including a letter of support from the IEEE Committee that will oversee this activity.

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

7.2 Activity Management

If no Activity Oversight 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.).

An Executive Committee of ~15 volunteers have been overseeing the work of The Initiative since April of 2016. The Executive Director in conjunction with The Initiative Chair are in regular contact to drive overall strategy and to deal with any issues that arise on a more frequent basis.

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* ([entity](#), [individual](#)), (b) *Abridged Industry Connections Activity Policies and Procedures* ([entity](#), [individual](#)), (c) Standards Committee policies and procedures accepted by the IEEE SA Standards

Board, or (d) Working Group policies and procedures accepted by the Working Group’s Standards Committee. If option (a) is chosen, then ICCOM review and approval of the P&P is required. If option (c) or (d) is chosen, then ICCOM approval of the use of the P&P is required.

Modified baseline *Industry Connections Activity Policies and Procedures*

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.

As listed above, our stakeholder communities refer to anyone involved in the research, design, manufacture, or messaging around intelligent and autonomous systems, including universities, organizations, governments, and corporations making these technologies a reality for society.

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.

There are already 3,000 members of The Initiative and we expect at least 500 more to be involved in the coming 16-24 months. Note that the 3,000 includes members from the Initiative, the P7000 communities, ECPAIS, and our EAD for...Committees along with hundreds of members regularly receiving our newsletter.

8.3 Initial Participants

Provide a few 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 individual-based activity:

Individual Name	Employer	Affiliation

[Click here to see an updated listing of Initiative Members.](#)

Below is the current listing of our Executive Committee Members along with their primary affiliation. (*Contact information listed below*).

- Raja Chatila / Professor of Robotics AI and Ethics, Sorbonne Université, Institute of Intelligent Systems and Robotics, France. Past President of IEEE RAS
- Kay Firth-Butterfield / Head of AI and Machine Learning for the World Economic Forum
- John C. Havens / Executive Director of The IEEE Global Initiative
- Greg Adamson / Past-President, IEEE Society on Social Implications of Technology
- Virginia Dignum / Associate Professor, Department of Computing Sciences, Umea University, Sweden
- Francesca Rossi / Full Professor of Computer Science University of Padova, Italy
- AJungMoon / Director, Open Roboethics Institute / Professor, McGill University, Canada
- Richard Mallah / Director of Artificial Intelligence Projects Future of Life Institute

- Monique Morrow / Chief Technology Strategist
- Malavika Jayaram / Executive Director, The Digital Asia Hub
- Alan Winfield / Professor of Robot Ethics, University of the West of England, Bristol UK
- Sven Koenig / Professor of Computer Science, University of Southern California, USA
- Danit Gal / MSc. Oxford Internet Institute
- Hagit Messer Yaron / Professor of Electrical Engineering, Tel Aviv University
- Eileen Lach / Former Lead Legal Counsel, IEEE
- Karen Bartleson / 2017 President for IEEE
- Sara Mattingly-Jordan / Future of Privacy Forum
- Lisa Morgan / Tech Consultant and Journalist

8.4 Activity Supporter/Partner

Indicate whether an IEEE committee (including IEEE Societies and Technical Councils), other than the Oversight Committee, has agreed to participate or support this activity. Support may include, but is not limited to, financial support, marketing support and other ways to help the Activity complete its deliverables.

Has an IEEE Committee, other than the Oversight Committee, agreed to support this activity? **No**

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

IEEE Committee Name: Committee Name

Chair's Name: Full Name

Chair's Email Address: who@where

Please indicate if you are including a letter of support from the IEEE Committee.