

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

Version: 2_2.7, 20 February 2018

IC16-002-02 Approved by the IEEE-SASB 8 March 2018

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: John C. Havens, Executive Director of the IEEE Global Initiative

Email Address: johnchavens@gmail.com / john.havens.us@ieee.org

Phone: 917-597-3323

Employer: N/A

Affiliation: Contracted by IEEE SA for this purpose

Chair: Raja Chatila (CNRS Institute for Information Systems and Technologies, France; Past President of IEEE RAS)

Vice Chair: Kay Firth-Butterfield (Head of AI and Machine Learning for WEF)

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 active for more than a year. Voting modalities and approval thresholds within the subgroups and at the level of the Steering Committee are specified in the P&P.

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

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 over... the need for regulation of autonomous machines that are already "out there" (drones, driverless cars, Lethal Autonomous Weapons, etc.). 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, To date, The IEEE Global Initiative is unique in its efforts compared to the organizations below in that it is:

- **Global in nature** – The Initiative features a growing number of Members from China, South Korea, Africa, India, Brazil, and other regions. This is important to create our paper, Ethically Aligned Design in a truly “global” way, where eastern and other ethical traditions (beyond utilitarianism, etc) 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.

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

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 include:

- **IEEE P7000™** - 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 P7005™** - 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™** - 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 P7010™** - 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

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 two versions of its document, *Ethically Aligned Design*:

- [Version 1 can be found here.](#)
- [Version 2 can be downloaded here.](#)

The Initiative has also produced a number of translations of EAD's Executive Summary in multiple languages, plus three additional reports and one video in the course of their activities. [These can all be found 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.

4. Estimated Timeframe

Work on the Industry Connections/Initiative by the Executive Committee of The Initiative has been operating since the inception of the first version of this ICAID.

An event featuring The Initiative in Tokyo, Japan is already being planned for March, 2018. Work focused on creating the final version of EAD has already begun, and further PAR recommendations stemming from work of the Initiative have been submitted to IEEE-SA for consideration.

Expected Completion Date: March 2020

Currently the plans for this Industry Connection expand over a period of two years.

5. Proposed Deliverables

Moving forward, The Initiative will be producing the following:

- The final version of *Ethically Aligned Design*, featuring an aggregated and condensed set of “Issues” including feedback from Versions 1 and 2 of EAD where “recommendations” will also be final in nature, stemming from the result of consensus based voting by membership. It is this global and open process (where all versions of EAD have been offered as Creative Commons documents and the first two versions have been Requests for Inputs) that makes the process of creating EAD unique both for IEEE and the larger A/IS global arena.
- EAD University (working title). As a way to galvanize content from EAD, a curriculum will be created for ten-fifteen global Universities to utilize targeted towards teaching engineers how to prioritize ethical considerations at the heart of all technology design. Geared to launch at the same time as the final version of EAD, the vision of EAD University is to add more universities, expand its curriculum, and grow over the coming years as a way to highlight IEEE’s vision of “Advancing Technology for Humanity” while directly applying the Mission Statement of The Initiative as well.

- EAD inspired Policy. By utilizing the Principles within Version 2 and the final version of EAD, The Initiative will create multiple, succinct A/IS policy position statements to submit to IEEE's Board to be considered as official IEEE positions on these topics.

6. Funding Requirements

The Industry Connections/Initiative will be self-funded, with IEEE-SA administrative support and support for the Executive Director. It will also seek support by outside contributions from other partners in the Initiative and/or future Alliance.

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?:

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

No

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).

An Executive Committee of ~15 volunteers has been overseeing the work of The Initiative since April of 2016.

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*

8. Participants

8.1. Stakeholder Communities

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

There are already 250+ members of The Initiative and we expect at least 100 more to be involved in the final stage of EAD development.

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 individual-based activity:

[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 and Ethics, Sorbonne Université, Institute of Intelligent Systems and Robotics, France. Past President of IEEE RAS / raja.chatila@gmail.com
- 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, Faculty of Technology Policy and Management, TU Delft
- Francesca Rossi / Full Professor of Computer Science University of Padova, Italy
- AJungMoon / Director, Open Roboethics Institute
- Richard Mallah / Director of Artificial Intelligence Projects Future of Life Institute
- Raj Madhavan / Founder & CEO, Humanitarian Robotics Technologies, LLC, Maryland, USA
- Monique Morrow / Chief Technology Strategist
- Ron Arkin / Regents' Professor, the College of Computing at Georgia Tech
- Phillip Hall / Member, IEEE-USA Government Relations Council
- 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

Email addresses:

"AJung Moon" <ajung@amoon.ca> ,

"Alan Winfield" <aftwinfield@googlemail.com>,
"Danit Gal" <danit_g@hotmail.com>,
"Francesca Rossi" <frossi@math.unipd.it>,
"Greg Adamson" <greg.adamson.engineer@gmail.com>,
"HAGIT MESSER" <hagitmesser@gmail.com>,
"John Havens" <johnchavens@gmail.com>,
"Kay Firth Butterfield" <kay@krwmail.com>,
"Kay Firth-Butterfield" <kay.firth-butterfield@weforum.org>,
"Malavika Jayaram" <mjayaram@digitalasiahub.org>,
"Monique Morrow" <monique.morrow223@gmail.com>,
"Philip Hall" <philip@faerberhall.com>,
"Raj Madhavan" <madhavan.ieeeras@gmail.com>,
"Raja Chatila" <raja.chatila@gmail.com>,
"Richard Mallah" <richard@futureoflife.org>,
"Ronald Arkin" <arkin@cc.gatech.edu>,
"Sven Koenig" <skoenig@usc.edu>,
"Virginia Dignum - TBM" <m.v.dignum@tudelft.nl>