



## Workshop on Smart Grid Technologies and Implications for Inclusive Development in Sri Lanka

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# IEEE: Perspectives on Technology, Society, and Ethics

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# Why Society and Ethics are important to IEEE

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- IEEE has 400,000 members across 160+ countries, including over 100,000 in this region.
- IEEE spends significant effort addressing how technologies are used, not just supporting the professional interests and technologies of its members.
- Its tagline is Advancing Technology for the Benefit of Humanity
- While IEEE first adopted a Code of Ethics in 1912, in 2017 it updated this Code to address key challenges of the 21<sup>st</sup> century.
- I will provide examples, including of a new program, Digital Inclusion through Trust and Agency, to show how IEEE is working to make these changes a reality.

# Holding the public interest paramount

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- In 2017 IEEE underwent an extensive program reviewing its Code of Ethics. While prompted by consideration of artificial intelligence, the review looked at several other areas of responsibility.
- IEEE previously required members “**to accept responsibility** in making decisions consistent with the safety, health, and welfare of the public”. Through the process of review this was strengthened, “to **hold paramount** the safety, health, and welfare of the public”.
- For IEEE members, this creates a direct link between the individual and the public interest.

# Non-discrimination

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- IEEE's Code of Ethics was originally adopted more than 100 years ago. It has been amended several times to maintain relevance.
- Prior to the 2017 review, the Code already required members “to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression”
- This applies in all circumstances, from treatment of the public through the operation of technologies to treatment of current and potential work colleagues

# Ethical design and sustainable development

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- Another change in 2017 which reflected the practice of IEEE in recent years was “to strive to comply with ethical design and sustainable development practices”.
- Through its Global Initiative on Ethics of Autonomous and Intelligent Systems, IEEE has widely promoted the concept of ethical design.
- Reference to sustainable development practices, generally associated with the UN’s Sustainable Development Goals, aligns IEEE to this universally important initiative.

# Understanding of technology

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- In addition, the statement on understanding of technology was significantly broadened: beyond encouraging a general “understanding of technology” among an undefined audience, the changes call on members “to improve the understanding by individuals and society of the capabilities and societal implications of conventional and emerging technologies, including intelligent systems”.
- To achieve this requires among other things an engagement in public policy development, something that IEEE has commenced in recent years, and which is now supported in the Code.
- The inclusion of “intelligent systems” represents the fundamental shift IEEE sees coming with these technologies.

# Digital Inclusion through Trust and Agency (DITA)

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- As indicated in its Code of Ethics, IEEE has a unique position: being the largest global association of professionals working with technologies; and addressing the impact of those technologies.
- The program Digital Inclusion through Trust and Agency (DITA) is an example of the special role IEEE can play based on this unique position.
- “Cyberspace”, the digital world, emerged in the second half of the 20th Century. Access to this on-line world, this world of information, is a precondition for engagement in the 21st Century global community.
- IEEE has adopted as policy the aspiration of Internet for All.
- The DITA program works across the gamut of issues, including access, trust, and human dignity.

# Workstreams in DITA

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- The DITA program takes an end to end view of the challenge, addressing many environments. One of the most important is maintaining human dignity in design of human-to-machine and machine-to-machine handling of identity, including privacy. Cyber security is a key aspect.
- This area has proven of particular interest to lawyers working with technology. Technologies considered include IoT and Blockchain.
- DITA is also paying particular attention to health technologies including pharmaceutical supply chain provenance.
- DITA is modelled on IEEE's highly successful Global Initiative on Ethics of Autonomous and Intelligent Systems, which resulted in a major report prepared by 250 global experts.



# Digital Inclusion workstreams

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- DITA's workstreams include:
  - Affordability: of technology (for network builders); of access (for Internet users); in network sustainability.
  - Accessibility: addressing digital divide, especially urban/rural; and barriers of wealth, authority, literacy and gender inequality.
- Dr Sarbani Banerjee from IIT-Bombay leads these two streams. Her team has implemented a 25 village pilot identifying relevant technologies and a planning tool to match specific local geography to technology.
- Her approach provides broadband (2Mbps) to village families.
- Frugal 5G is a technology that sits across both workstreams.

# IEEE Foundation (philanthropic) programs

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- The IEEE Foundation is driving a number of important programs:
- [IEEE Smart Village](#), an initiative to bring electrical power, access to education, and participation in the global economy to more than 50,000 people in remote, energy-deprived communities
- [EPICS in IEEE](#) assists communities in achieving improvements, encouraging students to pursue careers in engineering for community enhancement,
- [IEEE Power & Energy Scholarship Plus Initiative](#), to develop the next generation of power leaders, has provided millions of dollars in scholarships to nearly 1,000 electrical engineering students.
- [REACH](#) offers pre-university social studies teachers free access to educational resources that promote the relationship between engineering, technology, and society.

# Benefits of multi-disciplinary approaches

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- There are many initiatives addressing similar tasks around the world.
- IEEE's unique position is that it is a professional membership based organisation, working in the day to day fields of its members
- DITA adopts an inclusive approach, seeking social scientists, lawyers, economists, health professionals and other professions
- IEEE depends on members and others to identify the problems to work on. Collaboration with ADB is of great interest, because the problems ADB addresses are important and challenging, and occur in the real world.

# Links

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- IEEE Code of Ethics: <https://www.ieee.org/about/corporate/governance/p7-8.html>
- IEEE Smart Village: <http://ieee-smart-village.org/>
- Digital Inclusion through Trust and Agency:  
[http://standards.ieee.org/develop/indconn/digital\\_inclusion/](http://standards.ieee.org/develop/indconn/digital_inclusion/)
- IEEE Society on Social Implications of Technology: <http://technologyandsociety.org/>
- IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems:  
<https://ethicsinaction.ieee.org/>
- IEEE Foundation: <https://www.ieeefoundation.org/>
- EPICS in IEEE: <http://epics.ieee.org/>
- IEEE Power and Energy Society: <https://www.ieee-pes.org/>
- REACH: [www.ee-scholarship.org](http://www.ee-scholarship.org)
- IEEE Power & Energy Scholarship Plus Initiative: [www.ee-scholarship.org](http://www.ee-scholarship.org)

# Some recent IEEE SSIT engagements



Shri Narayana Murthy and Greg Adamson; Bengaluru, 27 March 2018

Greg Adamson, University of Melbourne; Shani Fernando, University of Colombo; Thavisha De Silva, Sri Lanka Institute of Information Technology; ManoRanjana De Silva, NSBM Green University; Yasumi Wickramasinghe, University of Moratuwa; Colombo, 2 April 2018.

