



2020 Activity Report by Standing Committee on Engineering for Innovative Technologies

October, 2020

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National Membership Building

CEIT Membership Update
36 Members from **27** Countries



WFEO-CEIT NEWSLETTER

January 2020

EVENT REPORT

World Engineers Convention 2019 (WEC 2019)



The World Engineers Convention 2019 was held in Melbourne, Australia, from 20 to 22, November. There were 3000+ delegates from more than 75 countries gathering in Melbourne to discuss how engineers can build a better world. Dr. PENG Jing, the Chair of WFEO-CEIT, CEIT members and CEIT secretariat participated in this three-days-forum.



Opening Ceremony of WEC 2019



Session on Innovative Technologies

As the co-organizer of the Session on Innovative Technologies, which was successfully held on November 21 at Melbourne Convention Centre. CEIT team invited Prof. GONG Ke, the President of WFEO, Mr. Dennis Cai, the Chief Network Architect of Alibaba, Prof. Jie Lu, distinguished professor of the University of Technology Sydney (UTS), Mr. Yohan Ramasundara, the President of ACS to join and had an efficient discussion on the responsible conduction of innovative technologies to achieve the UN Sustainable Development Goals (SDGs).



WFEO-CEIT NEWSLETTER

July 2020

- ☺ *Hope everyone is staying safe and healthy during this difficult time of the coronavirus outbreak.*
- ☺ *In this issue: Event Report & Upcoming Events*

EVENT REPORT

✦ WFEO-CEIT organized events:



CEIT Membership Renewal 2020

The CEIT secretariat has sent out emails on membership renewal 2020, and immediately responded by our members. If you have not yet done this, please check your email box or contact the secretariat for more information.

UNWFEO Call for Innovations 2020 Youth Creativity for Sustainable Transport

Submissions of the UNWFEO Call for Innovations, is now being reviewed, and the results are expected to be announced in August.



CEIT Newsletters Released



Achievements in Focused Areas

Released-Big Data and AI Principles in Engineering



Big Data and AI Principles in Engineering

-Promoting responsible conduct of Big Data and AI innovation and application in Engineering

Big Data and Artificial Intelligence (AI) are rapidly expanding their application in engineering projects with growing in capability and influences, which are expected to progress dramatically in the future. They hold great promise for empowering people, raising the quality of people's lives, fostering economic and social development, addressing critical global challenges such as climate change, food, inequality, health, and education, and promoting the achievement of United Nations Sustainable Development Goals. In engineering, Big Data and AI, as crucial driving force of the 4th Industrial Revolution are transforming every aspect of engineering such as R&D, plan, design, manufacture/implementation, testing, operation, and maintenance, with incredible potential to improve the productivity, quality, safety and efficiency in various engineering projects while decreasing related carbon emission, energy and matter consumption, and the costs. Moreover, they may contribute to fighting against corruption and others to keep engineering integrity.

While offering unprecedented opportunities, Big Data and AI also bring many technical and ethical challenges that must be addressed precisely, thoughtfully, and affirmatively. While considerable progress has been made in recent years, many knotty technical problems remain that will require more innovation: Data usability still needs improving. Data capture, storage, search, transfer, analysis, and visualization techniques need to be improved or even renovated. While significant progress of AI, it is not perfect. For example, machine learning requires large amounts of human effort to label the data necessary for supervised learning. Moreover, ethical challenges, including, but not limited to, privacy violations, inexplicability, bias, malicious use, and the possibility of exacerbating digital divide and inequality are confronting us and drawing increasing public concerns.

Engineering societies, as practitioners of Big Data and AI innovation and application, have the responsibility to promote innovation and ensure their development and application to maximize their benefit to people and our living environment while minimizing their negative impact. To promote responsible conduct of Big Data and AI innovation and application, engineers and engineering community should comply with the following principles, adopting sustainable development of humanity and the planet as primary success criterion, in engineering practices:

Good for Humanity and Its Environment

Respect, promote, and protect human dignity and autonomy, maximally serve human rights; follow cultural, social, and legal norms; serve the global social and environmental good, especially cultural continuity and ecological diversity; foster application beneficial to human of Big Data and AI technologies to augment human perception, cognition, and problem-solving abilities to realize sustainable development.

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In order to promote responsible conduct of Big Data and Artificial Intelligence (AI) application and innovation in engineering, World Federation of Engineering Organizations (WFEO) has formulated the following 7 Principles and releases it now on the first World Engineering Day Celebration.

CEIT led in this work, and set up the Big Data and AI Working Group with experts from industry, academia and government to draft the principles for a wide further discussion in engineering society.

Big Data and AI Working Group

Advisory Board:

GONG Ke(President,WFEO),
LIU Chuang(CASS),
Tariq DURRANI(University of Strathclyde)

Members:

Amir HUSSAIN, Edinburgh Napier University
Djordje KRIVOKAPIĆ, University of Belgrade
Prabath S. WICKRAMARATNE, CSSL
WANG Wei, Tianjin Normal University
Wael ABDULMAJEED, University of Bagdad
WANG Xiaohong, Xi'an Jiaotong University
Thomas CHAN, The Hong Kong Institution of Engineers

DUAN Weiwen, CASS
Frits BUSSEMAKER, I4ADA
Paolo ROCCA, IEEE
LIU Xuan, Microsoft
TAN Chee Fai, MIRA
Yohan RAMASUNDARA, ACS



Increasing the visibility and influence of CEIT

Inaugural Celebration - the World Engineering Day for Sustainable Development



**WORLD
ENGINEERING
DAY**

World Engineering Day for Sustainable Development aims to highlight the critical importance of engineers and engineering for sustainable development and modern life, as well as encourage future generations to tackle global issues through more holistic and ethically designed projects.

CEIT Secretariat joined the WED Working Group and assisted in the preparation for the Inaugural Celebration at UNESCO HQ on March 4th.

Engineering Leaders Podcasts – SDG 15



CEIT Chair Dr. PENG Jing was invited to give a talk on “Engineering Heroes Mini Series -Engineering in SDG 15” . This series lead up to the very first World Engineering Day for Sustainable Development in 2020.

UN/WFEO Call for Innovations 2020 Youth Creativity for Sustainable Transport



The UN/WFEO Call for Innovations: Youth Creativity for Sustainable Transport, initiated by the United Nations in collaboration with the World Federation of Engineering Organizations (WFEO).

CEIT led In this work and the results are expected to be announced soon.

The webinar - A Sustainable Future: Young Engineers and 4IR



**FRIDAY
18TH SEPTEMBER
15:00-17:00
BEIJING TIME
(CET+6)**

**A Sustainable Future:
Young Engineers and 4IR**
during the 23rd China Beijing High-Tech Expo

Speakers:

- Prof GONG Ke**
President of World Federation of Engineering Organizations (WFEO)
- Eng. Firas Bou Diab**
Chair of WFEO Young Engineers / Future Leaders Committee
- Ms. Kay Firth-Butterfield**
Head of AI and Machine Learning, World Economic Forum (TBD)
- Mr. Yohan Ramasundara**
Member of AI and BD W.G., Immediate Past President, Australian Computer Society

Moderator:
Dr. PENG Jing
Chair of WFEO Committee on Engineering for Innovative Technologies

Logos: WFEO-CEIT, Young Engineers Future Leaders

The webinar - A Sustainable Future: Young Engineers and 4IR

CEIT and the Young Engineers / Future Leaders Committee organized the webinar “A Sustainable Future: Young Engineers and the Fourth Industrial Revolution (4IR)” on the 18th September 2020, during the 23rd China Beijing International High-Tech Expo (CHITEC).

International Cooperation



**2020 China Intelligent Industry Forum,
China International Fair for Trade in
Services, 7th September 2020**



**A-tech Science and Technology Elite
Competition, IN.CLUSION Fintech
Conference, 24-26 September 2020**

Support in WFEO Events



Engineering step up to the challenge of coronavirus and other global threats: WFEO has followed the developments in the global spread of COVID-19 with deep concern, both for those affected and those on the frontline of response.

“How the Lever of Science and Technology Can Be Used in Peri-urban and Urban Environments to Advance Sustainable Development: the Case of Implementing Geospatial Engineering” , 9th July 2020

China Beijing International High-Tech Expo (CHITEC) is a major annual technology expo held in Beijing. The 23rd CHITEC was held during 17 – 20 September, 2020

Future Activities

A

The 2nd World Engineering Day, Paris, France, March 2020

B

Released-Big Data and AI Principles in Engineering

C

Big Data and AI Working Group

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Strengthen Cooperation with WFEO and other committees



Thank You!