



WFEO-CEIT 2020-2021 Activity Report

WFEO-CEIT undertakes to lead the engineering profession worldwide towards promotion and application of engineering for innovative technologies for sustainable development and helping developing countries to close the technology gap which is essential to sustain the UN's 2030 Sustainable Development Agenda.

A. CEIT Main Activities

1. UN/WFEO Call for Innovations 2020 - Youth Creativity for Sustainable Transport

The UN/WFEO Call for Innovations: Youth Creativity for Sustainable Transport, was initiated by the United Nations in collaboration with WFEO. CEIT led in this work and called for scientific, engineering technological and management innovations from all young innovators globally.



2. Big Data and AI Principles in Engineering

To better facilitate the work in big data and AI, CEIT officially set up the Big Data and AI Working Group with experts from industry, academia and government in 2020, and drafted the Big Data and AI Principles in Engineering. With 3 rounds of survey in a year, 40+ organizations and experts from around the world provided their feedbacks to the drafted principles through the online survey platform or via email. The seven principles were later released by WFEO for the World Engineering Day in 2020 and 2021 to promote responsible conduct of big data and AI application and innovation in engineering.



Big Data and AI Principles in Engineering

"Drawing upon the vision 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 capabilities and influence, which are expected to progress dramatically in the future. They hold great promise for engineering growth, raising the quality of people's lives, driving economic and social development, addressing critical global challenges such as climate change, food, energy, health, and education, and promoting the achievement of United Nations Sustainable Development Goals. In engineering, Big Data and AI, as cutting-edge key of the 4th Industrial Revolution are transforming every aspect of engineering such as R&D, plan, design, manufacture, implementation, testing, operation, and maintenance, with benefits provided to improve the productivity, quality, safety and efficiency in various engineering projects while driving social, economic, and environmental sustainability and innovation. However, their use continues to bring upon controversy and raises many engineering design challenges for users in different projects, companies, and industries. While considerable progress has been made in recent years, some timely technical problems remain that will require more resources, their usability will require improving. Data experts, energy, security, analysis, and visualization techniques need to be improved or even reinvented. While significant progress of AI is in progress, for example, machine learning requires large amounts of human data to feed the data necessary for supervised learning. Moreover, ethical challenges, including but not limited to, privacy, reliability, transparency, bias, misuse, use, and the possibility of overfitting, digital divide and inequality are continuing to be and driving engineering practitioners.

Engineering practice, as practitioners of Big Data and AI innovation and application, have the responsibility to govern themselves and ensure their development and application to maximize their benefits 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, shaping sustainable development of themselves and the planet in primary science centers in engineering practices.

Good for Humanity and the Environment

Respect, promote, and protect human dignity and autonomy, especially across human rights, labor relations, social and legal issues, over the different social and environmental and specific cultural contexts and regional scenarios, using appropriate knowledge in human Big Data and AI technologies to improve human perception, cognition, and problem-solving abilities to realize sustainable development.

(this article is a draft)

3. 2020 China International Fair for Trade in Services – China Intelligent Industry Forum

CEIT jointly held the 2020 China Intelligent Industry Forum in the China International Fair for Trade in Services on September 7th, 2020. Experts from the globe attended the forum and jointly discussed the development trends and opportunities of the Intelligent Industry in the post-epidemic era.





4. 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 September 18th, 2020, during the 23rd China Beijing International High-Tech Expo. This webinar, streamed live worldwide through TikTok and YouTube, attracted nearly 400 guests around the world to participate online.



5. Young Engineers Leading the Way: Video Campaign

CEIT and the Young Engineers / Future Leaders Committee co-hosted the campaign, calling for videos that highlighting contributions young engineers are making towards a more sustainable, resilient, and inclusive world. More than 40 young engineers from more than 20 countries participated in this activity. The final selected videos were presented at the WED celebrations on March 4th, 2021.



Young Engineers Leading the Way: Video Campaign

6. Webinar on Engineering in Poverty Alleviation

In celebration of WED 2021, CEIT held the webinar on Engineering in Poverty Alleviation on March 6th, 2021. This webinar was chaired by Dr. PENG Jing, Chair of WFEO-CEIT. Prof. GONG Ke, President of WFEO, delivered the opening remark. Experts from the globe shared engineering experiences in poverty alleviation by illustrating successful cases to help developing countries, especially countries in Southern Asia and sub-Saharan Africa to make progress in eradicating extreme poverty.



7. Online Open Course on Innovative Technologies for Sustainable Development

This serial of online open courses was initiated by CEIT in June 2021, aiming to popularize the basic knowledge of innovative technologies to the public and introduce the key role of innovative technologies in promoting sustainable development. 3 specialists from Malaysia, Bangladesh and China gave 4 recorded courses.





8. Engineering Innovations for Sustainable Development Best Practices

This casebook contains 21 innovative practice cases based on 17 UN 2030 Sustainable development goals from the engineering community. It shows the practical achievements of engineering innovations in promoting sustainable development so as to enhance exchanges and cooperation, and promote excellent practices and solutions. This casebook was exhibited on the China International Fair for Trade in Services 2021, and CEIT are responsible for compiling the content.



B. CEIT Capacity Building

1. Membership Renewal

CEIT secretariat regularly renews its membership. Now, we have 44 members from 33 countries.

2. Organise Work Meetings / Annual Meetings

CEIT organises at least one working meeting every year to report on CEIT's annual work and discuss future work plans with CEIT members. The 2020 Annual Meeting was held on October 12th, 2020, 15 members attended. The 2021 Work Meeting was held on February 26th, 2021, 10 members attended.



3. Release Newsletters

The CEIT Secretariat regularly produced and published newsletters to share the latest updates with all CEIT members. Since January 2020, CEIT has disseminated 4 newsletters.

C. Support WFEO Activities

CEIT actively participated and contributed to the WFEO activities, including the celebration of 2020 & 2021 World Engineering Day, the drafting of the UNESCO Engineering Report, the HLPF side events, etc.