



World Federation of Engineering Organizations  
Fédération Mondiale des Organisations d'Ingénieurs

# **Progress Report by Standing Committee on Engineering for Innovative Technologies (CEIT)**

**Ke GONG**

**April 5, 2017 · Paris**



# OUTLINE

- **Work Progress of 2016**
  - Committee Organization
  - Activities on the Thematic Areas
  - Delphi Study on Innovative Technologies
  - Correspondences with WFEO
- **Work Plan of 2017**
  - Committee Organization
  - Academic Conferences
  - Delphi Study on Innovative Technologies
  - International Research Project
  - Cooperation with other STCs



# COMMITTEE ORGANIZATION

- **Host and the Secretariat**
  - China Association for Science and Technology (CAST)
  - Chair: President Ke GONG
  - Secretariat



**Secretary:**  
**LIN Runhua**



**Assistant :**  
**LIAN Wenting**



**Assistant :**  
**LI Pan**



**Assistant :**  
**HAN Bangdong**



# COMMITTEE ORGANIZATION

- Members of WFEO-CEIT till now**

REGION	No.	Country
Latin America	2	Brazil, Peru
Europe	5	UK, France, Czech, Slovenia, Russia
Africa	5	Nigeria, Congo, South Africa, Zimbabwe, Ghana
Asia	6	China, India, Korea, Pakistan, Qatar, Iraq
Arab region	3	Kuwait
North America & Oceania		
<b>Total</b>	<b>21</b>	



# COMMITTEE ORGANIZATION

- Members of WFEO-CEIT till now

WFEO-CEIT Member Contact List					
No.	Name	Country	Affiliation	Title	Email
1	Engr. Saidu Njidda	Nigeria	Nigerian Society of Engineers	CEO	<a href="mailto:saiduniidda@gmail.com">saiduniidda@gmail.com</a>
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3	Engr. Siphso	South Africa	Engineering Council of South Africa	CEO	<a href="mailto:ceo@ecsa.co.za">ceo@ecsa.co.za</a>
4	Eng. Ben Rafemoyo	Zimbabwe	Engineering Council of Zimbabwe	CEO	<a href="mailto:brafemoyo@ecz.co.zw">brafemoyo@ecz.co.zw</a>
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7	Mr. Haro Bedelian	UK	Institution of Civil Engineers		<a href="mailto:hbedelian@aol.com">hbedelian@aol.com</a>
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9	Dr. Daniel Hanus	Czech Republic	The Czech Association of Scientific and Technical Societies	President	<a href="mailto:hanus@csvts.cz">hanus@csvts.cz</a>
10	Dr. S.S. Rathore	India			<a href="mailto:ssr7405@gmail.com">ssr7405@gmail.com</a>
11	Kwame A. Boakye	Ghana	Ghana Institution of Engineers	President	<a href="mailto:kboakye1@aol.com">kboakye1@aol.com</a>
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13	Abdulla Mohd. Hijji Al-Baker	Qatar	Qatar Society of Engineers		<a href="mailto:hijji08@gmail.com">hijji08@gmail.com</a>
14	Dr. Wael	Iraq	Iraqi Engineers Union (IEU)		<a href="mailto:drwael@ieee.org">drwael@ieee.org</a>
15	Eng. Ziga Lebar	Slovenia	Slovenian Chamber of Engineers	Scientific Consultant	<a href="mailto:barbara.skraba@izs.si">barbara.skraba@izs.si</a>
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21	LIN Runhua	China	Chinese Institute of Electronics	Vice Chair	<a href="mailto:linrunhua@cie-info.org.cn">linrunhua@cie-info.org.cn</a>

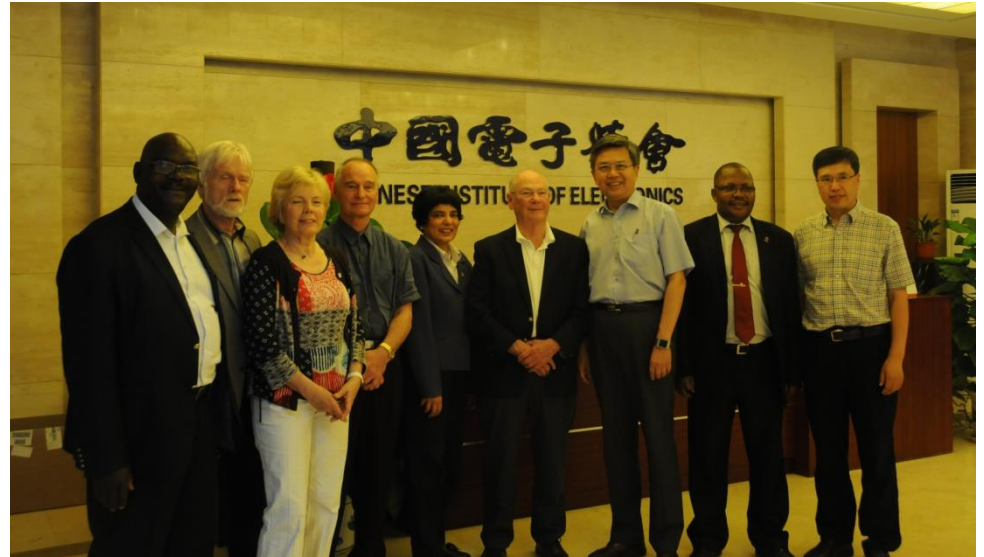


# COMMITTEE ORGANIZATION

- Close Communication with WFEO



President Jorge visited  
secretariat of CEIT in April, 2016



President-Elect Marlene Kanga  
and delegates of WFEO visited  
secretariat of CEIT in June, 2016





# COMMITTEE ORGANIZATION

- **First Meeting of New CEIT**



Work progress of new CEIT was reported and one international research project on earthquake prediction was proposed.

Delegates discussed future work of CEIT, how it can focus on SDGs, cooperate with other STCs and on big data's contribution to anti-corruption, Irrigation, Smart city transportation, and Energy Internet



# ACTIVITIES ON THE THEMATIC AREAS

- Conferences Co-organized by WFEO-CEIT



China Cloud Computing Conference  
Beijing, May 2016



China Big Data Application Conference  
Chengdu, July 2016

**To enhance the reputation and influence of WFEO-CEIT and WFEO, especially in China.**





# ACTIVITIES ON THE THEMATIC AREAS

- **Workshops on Big Data and Seismo-ionospheric precursors for promoting the Initiative for earthquake prediction and disaster mitigation from space**



To explore new approaches for earthquake prediction, CEIT, working with the committee on Earthquake Observation from space of Seismological Society of China, hosted a series of workshops of Big Data and Seismo-ionospheric precursors.

**launch an initiative for breaking through the both scientific & engineering problem in earthquake prediction**



# ACTIVITIES ON THE THEMATIC AREAS

- **Innovative Technologies for Disaster Reduction at WECDRR2016**



join the international efforts  
to mitigate the disaster risk  
by applying and integrating  
relevant innovative  
technologies !  
[wfeo-celti@wfeo.org](mailto:wfeo-celti@wfeo.org)

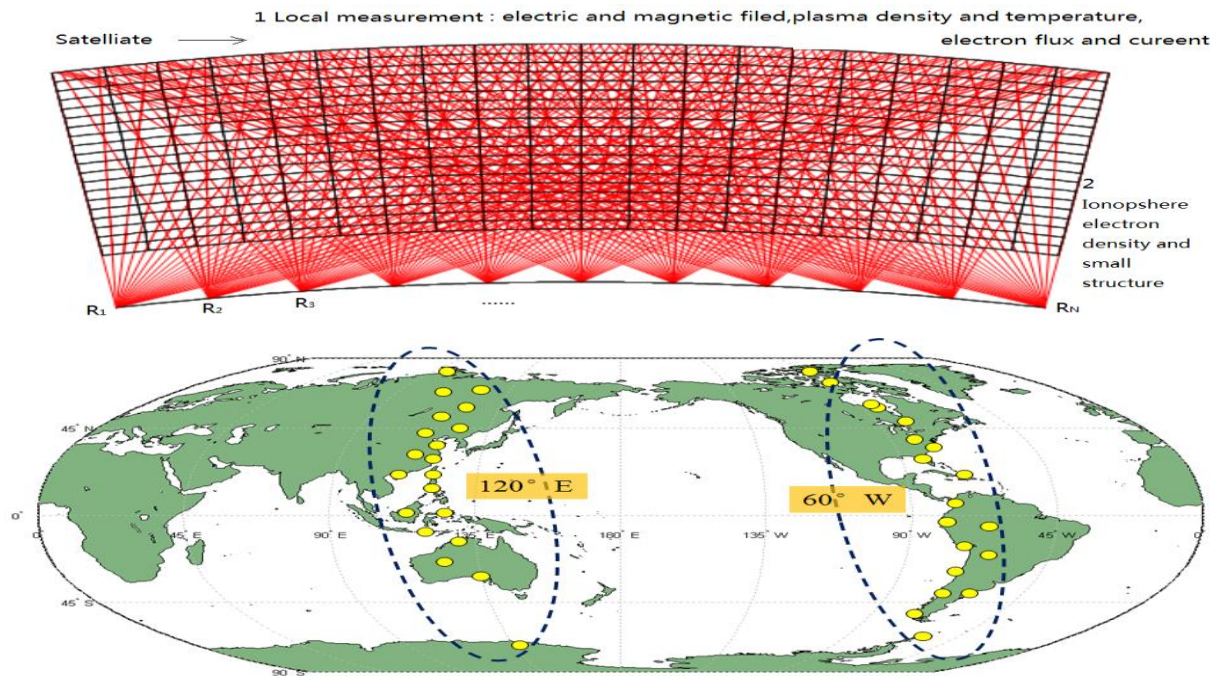


WECDRR2016 President Julio Kuroiwa and some experts expressed their interest and willingness of cooperation after the keynote.



# ACTIVITIES ON THE THEMATIC AREAS

- Innovative Technologies for Disaster Reduction at WECDRR2016



Seismo-Ionosphere Observation System along International Meridian Circle





# DELPHI STUDY ON INNOVATIVE TECHNOLOGIES

WFEO CEIT

Instituto de Ingeniería de España (Spain) contribution

SURVEY for DELPHI Analysis

Lima, 7th December 2016

World Federation of Engineering Organizations  
Fédération Mondiale des Organisations d'Ingénieurs

Please list at least 3 most important innovative technologies for sustainable development in your mind and give a brief explanation. Please submit it directly to our email: [wfeo-ceit@wfeo.org](mailto:wfeo-ceit@wfeo.org) in 3 days. Thank you!

For Example: Big Data - Potential use of Big Data for official statistics contributes to fulfil the mandate of providing timely and relevant statistics on the economy, society and the environment for decision making, research and public debate in statistical community. At the same time, in order to be able to take advantage of innovative data sources, it needs to adequately address issues pertaining to methodology and technology, legislation, privacy, management and finance. Moreover, it is of the utmost importance to create an environment where the public trust in the use of Big Data for official statistics is established and where privacy and confidentiality of personal information can be assured.

Name:

Email:

Phone

Our recommendations:

- 1- **Machine Learning**, combined with the analysis mass of data (**Big Data**), would allow large advances in agriculture, integrated management of production, cattle and trees that would help to the food (against hunger), marketing of products of families in farms. (earn something of money)... perhaps to manage better the no pollution of the water (health) ☐
- 2- **Energy technologies** for the production of clean distributed energy and **Smart grids** that would bring electricity to areas that do not have it and have to cook with firewood... Also **smart water grids and smart cities**.☐
- 3- **Space / Weather satellites** absolutely necessary to prevent natural disasters not listed due to the change climate, that combined with the analysis mass of data (**Big data**) allow track rural areas that combined then with technological platforms of open code would create cadastres for best guide the prevention and aid actions.

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Name: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

Your Recommendations:

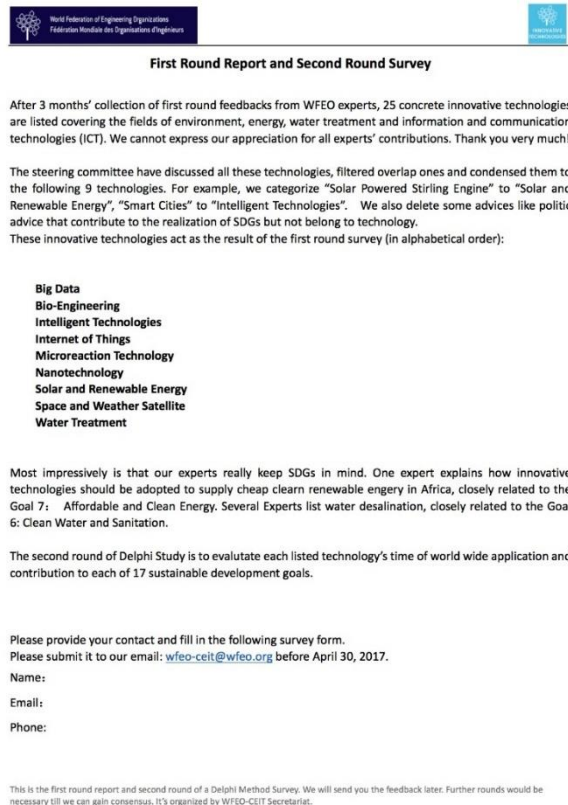
- Drone technology - use in agriculture sector and impact on early warning system
- Big Data and Internet of Things
- Solar and renewable energy
- nanotechnology and use in the health sector
- water desalination and cleaning technologies

This is the first round of a Delphi Method Survey. We will send you the feedback later and ask you to rate the selected top 10 innovative technologies in the second round. Further rounds would be necessary till we can rank the technologies.



# DELPHI STUDY ON INNOVATIVE TECHNOLOGIES

## • First Round Report



## 9 Key Innovative Technologies

**Big Data**

**Bio-Engineering**

**Intelligent Technologies**

**Internet of Things**

**Microreaction Technology**

**Nanotechnology**

**Solar and Renewable Energy**

**Space and Weather Satellite**

**Water Treatment**

(In Alphabetical Order)





# CORRESPONDENCES WITH WFEO



8th China Cloud Computing Conference (CCCC2016) co-organized by WFEO-CEIT

- BIG DATA · COMPUTER SCIENCE · INNOVATION · INTERNET · STC INNOVATION · TECHNOLOGY



## The 8th China Cloud Computing Conference

May 18-20, 2016 China National Convention Center, Beijing



The 8th China Cloud Computing Conference (CCCC2016) was held from May 18th to May 20th, 2016 at Beijing China National Convention Center and attracted an audience of 5000. The WFEO Standing Technical Committee on Engineering for Innovative Technology (WFEO-CEIT) co-organized CCCC2016 with the Chinese Institute of Electronics (CIE).



WFEO-CEIT is exploring new approaches for Earthquake Prediction with seismo-electromagnetic technologies

- DISASTER RISK MANAGEMENT · EARTHQUAKE · STC INNOVATION



WFEO Standing Committee on Engineering for Innovative Technologies (WFEO-CEIT) is planning to launch an initiative for breaking through both scientific & engineering problem in earthquake prediction. To explore new approaches for earthquake prediction, WFEO-CEIT, working with the committee on Earthquake Observation from space of Seismological Society of China, hosted a workshop of Big Data and Seismo-ionospheric precursors in July 15th, 2016.



# WORKING PLAN FOR 2017

- **Committee Organizations**
- **Academic Conferences**
  - China Cloud Computing Conference
  - Big Data Application Congress of China
  - World Intelligence Congress
- **Delphi Study on Most Important Innovative Technologies**
- **International Research Project**
- **Cooperation with other STCs**



# COMMITTEE ORGANIZATION 2017

- Potential Countries to Join CEIT**

REGION	NUMBER	COUNTRY
Latin America (15)	3	Costa Rica, Puerto Rico, Uruguay
Europe (25)	7	Bulgaria, Greece, Italy, Romania, Spain, Switzerland, Turkey,
Africa (16)	3	Kenya, Malawi, Tanzania,
Asia (14)	4	Japan, Malaysia, Sri Lanka, the Philippines
Arab region (17)	0	
North America & Oceania (5)	3	Canada, USA, Australia
<b>Total</b>	20	



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# ACADEMIC EXCHANGES CO-SPONSORED BY CEIT



**The 9<sup>th</sup> China  
Cloud Computing  
Conference**

Beijing, June 14-16 2017



**World Intelligence Congress**

Tianjin, July 2017



**中国大数据应用大会**

**BIG DATA APPLICATION CONGRESS OF CHINA**

Chengdu, July 2017





# WFEO CEIT TO SDGS







# DELPHI STUDY ON INNOVATIVE TECHNOLOGIES

## • Further Rounds Surveys

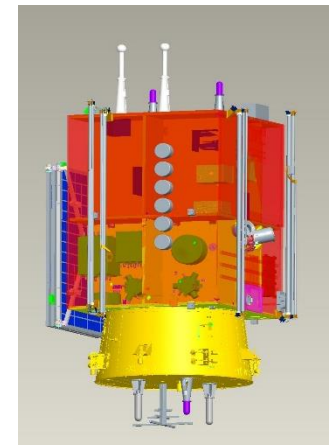
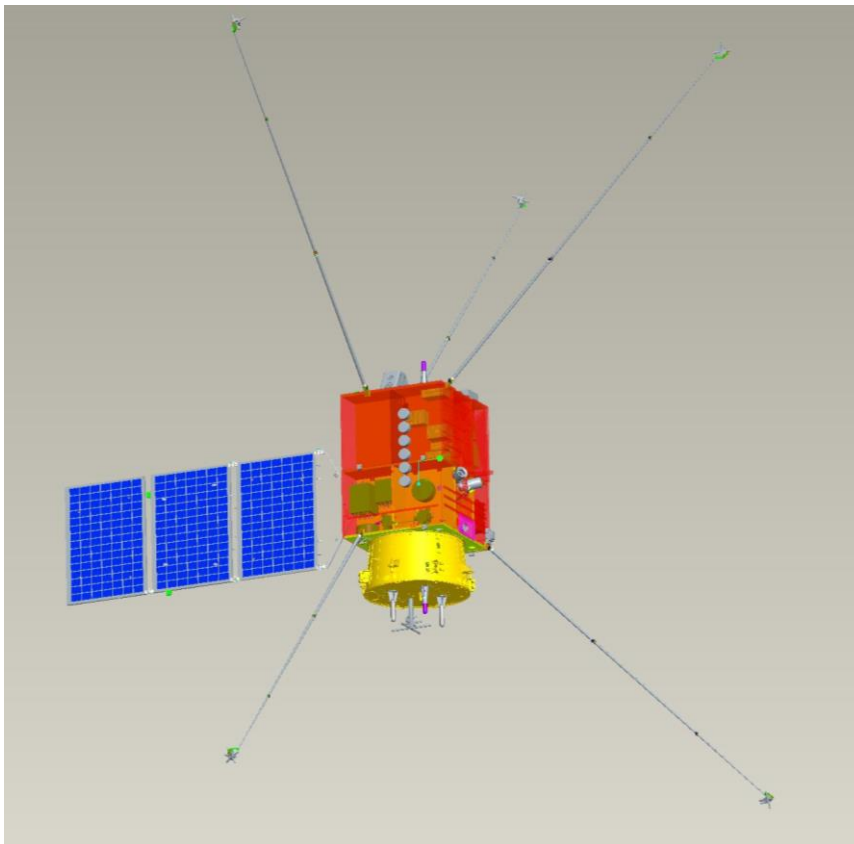
DelphiSurvey			Related Knowledge				Time Scale				Importance for each SDGs (Rate from 0-10)																	
			Big	Middle	Limited	No	until 2020	2020-2025	2025-2030	after 2030	No Poverty	Zero Hunger	Good Health and Well-being	Quality Education	Gender Equality	Clean Water and Sanitation	Affordable and Clean Energy	Decent Work and Economic Growth	Industry, Innovation and Infrastructure	Reduced Inequalities	Sustainable Cities and Communities	Responsible Consumption and Production	Climate Action	Life Below Water	Life on Land	Peace, Justice and Strong Institutions	Partnerships for the Goals	
Innovative Technologies	1	Big Data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	2	Bio Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	3	Intelligent Technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	4	Internet of Things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	5	Microreaction Technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	6	Nanotechnology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	7	Solar and Renewable Energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	8	Space and Weather Satellite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	9	Water Treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Second Round Survey on Importance of Selected 9 Technologies  
Submission Deadline : April 30th, 2017



# INTERNATIONAL RESEARCH PROJECT

- **China Seismo-Electromagnetic Satellite (CSES)**



To be launched in August 2017



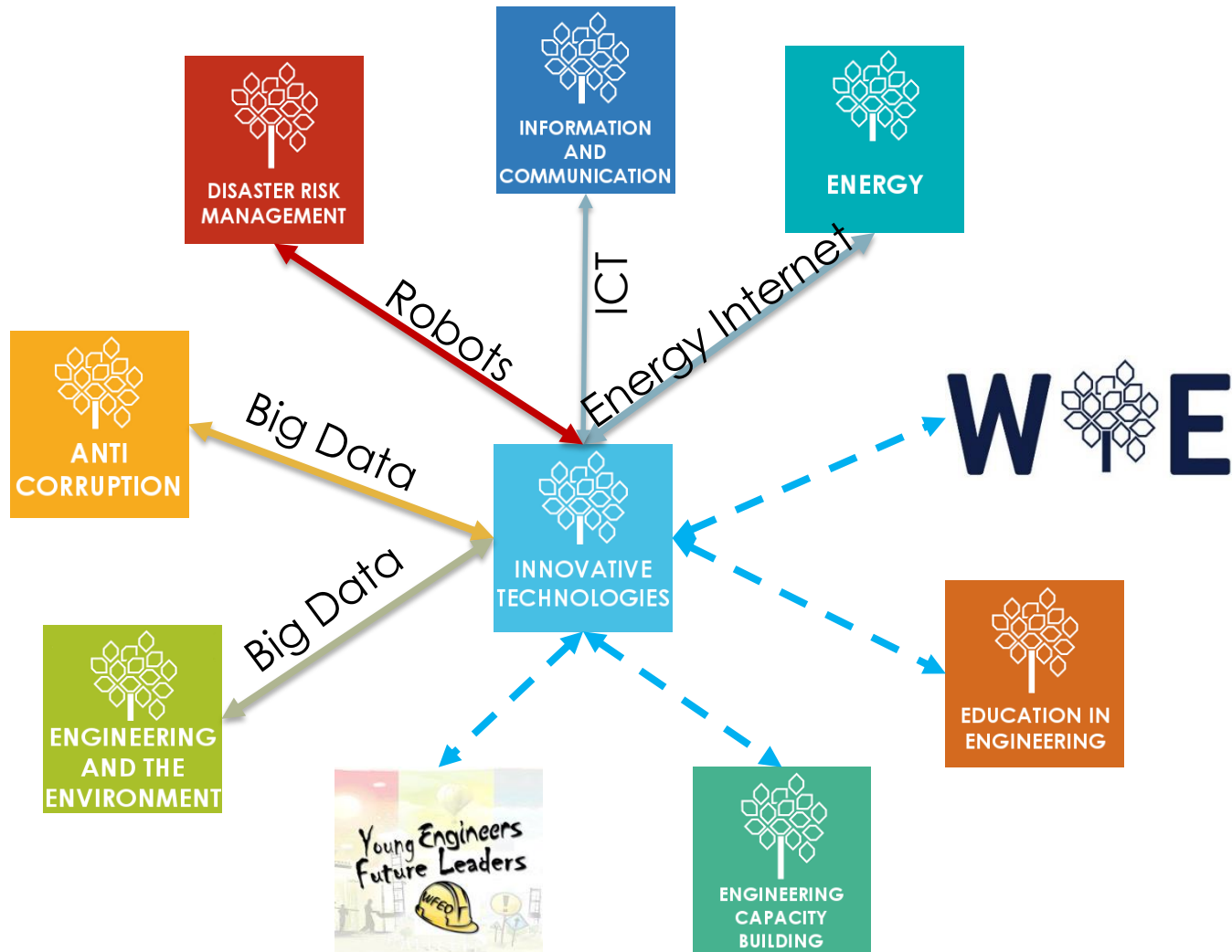
# INTERNATIONAL RESEARCH PROJECT

- CSES Physical Parameters and Specifications**

Detection content	Physical parameters	Specifications
Electromagnetic field and wave	Magnetic field	DC~20kHz
	Electric field	DC~20kHz
Ionosphere plasma	TEC and content profile	
	Ion density	$10^2 \sim 10^7 \text{cm}^{-3}$
	Ion temperature	500~10000K
	Electron density	$10^2 \sim 10^7 \text{cm}^{-3}$
	Electron temperature	500~10000K
Energetic particles	Proton flux	1.5MeV~200MeV
	Electron flux	$\geq 100 \text{keV}$
	Pitch angle	



# COOPERATION WITH OTHER STCS





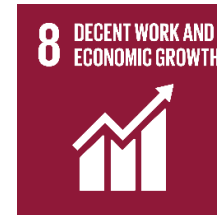
# COOPERATION WITH OTHER STCS

- **We would sincerely invite**
- **All STC Charis and Experts Recommended by Chairs**
  - to China Cloud Computing Conference, Beijing
  - to Big Data Application Congress, Chengdu
  - to World Intelligence Congress, Tianjin





# WHAT IS CEIT WORKING ON



## Sustainable Development



Cloud Computing  
Internet Plus

Big Data

Intelligent Technology  
Robotics

Smart Devices  
Smart Materials

Internet of Things (IoT)



# OPEN DISCUSSION FOR NEW TECHNOLOGY DIRECTIONS

- New thematic areas
- New approaches in promoting committee activities
- New CEIT outputs
- ...



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# Thank You!

