





International Knowledge Centre  
for Engineering Sciences and Technology  
under the Auspices of UNESCO  
联合国教科文组织国际工程科技知识中心

**International Knowledge Centre for  
Engineering Sciences and Technology under  
the Auspices of UNESCO: how can we  
contribute to the implementation of SDGs?**

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**Chinese Academy of Engineering (CAE) / IKCEST**

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**I. Overview of IKCEST  
Initiative**

## Motivation I: Engineering Achievements in China

China has made noticeable achievements in critical engineering fields in the past several decades.



Hangzhou Bay Bridge



Three Gorges Dam Project



High-Speed Railway



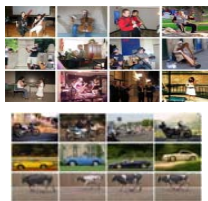
Qinghai-Tibet Railway



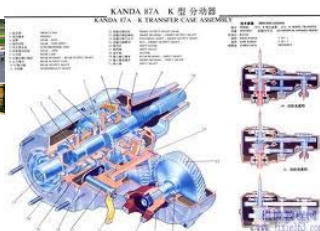
Lunar exploration

## Motivation I: Engineering Achievements in China

\* Those achievements produces a wealth of engineering experiences and knowledge, e.g., design documents, engineering drawings, experimental data.



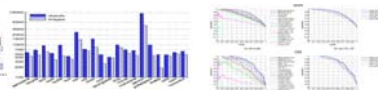
Data set



Engineering drawing



Code and Algorithm package



Experimental figure and table

□ Those expertise and knowledge should be shared with other developing countries.



## The Proposer of IKCEST: CAE

The Chinese Academy of Engineering is a national organization composed of elected members with the highest honor in the engineering science and technology community in China. CAE is the highest honorary, advisory academic institution in engineering science and technology in China.




- CAE was founded in 1994 in Beijing.
- CAE initiates and conducts strategic study and provides consultancy for decision-making for the nation's key issues of engineering science and technology.

## Signing and Unveiling Ceremony

Establishment of International Knowledge Centre for Engineering Sciences and Technology (IKCEST) under the Auspices of UNESCO was approved by the 37th session of the UNESCO General Conference in 2013.

\* The Signing and Unveiling Ceremony of IKCEST was held in Beijing on June 2, 2014.




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## II. Main Tasks of IKCEST

**Main Task I: to establish an international engineering and technology resources hub**

- \* **IKCEST will cooperate with research institutes, enterprises and institutions of higher learning worldwide to build a widely connected international hub for engineering science and technology resources.**

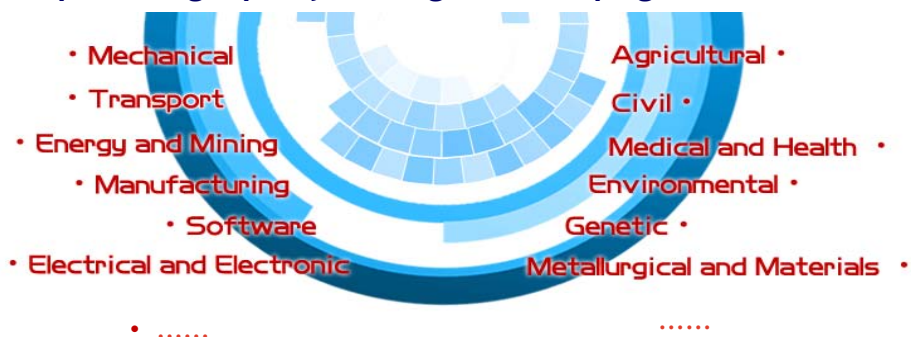


**Main Task II: to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data**

- **The public data service platform provides the engineering and technology resources hub with technology support, data connections, data management and development, as well as other technological services.**
- **In addition, it serves to develop ground-breaking technology for large data mining and improvements in data-mining and policy-making ability.**

**Main Task III: to cooperatively build professional knowledge service systems, and to build capacity in developing countries**

- \* **On the basis of the engineering science and technology resources hub and the public data service platform, IKCEST will pool engineering and technology institutions in different fields to focus on sustainable development and especially on promoting capacity-building for developing countries.**



Main Task IV: to foster interdisciplinary engineering talents with big data processing ability

\* IKCEST will establish a training department, formulate and implement training plans for engineers and managerial staff to enhance their abilities for developing as well as operating and maintaining professional knowledge systems.




Student Map of the Online Course

● Problem-based Learning

Main Task V: to assist UNESCO to fulfill its aims and support its action plans

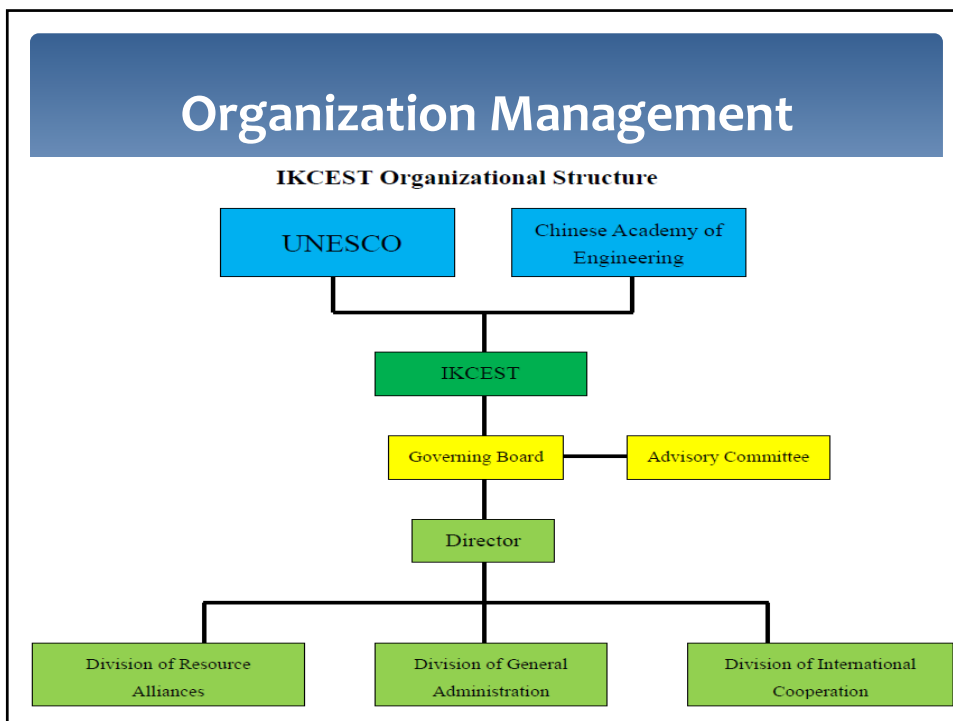
\* IKCEST will cooperate with UNESCO's network of Category 1 and Category 2 institutes and centres in support of the organization's efforts towards the attainment of the 2030 Agenda and the **UN Sustainable Development Goals (SDGs)** – and in support of peace building, poverty elimination and sustainable development in a globalized world.

- |   |  |
|---|--|
| ● <i>UN Literacy Decade Program</i>                         | ● <i>Information for All Programme</i>                             |
| ● <i>Decade of Education for Sustainable Development</i>    | ● <i>Sustainable Development of Small Island Developing States</i> |
| ● <i>International Association of Hydrological Sciences</i> | ● <i>International Basic Sciences Programme</i>                    |
| ● <i>Man and the Biosphere Programme</i>                    | ● <i>Memory of the World Programme</i>                             |
| ● <i>International Geoscience Programme</i>                 | ● <i>Local and Indigenous Knowledge Systems</i>                    |
| ● .....   | ● .....  |



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## III. Major Work Progress







\* IKCEST invited representatives of the UNESCO, the Chinese National Commission for UNESCO, Chinese government, Chinese Academy of Engineering, other UNESCO member states and world's top experts engaged in EST knowledge base to build its First Governing Board and First Advisory Committee. Two sessions have been held.

## Directive Documents

- \* **Charter of IKCEST**
- \* **Rules of Procedures of IKCEST Governing Board**
- \* **IKCEST MID-TERM STRATEGIC PLAN 2015-2020**
- \* **IKCEST Biennial Work Plan 2015-2016, 2017-2018**
- \* ...

## 1. Academic Activities



- \* China-Ukraine Workshop on **Resources Classification: Status, Mapping and Application** was held during June 1-3, 2015.
- \* IKCEST International Symposium 2015 on “**Digital Knowledge for Science and Engineering**” was held in November 2015.
- \* IKCEST International Symposium 2016 on “**Knowledge Service and Intelligent City**” was held in September 2016.
- \* IKCEST International Symposium 2017 on “**Knowledge Service and Artificial Intelligence**” will be held in Hangzhou on **September 28, 2017**. Welcome to join us!

## 2. Training Programmes

- \* IKCEST International Training Workshop 2015 and 2016 on **Big Data Technology and Knowledge Service**
- \* **International Training Course on Karst landscape, Geopark, Natural Heritage, Environmental Geology Mapping and Data Mining**
- \* **Training Program for Silk Road Engineering Science and Technology Development (Xi'an Jiaotong University)**
- \* **2016 Seminar on Assistance of Big Data for International Engineering Science and Technology Development for Countries along the Belt and Road (Ministry of Commerce)**
- \* **Training Base in Xi'an ...**



## IKCEST-ISTIC Joint Training Workshop



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聯合國際工程技術知識中心

In collaboration with:



TRAINING WORKSHOP ON

**AGRI-FOOD DATA**  
FOR DEVELOPING COUNTRIES  
15-18 May 2017 - Kuala Lumpur, Malaysia

May 15-18, Kuala Lumpur, Malaysia

**29** trainees from **12** countries

- \* *It was very informative, very well presented, plus enjoyable.*
- \* *I have learned so much from the training that will assist me in my workplace. In addition, knowing wonderful friends and establishing new cooperation.*
- \* *Hoping to join more training workshops under your esteemed organization and hoping to meet all the participants again.*

### 3. International Cooperation

#### \* UNESCO Science Centres Coordination Meeting

- \* Held in Beijing, May 15-18, 2016
- \* 45 Centres affiliated to the Natural Sciences Sector gathered to discuss how UNESCO can assist the centers and how centers can increase their contribution to the Sustainable Development Goals.
- \* Outcome of the meeting: **Beijing Action Plan**
- \* **Welcome** the establishment of **an Information and knowledge Sharing Platform** based on proposals such as the one presented to the meeting by IKCEST or others;





UNESCO  
United Nations Educational, Scientific and Cultural Organization



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- \* Further more:
- \* IKCEST delegation paid work visit to **UNESCO Headquarters**
- \* IKCEST cooperated with UNESCO **Disaster Risk Reduction Section**
- \* IKCEST conducted international **survey and study tours** to Iran, France, Australia, Czech, , the United States, Canada, attended **international conferences** in Switzerland, Malaysia, Indonesia and others.
- \* Signing of **MOU** with other category-2 centres, institutes and organizations

## UNESCO DRR Section raised needs to IKCEST for:

- \* Construction of **global disaster meta-database**
- \* Creation of **DRR educational platform**, including on-line educational modules
- \* **Training sessions** for developing countries
- \* Development of **methodology for setting up disaster database of national/local scales**



## 4. IKCEST Platform Development

- \* IKCEST Platform 1.0: [www.ikcest.org](http://www.ikcest.org)
- \* On April 30, 2016, IKCEST launched Version 1.0 of its Platform.
- \* On **May 31, 2017**, IKCEST launched Version 2.0 of its Platform. (Welcome to try it!)



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## Four Knowledge Services

- \* **Disaster Risk Reduction Knowledge Service**
- \* **Intelligent City Knowledge Service**
- \* **Silk Road Sciences and Technology Knowledge Service**
- \* **Engineering Education Knowledge Service**

## IV. How can we contribute to the implementation of SDGs?



**SUSTAINABLE  
DEVELOPMENT  
GOALS**



**SUSTAINABLE  
DEVELOPMENT  
GOALS**







- \* **Sustainable Development Goal 4**
- \* **Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Quality Education)**
- \* Online education / MOOC courses
- \* Trainings courses
- \* Literature, College textbooks etc.



- \* **Sustainable Development Goal 5**
- \* **Achieve gender equality and empower all women and girls (Gender Equality)**
- \* Trainings courses (women trainee priority)
- \* Symposium (women audience priority) etc.



- \* **Sustainable Development Goal 9**
- \* **Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Innovation)**
- \* Engineering sciences and technology trigger innovation.
- \* EST makes the world a better place.



- \* **Sustainable Development Goal 10**
- \* **Reduce inequality within and among countries (Reduced Inequalities)**
- \* Online education / MOOC courses
- \* Datasets and knowledge based apps etc.



\* **Sustainable Development Goal 11**

\* **Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable Cities and Communities)**

- \* Intelligent city knowledge service (city information / best practices / intelligent city evaluation / diagnosis / planning)
- \* Disaster Risk Reduction knowledge service (DRR metadata base / post-construction experience) etc.



\* **Sustainable Development Goal 17**

\* **Strengthen the means of implementation and revitalize the global partnership for sustainable development (Partnerships for the Goals)**

- \* MoU signed with three centres and joint efforts
- \* Regional meetings
- \* UNESCO C2IC knowledge sharing platform
- \* Enhancing support to developing countries through training courses

## Contact IKCEST

- \* You can visit <http://www.ikcest.org> to get to know more about us.
- \* Your feedback (needs included) will be greatly appreciated.
- \* You can contact me at [liuchang@cae.cn](mailto:liuchang@cae.cn) or [information@ikcest.org](mailto:information@ikcest.org).

**Thank You for your kind  
attention!**