



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

Newsletter

December 2018 No. 4



International Knowledge Centre for Engineering Sciences
and Technology under the Auspices of UNESCO



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The International Knowledge Centre for Engineering Sciences and Technology (shortened as “IKCEST”) is a category 2 centre under the auspices of the United Nations Educational, Scientific and Cultural Organization (shortened as “UNESCO”). IKCEST was established on June 2, 2014. The Chinese Academy of Engineering is responsible for the operation and management of the IKCEST.

Under the auspices of UNESCO, IKCEST is a comprehensive and international knowledge centre devoted to the engineering sciences, technology and applied technology. IKCEST aims at connecting engineering sciences and technology institutions globally, assembling various digital resources relating to engineering sciences and technology, building up a public data service platform and corresponding service environment, and coordinating the building of various professional knowledge systems, thus providing knowledge-based services at a global scale in the form of consultancies, scientific research and education for policy-makers and engineering science and technology professionals in the world, with particular reference to the developing countries.

The specific tasks and functions of IKCEST are as follows: to establish an international engineering and technology resources hub; to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data; to cooperatively build professional knowledge service systems, and to build capacity in developing countries; to foster interdisciplinary engineering talents with big data processing ability; and to assist UNESCO to fulfill its aims and support its action plans.

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» IKCEST News

Intelligent City Knowledge Service System of IKCEST held 2018 international training workshop in Shanghai

IKCEST and Tongji University jointly organized an international training workshop, Innovative Training on Smart City and Big Data in Urban Planning, in Shanghai from October 9 to 13, 2018. Wu Zhiqiang, CAE Member and Vice President of Tongji University, Liu Chang, Director of Division of International Cooperation of the IKCEST, and Liu Shuyan, President of the International School of Tongji University, attended the opening ceremony and gave speeches. The training workshop was attended by 24 overseas students from 18 countries including Algeria, Bangladesh, Brazil and Finland.

In his speech, Wu Zhiqiang observed that the history of cities is a history of the progress of human civilization, which has lasted for over 8,000

years. China has included intelligent city development in its latest five-year plan and launched many intelligent city pilot programmes across the country in an effort to explore the application of intelligent technologies in urban development. He expressed the hope that the trainees should draw upon the experience and lessons of China's intelligent city initiatives as well as practices in other parts of the world to promote intelligent city development.

In her speech, Liu Chang extended welcome to the trainees and briefed them on the background, founding philosophy and progress of the IKCEST. She hoped that the trainees should make good use of the training to improve their knowledge structure and build up their abilities in related

fields.

In her speech, Liu Shuyan introduced Tongji University as a leading university in urban planning with an outstanding teaching faculty and strong researching force and hoped that the trainees benefit from the training.

After the opening ceremony, the trainees each gave a self-introduction to increase mutual familiarity, which laid a solid foundation for the smooth progression of the training workshop.

The training workshop adopted an innovative model which combined classroom teaching, off-class discussion and field visits. Cao Buyang, Professor at Tongji University, Pan Qisheng, Professor at Texas Southern University, and Zhou Xingang, lecturer at Tongji University, gave classes on sub-

jects including City IQ evaluation system and applications, urban planning of the future, big data and smart city, and application of big data in urban planning.

During off-class discussions, the trainees were divided into three-member groups to discuss smart city evaluation with reference to related practices in their hometown and put forward many insightful views. Teaching assistants had lively face-to-face discussions with the trainees and offered good suggestions and methods for topic selection.

After three days' intense learning, the trainees completed all their tasks and passed the graduation exam before being conferred their graduation certificates by the IKCEST and Tongji University.

In addition, the trainees toured Jiading New



City in Shanghai and its urban planning hall and made a comparative analysis of Jiading new city and old city; had a study tour on the history, roles and future development of Shanghai's satellite cities; and toured Expo Park and China Art Museum in Pudong New Area in Shanghai for an understanding of the park's design and construction.

The training workshop put the focus on the publicity and application of the IKCEST platform,

the combination of classroom learning and practice activities, and interaction and communication between Chinese and international trainees. The trainees gave thanks to their teachers for the brilliant classes and said that they would apply what they learned to their future study and work and explore new methods for the development of even smarter cities.



International Training Workshop on Resource & Environment Scientific Data Sharing and Disaster Risk Reduction Knowledge Service for the “B&R” held in Beijing

The International Training Workshop on Resource & Environment Scientific Data Sharing and Disaster Risk Reduction Knowledge Service for “the Belt and Road”, a training project for developing countries jointly supported by the Department of International Cooperation of the Ministry of Science and Technology and the IKCEST, was held at the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) of the Chinese Academy of Sciences from October 9 to 26, 2018.

Approximately 60 young scientists from Belt and Road countries signed up for the training, of whom 18 trainees were actually enrolled, repre-

senting nine countries including Russia, Mongolia, Thailand, Pakistan, Bangladesh, Myanmar, Sudan, Bolivia and Sri Lanka.

The 18-day training not only organized 29 lectures on related subjects including “B&R” coordinated development and data integration, disaster risk reduction data and knowledge service, resource and environment big data platform and technology, scientific data standardization, scientific research digitalization innovation and practices, and remote sensing and GIS data processing techniques, six technical study tours, and multiple hands-on machine use training and exchange



activities, but also arranged the trainees to attend the Second International Workshop for Disaster Risk Reduction Knowledge Service convened by IGSNRR on October 20. Soichiro Yasukawa, Coordinator for Earth Sciences and Geo-Hazards Risk Reduction Section at the Natural Science Sector of UNESCO, Liu Chang, Director of Division of International Cooperation of the IKCEST, and Wang Juanle, technical head of the IKCEST Disaster Risk Reduction Knowledge System, gave lectures to the trainees. The IKCEST DRR knowledge service system team was responsible for coordination of specific activities of the training.

The training informed the trainees from “Belt

and Road” countries of related theories and practices, including policies and standards of resource and environment scientific data sharing, technical methods, software platform and data management; spread the technical means to access natural disaster remote sensing/online data, publicized the DRR Knowledge Service System (<http://drr.ikcest.org>), improved the trainees’ awareness of scientific data sharing and disaster risk reduction, fostered friendship of young scientists of “Belt and Road” countries, and promoted international cooperation. The training also increased the international influence of the IKCEST in “Belt and Road” regions and solidified the foundation for future cooperation.

2018 IKCEST International Engineering Education Training Workshop held at Tsinghua University

2018 IKCEST International Engineering Education Training Workshop, hosted by ICEE and IKCEST and organized by XuetangX.com was held at Tsinghua University on October 12-14. A total of 16 overseas students from 10 developing countries along the “Belt and Road”, including Bangladesh, Zambia, and Kazakhstan, took part in the workshop. All of these students major in engineering, specifically covering the civil engineering, information communication, computer science and technology, and the like. Liu Chang, Director of Division of International Cooperation of IKCEST, Wang Sunyu, Professor from Institute of Education,

Tsinghua University and Secretary General of ICEE, and Li Chao, President of XuetangX.com, attended the opening ceremony and delivered a welcome speech.

Scholars and experts including Prof. Shi Jinghuan from the Institute of Education Tsinghua University, Prof. Deng Junhui from the Department of Computer Science and Technology, and ICEE external expert Kang Jincheng gave wonderful lessons respectively on such topics as China’s higher education in the context of globalization, data structures and algorithm design, as well as science, technology and innovation in China. Sub-



sequently the trainees visited the Chinese Academy of Engineering, Tsinghua University History Museum, Fundamental Industry Training Centre, and XuetangX.com headquarters.

The trainees attended a seminar with five students from the Department of Computer Science and Technology, Department of Electrical Engineering and Department of Automation of Tsinghua University. The attendees had lively discussions on topics including China's engineering development, understanding of different specialties, online learn-

ing and campus life.

After intense learning, the trainees completed their tasks and passed the graduation exam. At the graduation ceremony, Guan Jian, Vice President of XuetangX.com, introduced big data applications in massive open online courses (MOOC). Four trainee representatives shared their thoughts about the training. They said that they were lucky to have participated in the training and expressed thanks to the organizer for providing the training and to the teachers from their great classes and efficient

and thoughtful arrangements. As engineers of tomorrow, they kept in mind Tsinghua's campus spirit of "actions speak louder than words". In his concluding remark, Professor Wang Sunyu expressed the hope that the trainees should take what they learned back to their home countries, strive to learn specialized knowledge and Chinese culture, and make contribution to their national development and the development of engineering science and

technology.

The training workshop was the offline training part of the online-offline training mode of the Micro-Diploma in computer science. The online training part was completed in August and was attended by more than 900 trainees from around the world. The participants in the physical training was selected from the online trainees.



Seminars on IKCEST General Platform Positioning and Development Direction held in Beijing

The IKCEST held a series of seminars on the positioning and development direction of the IKCEST platform on October 19, November 6, November 14 and November 22 respectively. The seminars were attended by experts from related universities, research institutes, international organizations and enterprises at the invitation of the IKCEST Secretariat and planned the development framework of the IKCEST platform in the next stage. The experts included Han Qunli, Executive Director of the International Project Office of the Integrated Research on Disaster Risk, Zhuang Yueting, Professor at School of Computer Science and Technology, Zhejiang University, Jin Hai, Professor at School of Computer Science and Technology, Huazhong University of Science and Technology, He Liang, Professor and Dean of Department of Computer Science and Technology, East China Normal University, Jiao Yi, Deputy Chief Engineer at the Electronic Technology Information Research Institute under the Ministry of Industry and Information Technology, Wang Juanle, researcher at Institute of Geographic Sciences and Natural Resources

Research (IGSNRR), Chinese Academy of Sciences, Gao Xiang and Pan Gang, Deputy Directors of the IKCEST Project Management Office, Deng Qiancheng, Ren Baijun and Cai Zhiyong, members of the chief engineer team of the IKCEST, Liu Xiaoyun, Technological Director of Product Technology Centre of Sohu Inc., Fang Dongxing, Vice President of NetDragon Websoft, Chi Changyan, Senior Director of overseas research at NetDragon Websoft, and Jin Xichuan, Product Manager at NetDragon Websoft. The seminars were also attended by relevant members of the IKCEST general platform and sub-platform teams. The series of seminars were presided over by Liu Chang, Director of Division of International Cooperation of IKCEST.

The seminars reviewed the background and development process of the IKCEST, summarized its progress and achievements, conveyed the opinions and suggestions given at the IKCEST platform acceptance meeting and the meeting of the second Governing Board of the IKCEST, and had discussions on the development direction and technical positioning of the IKCEST general platform in

the next stage.

Based on development in the previous three stages, the IKCEST platform has made positive progress in integration of the general platform and the sub-platforms, aggregation of data resources, and knowledge service development, with the page view of the platforms steadily increasing, though more efforts still need to be strengthened in such aspects as the depth and breadth of data

resources, development of special resources and knowledge services, multi-language support, and operations.

The seminars produced a series of guidelines based on the discussions of the experts. At their suggestion, the IKCEST Secretariat drafted the IKCEST Platform Roadmap for 2019 to serve as an important reference document for the formulation of the 2019 IKCEST work plan.



The 2nd International Workshop for Disaster Risk Reduction Knowledge Service held in Beijing

The Second International Workshop for Disaster Risk Reduction Knowledge Service was held on Oct.20-21, 2018, Beijing, China. The workshop was co-hosted by the International Knowledge Centre for Engineering Sciences and Technology under the Auspices of UNESCO (IKCEST) and Section on Earth Sciences and Geo-Hazards Risk Reduction, United Nations Educational, Scientific and Cul-

tural Organization (UNESCO DRR), organized by Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR, CAS).

Mr. Soichiro Yasukawa, Coordinator for Earth Sciences and Geo-Hazards Risk Reduction Section at the Natural Science Sector of UNESCO, Mr. Philippe Pypaert, Programme Specialist of

UNESCO Beijing Office, Ms. Liu Chang, Director of Division of International Cooperation, IKCEST, Ms. Feng Kai, Deputy Director of the Division of International Organization, Bureau of International Cooperation, CAS, Professor Gao Xing, Deputy Director of IGSNRR, CAS, Professor Cui Peng, Member of CAS, Ms. Gretchen Kalonji, former Assistant Director-General of UNESCO and the Dean of Institute for Disaster Management and Reconstruction, Sichuan University-Hong Kong Polytechnic University, Mr. Han Qunli, Executive Director of the International Project Office of Integrated Research on Disaster Risk (IRDR) participated in the workshop.

Foreign experts and scholars from 12 countries including the United States, Japan, Germany, Russia, England, Mongolia, Pakistan, Bangladesh, Thailand, Myanmar, Sudan and Bolivia, nearly 80 participants including Disaster Risk Reduction Knowledge Service System project team members attended the workshop. Professor Juanle Wang, Technical Director of the IKCEST Disaster Risk Reduction Knowledge Service System, moderated the opening ceremony.

Cui Peng delivered the keynote speech on "Silk Road Disaster Risk Reduction" in the opening ceremony. During the keynote reporting phase, Soichiro Yasukawa made a report on "UNESCO's update on DRR activities including data and AI", Gretchen Kalonji made a report on "Prospects for

Enhancing Global, Regional and National Collaboration in Data Sharing for Disaster Risk Reduction", Han Qunli gave a report entitled "Advancing the Science and Technology Roadmap" to support the implementation of the Sendai Framework - an IRDR perspective, Wang Juanle commissioned by Sun Jiulin made a report on "The new generation of AI technology boosts the modernization of disaster prevention and mitigation".

In the work report phase, Wang Juanle made a report on "Disaster Risk Reduction Knowledge Service System of IKCEST Progress". Experts at the conference presented the progresses on disaster risk reduction for earthquake, flood, drought, high temperature and heatwave and other types of disaster respectively. DRR techniques and practices, as well as disaster assessment, emergency response and disaster data management and services were exchanged and discussed. Liu Chang and Soichiro Yasukawa respectively moderated the keynote report and thematic report sessions, as well as the discussion and communication at the corresponding stage.

On the second day of the workshop, participants went to Tangshan, Hebei province for field visit, including Tangshan Earthquake Memorial Monument and Monument Square and Tangshan Earthquake Ruins Memorial Park.

The project group of the Disaster Risk Reduc-

tion Knowledge Service System of IKCEST would fully absorb and summarize the research results of this workshop, further strengthen and maintain cooperation with international and domestic insti-

tutions, and further enhance the service capabilities and influence of the Disaster Risk Reduction Knowledge Service System.



The Second International Workshop for Disaster Risk Reduction Knowledge Service

Oct.20-21, 2018



First Session of Second Governing Board of IKCEST held in Deqing

The First Session of the Second Governing Board of the IKCEST was held in Deqing County, Huzhou, Zhejiang province, on October 25, 2018.

The meeting was chaired by Chen Zuoning, Chair of the Second Governing Board of the IKCEST and Vice President of the Chinese Academy of Engineering (CAE), and attended by members of the Second Governing Board including Pan Yunhe, Member of the CAE, Wu Zhiqiang, Member of the CAE, Prof. Raj Reddy, Foreign Member of the CAE, Philippe Pypaert, Programme Specialist of UNESCO Beijing Office, Prof. Otthein Herzog, Member of German Academy of Science and Engineering, Prof. Narayanaswamy Balakrishnan, Member of Indian Institute of Science, Prof. Jan Eloff at University of Pretoria in South Africa, and Zhou Jiagui, representing the Chinese National Commission for UNESCO as a Governing Board member institution. Members of the Second Advisory Committee of the IKCEST, members of the IKCEST general platform and sub-platform teams and relevant personnel of the IKCEST Secretariat were in attendance.

At the meeting, the lists of members of the Second Governing Board of the IKCEST and members of the Second Advisory Committee of the IKCEST were announced, marking the official formation of the second Governing Board and Advisory

Committee of the IKCEST.

The meeting heard the IKCEST 2018 work report given by the IKCEST Secretariat. The attending members of the Second Governing Board recognized the work of the IKCEST in 2018. On behalf of UNESCO, Philippe Pypaert stated that the IKCEST 2018 work report was comprehensive and substantial and expressed appreciation and thanks to the IKCEST for its progress achieved in 2018 and its strong support and positive contribution to various endeavors of UNESCO.

The meeting deliberated and adopted in principle the IKCEST Biennial Work Plan (2019-2020) drafted by the IKCEST Secretariat. After discussion, the Governing Board gave a number of suggestions on the plan document and the centre's future work, including actively participating in relevant UNESCO initiatives and more aligning with UNESCO's concerns such as urban hygiene, water treatment and climate change; providing data resources and knowledge services with the focus on developing countries and even the least developed countries; and actively conducting engineering cooperation and exchanges and establishing cooperative relationships with more national academies of engineering and sciences and their members.

The meeting ended with a group photo-taking session.



First Session of Second Advisory Committee of IKCEST held in Deqing

The First Session of the Second Advisory Committee of the IKCEST took place in Deqing county, Huzhou, Zhejiang Province on October 25, 2018. The meeting was co-chaired by Committee Co-chairs Pan Yunhe, Member of the Chinese Academy of Engineering, and Prof. Raj Reddy, Foreign Member of the Chinese Academy of Engineering, and attended by CAE Members Wu Cheng and Li Guojie, Prof. Zhuang Yueting, Prof. He Liang and Mr. Liu Xiaoyun. Members of the Second Governing Board of the IKCEST, members of the IKCEST general platform and sub-platform teams and relevant personnel of the IKCEST Secretariat were in attendance.

The meeting heard the annual work reports of the IKCEST general platform and its four sub-platforms of Disaster Risk Reduction, Intelligent City,

Silk Road Science and Technology, and Engineering Education and their online system demonstrations and had in-depth discussions. The present members of the Advisory Committee gave a series of suggestions on the development of the IKCEST general platform, including making the platform more international, aggregating resources from wide sources, improving the quality of resources and updating them more frequently, clearly defining users' needs, increasing the platform's interactivity, focusing on content development, improving the platform's service capabilities, and further aligning with UNESCO's concerns. The meeting also discussed matters relating to the 2019 IKCEST International Symposium.

The meeting ended with a group photo-taking session.



IKCEST International Symposium 2018 held in Deqing

The IKCEST International Symposium 2018, with “Next Generation Artificial Intelligence and Knowledge Service” as its theme, was held in Deqing on October 26, 2018. The symposium is co-hosted by UNESCO and the Chinese Academy of Engineering (CAE) and organized by IKCEST and the People’s Government of Deqing County, Huzhou City, Zhejiang Province and so on.

The opening ceremony was presided over by Wang Qinying, Secretary of CPC Deqing County Committee. Li Xiaohong, CAE Member and President of CAE, Wang Wenxu, Vice Governor of Zhejiang Province, and Philippe Pypaert, Programme Specialist of UNESCO Beijing Office, attended and addressed the opening ceremony. Chen Zuoning, CAE Member and Vice President, Pan Yunhe, CAE Member and former Executive Vice President, Professor Raj Reddy, Turing Award winner, and more than ten Chinese and foreign academicians and business representatives attended the conference. An audience of over 400 people, including representatives from government agencies, scientific research institutions and enterprises as well as foreign students, participated in the conference, and

over 16,000 people watched the conference live at live.ckcest.cn.

President Li Xiaohong discussed the new features of AI development in the new stage in his speech. He said, the Chinese government attaches great importance to AI development. As a national think tank, the CAE pays close attention to this future-shaping strategic technology and has conducted a series of major strategic consulting and research projects, providing scientific support for the government to make policy decisions. President Li commended the work of IKCEST and shared his expectation for the organization. He encouraged the delegates to speak their mind, share their knowledge, seek consensus, and work together to “sprint” on the road of artificial intelligence, and harness the power of AI to the greater benefit of mankind.

On behalf of Zhejiang province, Vice Governor Wang Wenxu mentioned, this symposium contributes to the innovative environment and also plays a positive role in the development of AI in Zhejiang with far-reaching impacts.

Mr. Philippe Pypaert expressed his gratitude to

the IKCEST for its committed work and noticeable contribution. He said, UNESCO also thinks highly of next generation AI technology, and any further communication and cooperation would be warmly welcomed.

The morning session of the symposium was moderated by CAE Member Li Guojie. CAE Member Pan Yunhe analyzed a number of new trends of robotics based on in-depth research on AI 2.0. The first trend is the transition from robotics to autonomous intelligent systems. The second trend is the hybrid-augmented intelligence based on human-machine collaboration.

Professor Raj Reddy provided background and history of AI in an attempt to clarify the sources of misinformation about AI in the media recently. In his speech, he introduced the architecture of two types of Intelligent Assistants. Cognition Amplifi-

ers would enable humans to do many daily tasks faster and with less effort. Guardian Angels would provide humans with superhuman capabilities and enable humans to do tasks previously impossible.

CAE Member Wu Zhiqiang presented that the New Generation AI City was further supported by the latest database tool “City Tree” and the city simulation system “City Go” was trained on this basis, using machine learning technology. Eight most advanced city simulation tools for urban population distribution simulation, urban land use simulation, natural resource simulation, public service simulation, urban density simulation, city image simulation and industrial space simulation, respectively, were developed and would be applied to the planning and operation of the world’s first AI town.

Mr. Wang Haifeng, Senior Vice President of Baidu, gave a deep analysis of Baidu Brain. It has



made breakthroughs in the core technology of deep semantic understanding of multimodal data covering speech, image, and natural language, on the basis of large-scale cross-media knowledge graph fusing multi-sourced heterogeneous data etc.

The afternoon session was moderated by

Prof. Wu Zhiqiang. Prof. Otthein Herzog, Fellow of the German Academy of Science and Engineering, illustrated that connections of ontologies to approaches like DBPedia had proven to be useful at an application domain level. These approaches could be extended to Knowledge-as-a-Service

functions within vibrant domain ecosystems as a precondition to keep the knowledge bases of an application domain up to date.

Prof. Nakajima, Member of the Engineering Academy of Japan, proposed an autonomously networking method of small and weak AI computers in his speech. It presented a method of data and processor identification and an inference method to combine one and another.

Mr. Lin Fan, Founder and CEO of Maimai, gave an introduction to the exploration of great potential of AI in helping white-collar worker's career, including the close connection in people's social contact, as well as acquiring high value information.

Mr. Sung Ho YOO, Director of Kakao Corp of South Korea, shared overview of the Korean smart speaker landscape and expressed that the vast service portfolio offered by Kakao would in the end create lasting value and utility to the users in their everyday lives.

During the panel discussion, the moderators and speakers answered the questions from the audience and had an in-depth exchange of views with them.

The symposium provided a platform for communication between top-class experts, scholars, outstanding entrepreneurs and participants from all over the world, making positive contributions to the in-depth cooperation of engineering science and technology circles at home and abroad in the fields of knowledge service, big data technology research and artificial intelligence.



IKCEST Silk Road Training Base held the 20th-22nd (the 44th-46th in total) Training Programmes for Silk Road Engineering Science and Technology Development of 2018

IKCEST Silk Road Training Base held the 20th-22nd (the 44th-46th in total) Training Programmes for Silk Road Engineering Science and Technology Development of 2018 from October 29 to November 2, from November 9 to 14, and from November 12 to 16, respectively. The three programmes, with their themes being “The Frontiers of Life Science”, “Medical Frontiers and Big Data Theory and Applications” and “Frontiers of Chemical Technology and Applications” respectively, were attended by more than 220 overseas students of universities

including Xi’an Jiaotong University, Northwestern Polytechnical University, Chang’an University and Xidian University, who are from more than 20 Belt and Road countries including Pakistan, Nigeria and Kazakhstan.

The 44th programme covered contents including innovative thinking and cross-disciplinary research, tissue engineering and regenerative medicine, PHAs and their biomedical applications, and “Belt and Road” and Chinese culture. To deepen the trainees’ understanding of Chinese culture, history and thoughts, the programme arranged the trainees to participate in the event celebrating the 1000th China-Europe freight train trip and tour Shaanxi History Museum.

The 45th programme covered contents including big data processing and deep learning, the challenges and applications of big data on wireless networks, the basic techniques of massotherapy and prevention and treatment of common diseases, from laboratory to clinical utility, gene expression



The 45th IKCEST Training Program for Silk Road Engineering Science and Technology Development
XJTU, Nov., 2018



regulation, and online course “The Belt and Road: History and Future, and Opportunities and Challenges”. It complemented classroom teaching with practice experiences and interactions and provided the trainees with a preliminary understanding of big data, genetical engineering and basic theories of traditional Chinese medicine. The trainees expressed their intent to take more similar courses and apply their knowledge to their national development in science, technology and medicine.

The 46th programme covered contents including the Belt and Road and Chinese culture, synthesis of PVDF-based fluoropolymers and regulation of ferroelectric properties, protection of foreign copyrights in China, self-healing polymer materials, organic electroluminescence technology and applications, driverless cars, and Tai Chi culture and

cultivation. The session also arranged visits to ZTE, Shaanxi Institute of Metrology Science and Xi’an International Trade and Logistics Park.

To improve the trainees’ artistic sense, promote the exchange of civilizations, expand the influence of the Silk Road Training Base, and increase the trainees’ cross-cultural communication ability, the IKCEST Silk Road Training Base, in cooperation with the CYL Committee of Xi’an Jiaotong University, held the “2018 Silk Road Concert of Ramble in the Classics” during the training session 46. Held under the theme of “People-to-People Connectivity through Art”, the concert was attended by more than 50 overseas student representatives.

At the end of the training programmes, the co-organizers conferred graduation certificates on qualified trainees.

IKCEST held video conference with UNESCO Headquarters on Communication and Outreach Platform Construction

On November 14, 2018, the IKCEST and UNESCO held a video conference on the construction of UNESCO Natural Sciences Sector’s Communication and Outreach Platform (hereinafter referred to as “Communication and Outreach Platform”) and the signing of a MoU. The teleconference was attended by Liu Chang, Ma Yingchen, Zhang Ye and Fang Ying at the IKCEST Secretariat, and Ana Peršić, Gifty Dlouhy and Isabelle Brugnion at UNESCO Liaison Office.

Liu Chang briefed on the background of the

IKCEST Communication and Outreach Platform commissioned by UNESCO and the drafting of the MoU. The two sides discussed topics including platform copyright and maintenance, respective obligations among the construction parties, and launch time of the platform. Ana believed that relevant work should be started soon, including discussion with Ecole Polytechnique Fédérale de Lausanne (a party of the platform construction) to determine the joint meeting time and advancement of the MoU signing and platform construction.

IKCEST Intelligent City Knowledge Service System held 2018 International Symposium in Deqing

The 2018 International Symposium of IKCEST Intelligent City Knowledge Service System, co-sponsored by the IKCEST and Tongji University, was held in Deqing, Zhejiang province on November 19, 2018.

The meeting, themed “AI and Urban Space Planning of Tomorrow”, took place as part of the inaugural United Nations World Geospatial Information Congress. At the meeting, top urban planning and AI experts, scholars and industry practitioners discussed on related topics including intelligent city planning and smart geographical information, shared their ideas and views, and envisioned an exciting future of smart planning based on the marriage of urban space planning and AI technology. The meeting was attended, among others, by Wu Zhiqiang, Member of the Chinese Academy of Engineering (CAE) and Vice President of Tongji University, Otthein Herzog, Fellow of German Academy of Science and Engineering, Cao Buyang, Professor at College of Architecture and Urban Planning, Tongji University, Xu Liyan, Assistant Professor at College of Architecture and Landscape, Peking University, Huang Qian, Chief Engineer at China Highway Engineering Consulting Corporation (CHECC), and Liu Chang, Director of Division

of International Cooperation of the IKCEST.

The meeting opened with an address by Liu Chang on behalf of the CAE and the IKCEST, in which she introduced the work of the CAE and the IKCEST in knowledge sharing in geospatial information and engineering, including the background of the IKCEST, the development of the IKCEST general platform and sub-platforms, international training and support of UNESCO actions.

After that, Cao Buyang introduced cases of using machine learning to analyze and predict spatial and statistical data of urban built-up areas and discover patterns of urban development.

Wu Zhiqiang introduced the research and practices of his team in smart data capture, smart configuration of urban functions, and smart design of urban form, and demonstrated the exciting potential of the integration of AI technology and urban planning science in transforming urban research, urban management and urban life.

Otthein Herzog introduced the changes brought by AI to knowledge systems and urban planning and, based on the city tree research of CIUC, how AI can help discover the laws of urban development.

In his report, Xu Liyan also emphasized the

important role played by technologies such as geographic information, AI and virtual reality in environmental sustainability, intelligent city and territory spatial planning, and gave a brief introduction to how these technologies can advance sustainable intelligent city development and management.

Finally, Huang Qian shared his views on how geographic information and AI would help address urban and social issues and expounded on the

importance of geographic information in intelligent city development.

The symposium provided a platform for the relevant experts and practitioners in geographic information to have in-depth communication, share success stories and innovative approaches, and discuss the trends of geographic information technology and smart planning, and opened up new prospects for geographic information cooperation.



Seminar on 2019 Platform Development Planning of IKCEST Silk Road Science and Technology Knowledge Service System held at CAE

The Seminar on 2019 Platform Development Planning of IKCEST Silk Road Science and Technology Knowledge Service System was held at the Chinese Academy of Engineering (CAE) on November 22, 2018. The meeting was attended by Liu Chang, Director of Division of International Cooperation of IKCEST, Han Qunli, Executive Director of the International Project Office of Integrated Research on Disaster Risk, Zhuang Yueting, Professor at School of Computer Science and Technology, Zhejiang University, Jin Hai, Professor at School of Computer Science and Technology, Huazhong University of Science and Technology, Cai Zhiyong, Director of Government Projects, Information Division of China National Chemical Information Centre, Wang Juanle, researcher at Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences, Fang Dongxing, Vice President of NetDragon Websoft, Jin Xichuan, Product Manager at NetDragon Websoft, Xu Yiwei, Business Manager of Inspur Software Group, and relevant personnel of the IKCEST Secretariat and the IKCEST general platform team.

The Silk Road Science and Technology System team reported on the project's progress, December 30 iteration and 2019 work plan. The attending experts had discussions on the abovementioned subjects, reviewed the development of the sub-platforms, and gave a number of opinions and suggestions for the advancement of project development and planning in 2019. Their suggestions included 1) aligning content development with UNESCO's concerns; 2) focusing resource aggregation on key areas, including the adoption of the "six major corridors" concept in geographical scope and water resources, agriculture and renewable energy which are emphasized by Belt and Road countries in the scope of academic disciplines; 3) adding information such as rankings of universities in Belt and Road countries and their leading programmes; and 4) optimizing the positioning of some existing content modules and highlighting the unique features of the sub-platforms. The meeting also assigned some tasks of integration of the general platform and the sub-platforms in 2019.

Seminar on 2019 Platform Development Planning of IKCEST Intelligent City Knowledge Service System held at CAE

The Seminar on 2019 Platform Development Planning of IKCEST Intelligent City Knowledge

Service System was held at the Chinese Academy of Engineering (CAE) on November 23, 2018.

The meeting was attended by Jin Hai, Professor at School of Computer Science and Technology, Huazhong University of Science and Technology, Cai Zhiyong, Director of Government Projects, Information Division of China National Chemical Information Centre, Wang Juanle, researcher at Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences, Fang Dongxing, Vice President of NetDragon Websoft, Chi Changyan, Senior Director of overseas research at NetDragon Websoft, Jin Xichuan, Product Manager at NetDragon Websoft, and representatives of the IKCEST Secretariat and the IKCEST general platform.

The Intelligent City Knowledge Service System (iCity) team briefed on the December 30 platform iteration, gave a presentation on the platform's existing functions, and introduced its 2019 platform development plan. The attending experts had discussions on the abovementioned contents and gave the following suggestions: 1) unify the standards of classification of global best practices,

enrich the practice library, and expand practice presentation formats, with suggested measures including designing clear practice templates and highlighting the relevance of intelligent city cases to the UN Sustainable Development Goals (SDGs); 2) strive to make the iCity's City IQ and City Comparison module a mainstream authoritative product in the industry and increase the authoritativeness and recognition of its classification indicators, highlight smart features and expand them on the meso-level such as transportation, healthcare and communication, and clarify the number of cities covered and the criteria of selection; and 3) create a database of educational institutions specialized in planning as part of the global knowledge sharing platform for planning education and provide the link to IKCEST on the GPEAN website. In addition, the experts also gave constructive suggestions on such aspects as website security, diversity of resources, alignment with relevant UNESCO endeavors, and search engine optimization.

Seminar on 2019 Platform Development Planning of IKCEST Engineering Education Knowledge Service System held at CAE

The Seminar on 2019 Platform Development Planning of IKCEST Engineering Education Knowledge Service System was held in Meeting Room 219 of the Chinese Academy of Engineering (CAE) on November 23, 2018. The meeting was chaired by Liu Chang, Director of Division of International Cooperation of IKCEST, and attended by Wang Juanle, researcher at Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences, Cai Zhiyong,

expert of the chief engineer team of the IKCEST, Fang Dongxing, Vice President of NetDragon Websoft, Chi Changyan, Senior Director of overseas research at NetDragon Websoft, Jin Xichuan, Product Manager at NetDragon Websoft, and 14 representatives of the Engineering Education Knowledge Service System team, the IKCEST Secretariat and the general platform team.

The meeting had discussions on the progress of the Engineering Education Knowledge Service

System and December 30 iteration and the development plan of the platform for 2019. The attending experts shared their views on general issues including inadequacy of resources on the platform and their presentation and gave suggestions on its development in 2019: 1) strengthen resource development and make more resources available; 2) put high priority on building advantages and developing distinctive resources; 3) improve knowledge

graphs and offer more ways of knowledge presentation; and 4) plan well and strengthen cooperation and sharing with CKCEST.

By organizing experts to have “group consultation” based thematic discussions and share views on existing issues, the meeting played a positive role in guiding the development of the Engineering Education Knowledge Service System in 2019 and beyond.

Preparatory Meeting for Annual Conference of Chinese Union of UNESCO Category 2 Centres held at CAE

On November 30, 2018, the Preparatory Meeting for Annual Conference of Chinese Union of UNESCO Category 2 Centres was held at the Chinese Academy of Engineering (CAE), and attended by Hong Tianhua, Secretary-General of the Union, Deputy Secretaries-General Li Xin and Liu Chang, and Secretaries Liu Jing, Wang Meng, Ma Yingchen and Che Nan. The meeting reviewed the Union’s work in the year and discussed the preparation of the 2019 annual meeting of the Union.

The meeting opened with Hong Tianhua briefing on personnel changes of the UNESCO headquarters and the Chinese National Commission for UNESCO and the “Regulation on UNESCO Category 2 Centres in China” soon to be released by the Chinese National Commission for UNESCO. And Hong Tianhua, representing the International Centre on Space Technologies for Natural and Cultural Heritage (HIST), Li Xin, representing the World Heritage Institute of Training and Research for the Asia and Pacific Region (WHITRAP), Liu Jing, represent-

ing the International Research and Training Centre for Rural Education (INRULED), and Liu Chang, representing the International Knowledge Centre for Engineering Sciences and Technology (IKCEST), reported on the functioning of their respective centres in 2018.

After that, the attendees discussed the time, location and agenda of the 2019 Annual Conference of the Chinese Union of UNESCO Category 2 Centres and decided that the conference should be held in Tongren in Guizhou Province from January 17 to 18, 2019, with agenda including review of the 2018 annual conference, summary of the Union’s work in 2018, thematic discussion on Category 2 Centre development and experience, and thematic discussion on the operating mechanism of Category 2 Centres.

The meeting also discussed matters including the potential and ways of Category 2 Centres cooperating with enterprises and development of sub-centres.

IKCEST representatives attended the Forum on Artificial Intelligence in Africa

From December 12 to 13, 2018, Ms. Liu Chang, Director of Division of International Cooperation of the International Knowledge Centre for Engineering Sciences and Technology under the Auspices of UNESCO (IKCEST), and Prof. Wang Juanle, the Technical Director of Disaster Risk Reduction Knowledge Service System (DRR) of IKCEST, were invited to attend the Forum on Artificial Intelligence in Africa sponsored by United Nations Educational, Scientific and Cultural Organization (UNESCO) in Benguerir, Morocco.

The theme of the Forum was the issues and challenges of artificial intelligence in Africa. More than 200 participants from UNESCO officials in Africa, ambassadors of African countries, representatives of UNESCO Permanent Delegations, officials of National Commission for UNESCO as well as representatives of academia and business circles around the world participated in the meeting. Ms. Audrey Azoulay, Director-General of UNESCO, made a speech, expressing the great importance and firm determination of UNESCO to achieve the

goals of promoting Africa’s development and sustainable development through artificial intelligence technology.

As a panelist, Prof. Wang Juanle participated in the Plenary Session 1 named Artificial intelligence in Africa: issues, challenges and opportunities, and made a report on Big Data and Knowledge Service in Disaster and Risk Reduction. He pointed out that, in Africa, whether the building of smart city, agricultural production or big data development, it needs the support of artificial intelligence. DRR is one of the knowledge services systems of IKCEST. He suggested that cooperation between IKCEST and Africa should be strengthened and the application of AI in the prevention and control of natural and man-made disasters should be promoted.

In the interactive communication, Ms. Liu Chang introduced to the participants the main functions of the Chinese Academy of Engineering and IKCEST, the importance they attached to the application of artificial intelligence technology, and



she pointed that IKCEST has consistently adhered to and highlighted the principle of “Africa Priority” and made great efforts to provide on-line and off-line knowledge services for African engineers and technicians and expressed the IKCEST’s willingness to provide more targeted knowledge services to meet the needs of African users in the future.

IKCEST briefing materials, DRR briefing materials and user demand questionnaires were actively distributed to the participants during the meeting.

The meeting explored the opportunities, challenges and threats posed by AI to the sustainable and inclusive development of the African in depth, and provided an excellent platform for UNESCO to

communicate with officials, scholars and entrepreneurs from relevant backgrounds from all over the world. IKCEST team actively delivered the “voice from China” during the meeting, carried out extensive and friendly communication and exchanges after the meeting, and obtained the cooperation intention of international and domestic institutions such as Brazilian Internet Association and Xi’an High-tech Zone of China, enhanced the cooperation possibility between IKCEST and African countries, laid a foundation for joint training with UNESCO headquarters in Africa in the future, and further enhanced the international popularity and influence of IKCEST.



The closing meeting on the planning of the IKCEST Knowledge Service Systems from 2019-2021 held in Beijing

The closing meeting on the planning of the IKCEST Knowledge Service Systems was held on December 28, 2018 at the Chinese Academy of Engineering.

Han Qunli, Executive director of the International Project Office of Integrated Research on Disaster Risk(IRDR), Xuan ZengPei, former Director of United Nations Economic and Social Commission for Asia and the Pacific Information and Communication and Space Technology Department and Deputy Secretary General of China Association of Inventions, Hong Tianhua, Executive Deputy Director and Secretary-General of the International Centre on Space Technology for Natural and Cultural Heritage under the Auspices of UNESCO, Cai Zhiyong, Director of Government Projects, Information Division of China National Chemical Information Centre, Liu Chang, Director of Division of International Cooperation of IKCEST, Professor Wang Juanle and Associate Professor Wang Shuqiang, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR, CAS), Li Yang, National Science Library,

CAS, Ma Yingchen, Zhang Ye, Fang Ying, Secretariat of IKCEST and the team members of the project attended the meeting. Professor Wang Juanle moderated the meeting.

Prof. Wang Juanle made an overall work report focusing on the work background, identification of priority areas in international engineering science and technology, analysis of key areas of UNESCO and IKCEST, selection principles and technical indicators of knowledge service systems, recommendation of candidate agencies for knowledge service systems in 2019-2021, etc.

The experts showed their positive comments on the research results and believed that the group has fulfilled its obligations. They also had a deep discussion and provide suggestions on the selection of priority areas such as artificial intelligence, water, ocean and ecological restoration, the optimization of quantitative evaluation values of selection indicators, the selection method and research work of IKCEST candidate institutions, and the periodic output and impact of research results.





» CKCEST News

The China Knowledge Centre for Engineering Sciences and Technology (shortened as “CKCEST”) is a significant part of and vital support for the International Knowledge Centre for Engineering Sciences and Technology (shortened as “IKCEST”).

3rd Knowledge Service and Informatics Seminar held in Beijing

On October 11 and 12, 2018, the 3rd Knowledge Service and Informatics Seminar successfully took place in Beijing. The seminar was sponsored by China Society for Scientific and Technical Information (CSSTI), co-organized by the Institute of Scientific and Technical Information of China (ISTIC) and China Knowledge Centre for Engineering Sciences and Technology (CKCEST), and held under the theme of “AI and knowledge service”. At the meeting, Sun Jiulin, Chinese Academy of Engineering Member, gave a thematic report titled “Big Data, Data Science and AI”. Liu Qiyan, Deputy Director of ISTIC, and Pan Gang, Deputy Director of the CKCEST Project Management Office, attended the meeting and gave addresses. Representatives of AMiner, and sub-centres such as forestry, information technology and expert database also gave reports.

Meeting held for selection and evaluation of CKCEST public data knowledge service products

To better utilize data resources, improve the CKCEST’s knowledge mining and analysis capabilities, and make full use of the strengths of domestic public data resource service organizations in knowledge service, the CKCEST Project Management Office held a meeting for the selection and evaluation of CKCEST public data knowledge service products for development in 2019 on October 16, 2019, which was attended by experts in related fields. The meeting put forward three requirements: 1) the knowledge products should relate to the CKCEST’s project goals; 2) they should be synchronized with purchased data resources; and 3) they should make full use of available strengths of the partners involved to increase product influence and performance. The evaluation experts selected and evaluated six knowledge products provided by five organizations and produced a selection and review report in accordance with the requirements of the meeting.

1st Forum on Metallurgical Knowledge Service & Metal Info Annual Conference held in Beijing

On November 8, 2018, the 1st Forum on Metallurgical Knowledge Service & Metal Info Annual Conference took place in Beijing. The event was sponsored by China Metallurgical Information and Standardization Institute (CMISI) and CKCEST and co-organized by metalinfo.com.cn, the CKCEST Professional Knowledge Service Centre for Metallurgy and the Chinese Society for Metals (CSM) Branch for Information. At the event, Yin Ruiyu, Member of the Chinese Academy of Engineering, gave a thematic report titled “Building a First-rate Programme in Metallurgy with the Future in Mind: On Development of the Academic Discipline of Metallurgy in the Context of ‘New Engineering’”. The event was chaired by Yu Kai, Vice President of CMISI. Ma Jun, President of CMISI, and Pan Gang, Deputy Director of the CKCEST Project Management Office, attended the meeting and gave reports. The meeting was attended by more than 200 representatives from partner organizations in upstream and downstream fields including mining, steel, ferrous, deep processing, durable material, environmental protection, equipment manufacturing, and logistics.

Cooperation agreement signed between Professional Knowledge Service System for Geography Resources and Ecology and four institutes of Russian Academy of Sciences

From November 3 to 6, 2018, a Russian Academy of Sciences delegation of 11 members, including directors of four RAS institutes — the Pacific Institute of Geography, Institute of Ecology and Evolution, Institute for Informatics and Control of Regional Problems and Sochava Institute of Geography — made a four-day exchange visit to the CKCEST Professional Knowledge Centre for Geography Resources and Ecology at the invitation of Sun Jiulin, Member of the Chinese Academy of Engineering, and Yang Yaping, head of the centre and Deputy Director of Earth Data Science and Sharing Research, the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) of the Chinese Academy of Sciences (CAS). The two sides had in-depth discussions and consultations on the areas, scope and methods of cooperation. Yang Yaping gave a presentation on the development of the Professional Knowledge Service System for Geography Resources and Ecology and signed cooperation agreements with the four RAS institutes. The Russian



delegation spoke highly of the platform's work in data sharing and wished it even greater success in international data sharing.

Winners selected for 2018 China Good Design Awards

On November 12, 2018, the China Good Design Awards programme co-sponsored by the CKCEST and the Innovation Design Alliance of China completed the selection of winners for the annual awards for 2018, including 10 gold awards, 20 silver awards and 40 creative awards. The programme was initiated by Lu Yongxiang and Pan Yunhe, Members of the Chinese Academy of Engineering (CAE), as part of the CAE key advisory project "Strategic Research on Innovation Design Development", and was in its fourth year in 2018. Through case study, recommendation, selection and award recognition of innovative designs, the programme is on mission to spread advanced design ideas, foster a favorable environment for design work and build globally influential Chinese brands. The award ceremony will take place during the China Innovation Design Conference in December.

CKCEST Live continued to offer live-casting services for academic events

As of late November, CKCEST Live has broadcast live six high-end forums including the Summit Forum on Immunology and Clinical Application, Forum on Auto Manufacturing Power and Indigenous Innovation, the 1st Forum on Metallurgical Knowledge Service, Forum on Cultivation and Development of Strategic Emerging Industries and 2018 International Forum on Smart Manufacturing with the generation of more than 130 videos of presentations given by CAE Members which received over 200,000 views.

CKCEST Live was launched by the CKCEST as a live-casting service focusing on academic events and has gained a remarkable influence after one year of operation. The platform will continue to improve its functions and make itself more known while advancing its mission to spread the latest academic knowledge and serve the CAE's trailblazing academic activity.

»» Top News for Big Data Era

Xi Jinping sent congratulations to 5th World Internet Conference

President Xi Jinping sent a congratulatory letter to the fifth World Internet Conference, which opened in Wuzhen, Zhejiang Province, on November 7, 2018.

The world is going through a broader and deeper science and technology revolution and industrial transformation, Xi said in the letter. In a world where the interests of countries are increasingly intertwined as emerging technologies such as the internet, big data and artificial intelligence continuously make breakthroughs, we should speed up the development of the digital economy and promote the global internet governance system to advance in a just and more reasonable way, so as to inject new impetus to the world economy, Xi said.

Despite having different conditions and facing various challenges, countries across the world share the need to promote the digital economy, the interests in handling challenges to cybersecurity, and the demands for better governance in cyberspace, Xi said. He called for concrete cooperation among different countries to advance mutual trust and collective governance in cyberspace and create a vigorous community with a shared future in cyberspace.

Noting that the conference was themed "creating a digital world for mutual trust and collective governance -- towards a community with a shared future in cyberspace," Xi expressed the hope that participants can pool wisdom, accumulate consensus and work for a sustainable digital world to make the internet better for the benefit of people around the world.

Source: xinhuanet.com



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