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

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联合国教科文组织国际工程科技知识中心

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

IKCEST Delegation went on survey and study tour to a number of UNESCO institute and category 2 centres in Asia and Europe

To better direct the development of the International Knowledge Centre for Engineering Sciences and Technology under the Auspices of UNESCO ("IKCEST"), a delegation of experts headed by CAE Member Pan Yunhe made a survey and study tour to a number of UNESCO institute and category 2 centres from January 7 to 16, 2015, including five UNESCO category-2 centres: Regional Centre for Educational Planning (RCEP) in the United Arab Emirates, Regional Centre on Urban Water Management (RCUWM), Regional Research Centre for Safeguarding Intangible Cultural Heritage in West and Central Asia (TICHC), Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS) in Iran, and International Centre for Pure and Applied Mathematics (CIMPA) in France, and one UNESCO institute: International Institute for Educational Planning (IIEP) in France.

Based on the recommendations from the UNESCO headquarters and its Beijing Office, as well as the overall IKCEST plan to start data cooperation from Asia and Europe, the destinations of these survey and study visits are all centres or institutes with rich management experience, mature operating models and extensive international networks for cooperation, covering both UNESCO institute and UNESCO category-2 centres in three different sectors of UNESCO, i.e. natural science, education and culture. Through the survey and study visits, the delegation expected to learn advanced management experience, publicize the IKCEST's mission, explore feasible approaches to data sharing and exchange, discuss directions and channels for future cooperation, thus paving the way for the IKCEST's future international cooperation and exchanges.

The survey and study visits gave the delegation an informed understanding of the rich management experience of the six centres and institutes in organizational structure, sources of funds, operating models, main activities and international networks, and of their technology conditions and needs in data exchange and knowledge service, which not only shed a valuable light on the future development of the IKCEST and also helped clarify its priorities in the next stage. Through the visits, the delegation effectively communicated the IKCEST's

mission and gained support of the visited UNESCO institute and category-2 centres, with consensus of cooperation reached with several centres, and a memorandum of understanding on cooperation jointly drafted with the Regional Centre on Urban Water Management.

(I) Visit to Regional Centre for Educational Planning (RCEP)

IKCEST delegation headed by CAE Member Pan Yunhe paid a visit to the Regional Centre for Educational Planning (RCEP) in the United Arab Emirates on January 8, 2015.

The RCEP is one of the five UNESCO category-2 centres in the education sector. Founded in 2003, it is based in Sharjah of the UAE, mainly committed to educational planning for the Gulf States. Its official website is http://www.rcepunesco.ae/.

During the visit, Ms. Mahra Hilal Al Mutaiwei, Director of the RCEP, introduced the overall framework of UNESCO regional partner organizations, the role positioning of UNESCO category-2 centres, and the history, organizational structure, staffing, main activities, international exchanges and cooperation (with domestic partners, other Arab states, and other parts of the world), and development plan of the RCEP.

The visiting delegation made a briefing on general information of IKCEST, including its mission and progress. Then the two sides had an in-depth discussion on extensive topics, including implementation details of training programs (such as recruitment channels, training duration, trainee number, trainer selection, and expenditure breakdown), symposia, consulting activities, website development, data management, operational cost, and Governing Board composition.

RECP was officially approved by the cabinet of UAE on January 12, 2004 after the UNESCO category-2 centre application was approved at the General Conference of UNESCO, including the grant of US$5 million for the construction of its office building. The centre was inaugurated in its

Visit to Regional Centre for Educational Planning (RCEP)

new office building on November 17, 2007, and the ceremony was attended by the Sheikh of Sharjah. In addition to adequate office rooms, the building has a meeting room which can hold 200 people.

The UAE government grants US$1 million in project funds to the RECP every year, in addition to fully funding the payroll of the centre's ten staff members. Its annual operational cost is around US$1-1.5 million. In addition, the RCEP is directly affiliated with IIEP, a UNESCO institute in education and receives direct technology and financing support from IIEP. Some tasks of the RCEP are completed by way of outsourcing.

Visit to Regional Centre for Educational Planning (RCEP)

The RCEP is closely associated with the Ministry of Education of UAE, with its Governing Board Chairman being the education minister himself and its around ten staffers being all from the Ministry of Education. The RCEP is influential among Gulf States in educational planning, with good relations with their education departments. All the six Gulf States have education officials serving as Governing Board members of the RECP.

Government officials, education policy makers and university leaders of the six Gulf States and their surrounding countries are the main targeted recipients of the training provided by the RCEP. RCEP also needs to prepare Gulf States Education Sector Strategic Planning, Education for All Global Monitoring Report, and RCEP Annual Report.

Besides, the RCEP attaches great importance to leveraging social media platforms such as YouTube, Google+, Facebook and Twitter to publicize its activities and expand its influence.

Accompanied by Ms. Mahra Hilal Al Mutaiwei and other senior officials of the RCEP, the Chinese delegation toured the centre's office building in Sharjah University City, which is well-planned with well-equipped office rooms, meeting rooms, classrooms, lecture halls and lounges in a sleek and modern style.

"In order to run the Category-2 Centre effectively, being independent is very important, and stable annual funding is another decisive factor," said Ms. Mahra Hilal Al Mutaiwei.

After the tour, the delegation was invited to visit the Applied Technology High School (ATHS) which has close ties with the RCEP. The school, which emphasizes practices and hands-on skills in teaching with outstanding achievements in vocational training, led the delegation on a tour of its laboratories and other facilities. ATHS undertakes part of the RCEP's training tasks.

In respect of future cooperation, given the RCEP's strong influence in Gulf States in educational planning and its close ties with the education authorities of those states, the IKCEST may consider strengthening cooperation with the RCEP in engineering education and internship and training in network infrastructure and engineering.

(II) Visit to Regional Research Centre for Safeguarding Intangible Cultural Heritage in West and Central Asia (TICHC)

The IKCEST delegation headed by CAE Member Pan Yunhe paid a visit to the Regional Research Centre for Safeguarding Intangible Cultural Heritage in West and Central Asia (TICHC) in Tehran, Iran, on January 11, 2015.

TICHC, established in Tehran in 2010, is a UNESCO category-2 regional centre in the culture

sector, mainly committed to safeguarding intangible cultural heritage in West and Central Asia. The centre's official website is under construction and will be open to the public soon.

The Director of TICHC gave a comprehensive introduction to the centre, including the definition and classification of intangible cultural heritage, summarization of Islamic cultural elements, the history, organizational structure, Governing Board composition, staffing, expenditure, main activities, main achievements, main challenges it faces, as well as its international cooperation network.

TICHC has its own independent office building and is financially supported by the Iranian government on a regular basis. The centre was formed by merging a number of research centres, including the Centre for Anthropological Research, Centre for Linguistic Research, Centre for Archaeological Research, Centre for Ancient Relic and Landscape Research, Centre for Research of Historical Preservation and Revitalization, and Centre for Research of Traditional Arts. In addition to focusing on digital preservation of intangible cultural heritage, information exchange, popularization of science, improvement of the public's preservation awareness, and capacity building, TICHC has also attained fruitful achievements in linguistics and made contributions to the analysis and preservation of the Persian language.

TICHC has attached importance to international cooperation. Besides establishing cooperative relations with West and Central Asian states including Afghanistan, Azerbaijan, Iraq, Pakistan, Armenia, Turkey, Uzbekistan, Turkmenistan and Kyrgyzstan, the centre has also played an active part in Asia Cooperation Dialogue and China's New Silk Road initiative. TICHC has signed memorandums of understanding on cooperation with a number of states on joint research projects and capacity building training workshops. The Director of TICHC expressed a strong interest in conducting extensive cooperation with Asian countries on the New Silk Road initiative and shared the centre's direction in cultural fusion and interdisciplinary research.

The Chinese delegation briefly introduced the general information of IKCEST, including its ideals and current status. The two sides discussed forms of future cooperation. CAE Member Pan Yunhe suggested displaying Islamic cultural elements on IKCEST's website to correspond to the Chinese cultural elements displayed by the Confucius Institute, proposing it as a specific way to realize the UNESCO goal of promoting exchanges of diverse world cultures. The New Silk Road initiative is also a good platform for cooperation between the two sides, with details of cooperation to be agreed upon in the future. The two sides reached consensus on cooperation and sharing in resources and experts.

Visit to Regional Research Centre for Safeguarding Intangible Cultural Heritage in West and Central Asia (TICHC)

Afterwards, the Director and other senior officials of TICHC led the Chinese delegation on a tour of the centre's office building which is a cultural heritage site itself. The Director of TICHC introduced the Islamic cultural elements on display inside the building, as well as functions of the various parts of the office building.

In view of the fact that Iran is a regional power with a long history featured with rich and colourful Islamic cultural elements and it is also an important node of the New Silk Road, it is necessary to promote cooperation between TICHC and IKCEST in the publicity and preservation of intangible cultural heritage. There is significant potential of cooperation between the two centres in digital documentation and preservation of intangible cultural heritage.

The meeting was attended not only by senior officials of TICHC, but also by officials of Iranian National Commission for UNESCO and relevant personnel of the Chinese Embassy in Iran.

(III) Visit to Regional Centre on Urban Water Management (RCUWM)

IKCEST delegation headed by CAE Member Pan Yunhe paid a visit to the Regional Centre on Urban Water Management (RCUWM) in Tehran, Iran, on January 11, 2015.

The RCUWM, established in Tehran in 2002, is a UNESCO category-2 regional centre in natural sciences, mainly committed to urban water management in arid and semi-arid regions. Its official website is http://www.rcuwm.org.ir/.

During the meeting, Ali Chavoshian, Director of the RCUWM, introduced the centre's development history, organizational structure and Governing Board composition, major UNESCO actions it has been involved in such as the International Drought Initiative, five major challenges facing the centre, as well as its main activities.

RCUWM has its own independent office building, currently with 14 staff members. In addition to a fixed amount of funds allocated by the Iranian government (amount not specified), the RCUWM also receives financial support from the World Bank and other international organizations and non-governmental organizations.

From 2002 to 2014, the RCUWM held a total of 32 symposia, 7 exhibitions, 7 training programs, 6 large-scale international conferences, and 4 academic meetings, involving a total of 22 countries.

The Governing Board of the RCUWM has 26 members, including the energy ministers of multiple countries including Afghanistan, Bangladesh, Egypt, India, Oman, Pakistan, Tajikistan, Germany, Kuwait, Lebanon, Syria, Yemen, Bahrain, Iraq and Zimbabwe and representatives from relevant organizations, with a scale far surpassing other UNESCO category-2 centres. The Governing Board is

Visit to Regional Centre on Urban Water Management (RCUWM)

chaired by the energy minister of Iran.

The RCUWM, which attaches great importance to expanding its international cooperation network and is active in international affairs, has signed memorandums of understanding on cooperation with 17 international organizations. Focusing on the Middle East and West and Central Asia and extending to other regions, its members, among others, include relevant organizations from 15 countries. It has established cooperative relations with 25 countries, covering a total population of five million. Its Governing Board is comprised of representatives from 16 countries.

The IKCEST delegation introduced the basic information of the IKCEST. The Director of the RCUWM expressed congratulations on the IKCEST's inauguration, optimism for its outlook, and interest in cooperating with the IKCEST in knowledge sharing.

The two centres have completed the draft of a memorandum of understanding on cooperation through post-visit discussions, which covers data sharing, joint research, training collaboration, exchange of personnel, and website linkage. The two sides are working on the finalization of the agreement, which is expected to be signed in the near future and provide a framework of cooperation between the two centres.

CAE Member Pan Yunhe stated that urban water management is a very important field of research which is of particular relevance to China because China faces serious challenges in this regard. He suggested leveraging the platform of the IKCEST to introduce Iranian experts in related fields to China and other parts of the world and introduce related Chinese experts to Iran and expected to use big data technology to solve engineering challenges.

Given that the Chinese Academy of Engineering has undertaken a series of advisory projects on the status and challenges of China's water resources and accumulated a large amount of related data, the IKCEST may exchange data with the RCUWM in this field to better serve researchers in water resource development, application and management in the two countries and other parts of the world.

(IV) Visit to Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS)

IKCEST delegation headed by CAE Member Pan Yunhe paid a visit to the Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS) in Isfahan, Iran, on January 12, 2015.

The IRIS, established in Isfahan in 2010, is a UNESCO category-2 regional centre in natural sciences, which, backed by Isfahan Science & Technology Town (ISTT), is mainly committed to the development of science and technology parks and technology business incubators in developing countries, with the focus on methods of promoting integration of science and technology with innovation, technology transfer, institutional capacity building, policy advice and sharing of best practices and experience. Its official website is http://www.istt.ir/.

Mohammad Javad Omidi, Director of the IRIS, first briefed on ISTT to the Chinese delegation, including its mission, vision, goals, fields of its activities, rapid development, business incubation process and achievements (having incubated 369 technology companies), commercialization process, and expansion and maintenance of international relations. It merits mentioning that ISTT has entered into cooperation with many international and national organizations, including UNESCO headquarters, IRIS, ISAP (Spain), ASPA, IDB, WTA (Korea), CSTEC (China), Z-Park (China), and MIGHT (Malaysia). The most recent cooperation

between ISTT and Z-Park was a one-week joint training in Z-Park in Beijing in June 2014, with the trainees being mainly technicians from Iran and the trainers being mainly Chinese experts. The Director of IRIS also mentioned the IRIS-ASPA international conference which was held in 2006 and 2011 with fruitful results and the Technopreneurship Festival, a major annual event of ISTT.

The Director of the IRIS then briefed on the IRIS, including its creation, organizational structure, governing board composition, priorities and main activities. The Director particularly mentioned the centre's international activities, including international training classes in foreign countries, international exchanges and cooperation, and memorandums of understanding on cooperation signed with international partners.

According to the introduction, the IRIS, hosted by ISTT, has its own independent office building and regular staff and receives project funds from the government every year. The IRIS is mainly committed to the development of science and technology parks and technology business incubators in developing countries, with the focus on methods of promoting integration of science and technology with innovation, technology transfer, institutional capacity building, policy advice and sharing of best practices and experience.

The IRIS emphasizes the building of information networks to promote the transfer and transmission of knowledge and technology. On the one hand, they hope to have an information platform through which to keep informed about foreign technology experts and product information and facilitate cooperation and communication. On the other hand, they also expect to leverage the platform to release its own technologies for technology transfer.

The IKCSET delegation introduced the basic information of the IKCEST and had extensive discussions with IRIS officials. IRIS officials said that ISTT was home to quite a few companies with a strong strength in data mining, data security and related fields, and that they might provide technology support for IKCEST in this regard.

CAE Member Pan Yunhe stated that China had technology and science parks in many cities such as Beijing, Shanghai, Tianjin, Wuhan and Hangzhou, as well as in various universities like Zhejiang University which provides technology support for the China Knowledge Centre for Engi-

Visit to Isfahan Regional Centre for Technology Incubators and Science Parks Development (IRIS)

neering Sciences and Technology (CKCEST) and that, therefore, the two sides had a solid foundation for cooperation.

Pan also said that, with expert databases with over ten million entries, IKCEST can introduce ISTT/IRIS experts to China and introduce Chinese major projects in related fields to ISTT/IRIS companies and experts, and leverage the IKCEST platform to enable interaction between experts and experts, companies and companies, experts and companies, and promote technology transfer and commercialization of R&D results.

The two sides also reached consensus on staff internationalization and expressed their shared support for exchange of visits and staff exchange to strengthen their respective team internationalization and promote fusion and communication.

The two sides agreed on drafting a memorandum of understanding on cooperation, with the scope of cooperation covering website linkage, personnel exchange, joint research, and training cooperation.

The two sides shared a high degree of consensus on serving as bridges to connect related experts and enterprises in the two countries. “Just put scientists on connection / in touch, good things will happen”, the Director of IRIS stressed.

The IKCEST took a strong interest in the concept of “virtual science park” mentioned by the IRIS, and its technology team is ready to undertake research on virtual science park under the direction of Pan to advance international training and related tasks.

It is necessary for the IKCEST to strengthen expert database and product database development while taking into account the needs of the IRIS and other factors to drive international technical exchanges and technology transactions.

(V) Visit to International Centre for Pure and Applied Mathematics (CIMPA)

IKCEST delegation headed by CAE Member Pan Yunhe paid a visit to Paris on 14 January 2015, where the Chinese delegation met with a delegation of the International Centre for Pure and Applied Mathematics (CIMPA) delegation headquartered in Nice, France, headed by the centre’s Director.

The CIMPA, which was established in 1978 and became a UNESCO category-2 centre in natural sciences in the early 1990s, is headquartered in Nice, France, and mainly committed to promoting international cooperation for developing research in mathematics. Its official website is http://www.cimpa-icpam.org/.

The CIMPA, based in the University Nice Sophia Antipolis, has been a UNESCO category 2 centre since the 1990s. Due to its early founding, it doesn’t have its own independent office building. The centre operates on membership, including individual and institutional members. It is funded by relevant organizations in France, Norway and Spain, as well as the membership fees.

Its activities are mainly CIMPA School-based and undertaken by member schools, with teachers provided by CIMPA (at their own expense), attended by young mathematicians from the local area and neighbouring countries. Since 1979, it has organized 279 activities, attended by a total of 2,500 teachers and 13,500 young mathematicians, covering 18 African countries, 12 Asian countries, 13 Latin American countries, and 8 Middle East countries.

The meeting was held at the UNESCO headquarters in Paris, with the attendees including not only the CIMPA’s personnel but also Tian Zhong, First Secretary of the Chinese Permanent Delegation to UNESCO.

At the meeting, Claude Cibils, Director of the CIMPA, briefed on the centre’s mission, history, organizational structure, governing board composition, director’s responsibilities, as well as its main activities.

The CIMPA’s main activities focus on organizing “research schools”. The CIMPA selects suitable proposals from many mathematical teaching and

research proposals submitted from around the world and provide support for them. A research school activity generally lasts two to four weeks.

At the meeting, the Director of the CIMPA introduced the research schools established or to be established in 2014 and 2015, which are mainly distributed in African, South American and Asian countries. According to its plan for 2015, it will launch research schools in countries including South Africa, Kenya, Tunisia, Morocco, Turkey, Chile, Brazil, Argentina, Peru, India, Iran, South Korea and Mongolia. This is in high agreement with the UNESCO priorities in developing countries in Asia, Africa and Latin America.

In addition, the CIMPA is committed to developing a new generation of male and female mathematicians, with a particular focus on gender equality, which again is in complete consistency with the UNESCO priority on gender equality. Specifically, the CIMPA's expert panel requires applicants to specify the gender ratio of their teams (female participants are required to account for at least 20-30%) and takes the ratio as an important criterion for selection.

After the IKCEST's briefing on its overview, the two sides started in-depth discussions. First, consensus was reached on including CIMPA's expert information into the IKCEST's expert database and leveraging the IKCEST's platform to introduce CIMPA's activities and experts to other countries and organizations.

Secondly, the two sides expressed their readiness to carry out joint research projects in 2015 or 2016 and establish more research schools in China to improve the levels and capabilities of mathematical teaching and research in China.

Thirdly, it was suggested that information technology be leveraged to transform the ways schools give lessons and operate and enable young mathematicians to reach experts in relevant fields more efficiently, for, after all, there are very urgent needs for learning of mathematics in developing countries.

Finally, it was agreed that the IKCEST's website will provide a dedicated space for introduction of the CIMPA's expert information and publication information.

Visit to International Centre for Pure and Applied Mathematics (CIMPA)

(VI) Visit to International Institute for Educational Planning (IIEP)

IKCEST delegation headed by CAE Member Pan Yunhe paid a visit to the International Institute for Educational Planning (IIEP) in Paris on January 15, 2015.

The IIEP, established in 1963, is a UNESCO Institute headquartered in Paris, with offices in Buenos Aires and Dakar and a staff of nearly 100 people, committed to increasing opportunities for quality education for young people around the world. The institute focuses on the programmes of training, technical assistance, research and knowledge sharing, aiming at helping education sectors in different countries plan their education development. The institute's official website is http://www.unesco.org/iiep/.

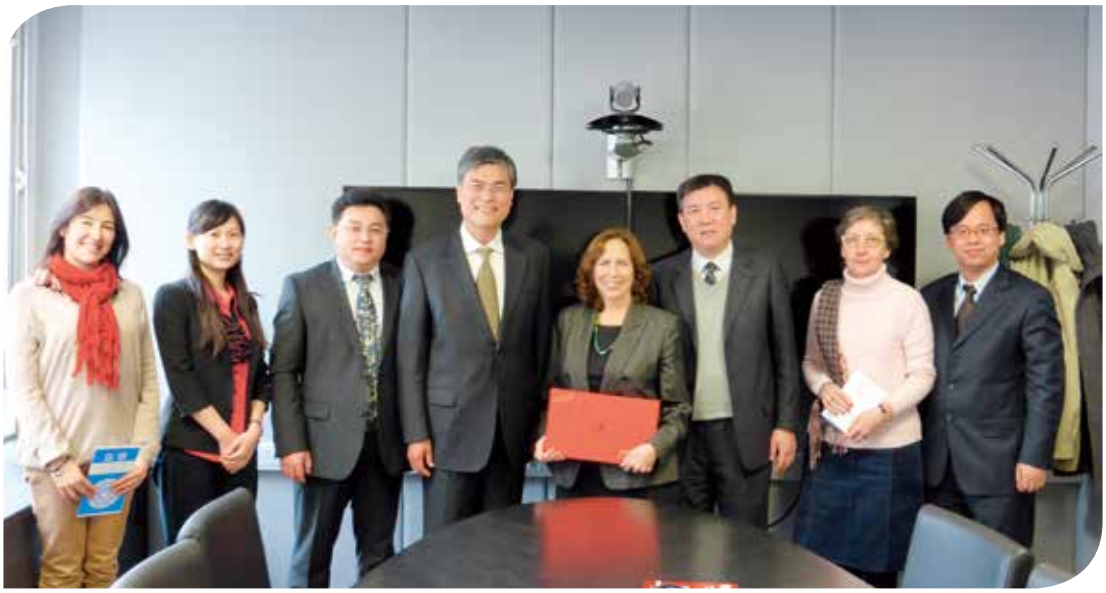
The meeting took place in the IIEP's office building in Paris. First, Suzanne Grant Lewis, Director of the IIEP, introduced the institute, including its 51-year history, vision, organizational structure, staff (approximately 60 in head office, 20 in Buenos Aires, and 15 in Dakar), global network, sources of funds (10% from UNESCO, 42% from donations from around the world, and 48% in accordance with additional agreements), main activities, and mid-term performance.

IIEP Director Ms. Suzanne Grant Lewis has a strong educational background, with nine years of experience of teaching at Harvard University. She emphasized that the IIEP has a key focus on gender equality and that, to sum it up, the point is to provide equal access to quality education to all young people around the world regardless of gender.

According to Ms. Grant Lewis, the institute's nine-month training is usually provided locally for six to seven months and remotely for two to three months. In addition, IIEP provides customized services to meet specific needs, such as providing training bilingually in English and French.

The Director also mentioned the importance of knowledge sharing, stating that the IIEP has a massive amount of document centres, publications, newsletters, websites and expert information in addition to many databases and is willing to share its information assets with relevant organizations.

The institute focuses on the programmes of training, technical assistance, research and knowl-



Visit to International Institute for Educational Planning (IIEP)

edge sharing, aiming at helping education sectors in different countries plan their education development. Thanks to its exceptional research strength in educational planning and its ability to combine theory and practice and provide tailored support in the light of the actual conditions of countries or regions with outstanding social and economic benefits, 90% of the institute's funds are raised by itself.

As an international authority in educational planning, the IIEP has published many books in various fields of educational planning and sell those books on its website. To sum up, the IIEP has built up its core capabilities in educational planning, which have been transformed to outstanding economic and social benefits.

After the visiting delegation's briefing on IKCEST, the two sides carried out enthusiastic discussions on related topics. IIEP introduced the three ways in which it cooperates with other UNESCO Institutes and Centres or Category-2 centres and institutes, for example, the most direct way of cooperation between the IIEP and its affiliated category-2 centres, such as the Regional Centre for Educational Planning (RCEP) in Sharjah.

The two sides also talked about all the UNESCO Institutes in the education sector, including UNESCO International Bureau of Education (IBE) in Switzerland, UNESCO Institute for Lifelong Learning (UIL) in Germany, UNESCO Institute for Information Technologies in Education (IITE) in Russia, UNESCO International Institute for Capacity-Building in Africa (IICBA) in Ethiopia, UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP), and IIEP itself, among which IIEP has been the most eye-catching. These UNESCO Institutes in the education sector vary significantly in both size and financial support from UNESCO.

Delegation head Pan Yunhe suggested leveraging big data technology and information technology to reform the education system, especially the patterns of engineering education. The IIEP and IKCEST also mentioned possible ways of data cooperation between them, with the degree of data sharing to be discussed further subsequently. The two sides also reached consensus on website linkage.

IKCEST Delegation went on survey and study tour focused on big data research and application

In accordance with IKCEST's development plan for international cooperation and exchanges, a delegation headed by Liu Xu, Vice President of the Chinese Academy of Engineering (CAE), visited four universities and three research institutes in Australia on a survey and study tour focused on big data research and application, from 2 to 6 February 2015.

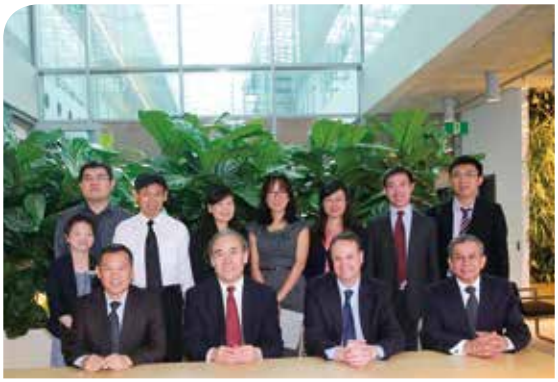
The delegation is also composed of relevant experts from the College of Computer Science and Technology of Zhejiang University, and the China Iron & Steel Research Institute Group, as well as relevant officials from the Chinese Academy of Engineering,

The delegation visited the Faculty of Engineering and Information Technology (FEIT) of the University of Technology, Sydney (UTS), and its Centre for Quantum Computation & Intelligent Systems (QCIS), the Faculty of Engineering and Information Sciences (EIS) of the University of Wollongong (UOW), and its Institute for Superconducting and Electronic Materials (ISEM), the Faculty of Engineering of University of New South Wales (UNSW), and the Faculty of Engineering and Information Technologies of the University of Sydney, and its Centre for Advanced Materials Technology

With the focus on the IKCEST's goals of allying with international engineering science and technology institutions, integrating digital resources of engineering science and technology, and building cooperation in sci-tech exchanges and training programs, the delegation contributed to in-depth discussions and established ties with the visited universities and institutes, laying a good foundation for subsequent cooperation.

(I) Visit to University of Technology, Sydney

On the morning of February 3, the delegation, accompanied by Jin Zhiyong, Science and Technology Counsellor of the Chinese General Consulate in Sydney, paid a visit to the University of Technology, Sydney (UTS), and was warmly received by Prof. William Purcell, Deputy Vice Chancellor (International and Advancement) of UTS, gave a briefing of the university to the delegation after getting to know the mission of the



Visit to University of Technology, Sydney

delegation.

Then, the delegation had a meeting with relevant personnel from UTS Faculty of Engineering and Information Technology and its Centre for Quantum Computation and Intelligent Systems (QCIS) and Advanced Analytics Institute (AAI). Prof. Ian Burnett, Dean of UTS Faculty of Engineering and Information Technology, Prof. Zhang Chengqi and Prof. Simon Kwan gave detailed introductions to the faculty and the two institutes.

CAE Vice President Liu Xu briefed on the Chinese Academy of Engineering and IKCEST. After that, the two sides exchanged views. The meeting was also attended by Prof. Deepak Sharma from the Faculty of Engineering and Information Technology and Liu Mian, UTS Director of International Affairs.

The delegation toured five research laboratories under the Quantum Computation and Intelligent Systems (QCIS) of UTS. Prof. Zhang Chenqi at the centre gave a detailed introduction of the centre's expertise and experience in data mining and intelligent systems development and its achievements in knowledge content analysis, knowledge presentation and knowledge structure creation.

The delegation also toured the UTS Advanced Analytics Institute. According to the institute's head Prof. Simon Kwan, the AAI is the Australia's first research institute to focus on data science and big data analytics with rich experience in developing big data public service platforms and has organized a series of international conferences and events on big data and been involved in a lot of international exchanges and cooperation, with its R&D achievements having been applied in extensive fields including the public sector, banking, finance and the capital market. The two sides reached consensus on introducing the AAI's activities on the IKCEST's platform and inviting the AAI's experts to the IKCEST's future academic activities. Prof. Simon Kwan also invited the delegation to attend the SIGKDD international conference to be held in mid-August this year.

The delegation was informed that UTS has maintained close ties with Chinese universities and research institutes, having established joint research centres with five Chinese universities or research institutes. UTS expressed interest in establishing a joint research centre with the Chinese Academy of Engineering.

During the visit, the two sides showed intent on cooperation and expected to sign a memorandum of understanding on cooperation at a property time and carry out cooperation in extensive areas including resource sharing, achievement recommendation, academic exchange and exchange of visits within its framework.

(II) Visit to University of Wollongong

On the morning of February 4, the delegation visited the Faculty of Engineering and Information Sciences of the University of Wollongong. UOW

Visit to University of Wollongong

Deputy Vice-Chancellor (Global Strategy) Joe Chicharo briefed on UOW and its Faculty of Engineering and Information Sciences, and CAE Vice President Liu Xu briefed on CAE and the IKCEST. The meeting was also attended by Prof. Shen Jun, Prof. Li Weihua, and Jessica Sun, Senior Coordinator of UOW Transnational Education & Alliances.

The delegation paid a special visit to the faculty's SMART Infrastructure Facility Research Centre, where several researchers talked about the close co-relation and mutual reliance between infrastructure and systems.

After that, the delegation visited UOW Institute for Superconducting and Electronic Materials and its laboratory building, where the delegation was introduced to the institute's advanced laboratory equipments and analytical instruments such as atomic force microscope, who also exchanged thoughts with relevant experts of the institute. The institute's head Prof. William E. Price introduced the institute's research areas and strengths and presented three research reports in big data applications in the field of materials. The meeting was also attended by Prof. Liu Huakun and Prof. Wang Xiaolin.

The delegation stated that the SMART Infrastructure Facility Research Centre has conducted excellent research which would shed light on the development IKCEST. The two sides discussed the means of data aggregation and sharing as well as challenges facing this process, and reached certain agreements. Both sides expressed their intent on future cooperation in information technology and data sharing.

(III) Visit to University of New South Wales

On the morning of February 5, the delegation visited the Faculty of Engineering of the University of New South Wales (UNSW).

UNSW Pro-Vice Chancellor (International) Fiona Docherty gave a briefing on the university and its ties with Chinese universities and enterprises. CAE Vice President Liu Xu introduced the Chinese Academy of Engineering and IKCEST. Prof. Mark Hoffman, Dean of the Faculty of Engineering, introduced the faculty and its strengths in engineering.

After that, experts on both sides discussed extensive topics of interest to the IKCEST, including big data management, computing and analysis, with a particular focus on such aspects as database management, statistical analysis, machine learning, national security, social networking, traffic management, real-time computing and IPR protection. Attendees on the UNSW side included Prof. Bruce Henry and Associate Professor Scott Anthony Sisson from the School of Mathematics and Statistics, Prof. Robert John from the School of Economics, Prof. Lin Xuemin from the School

Visit to University of New South Wales

of Computer Science and Engineering, Research Partnerships Director Warwick Dawson, China Strategy & Development Director Laurie Pearcey, and Diplomatic & Network Relations Director Keith Johnstone.

The two sides had in-depth discussions on efficient data aggregation and data quality assurance. UNSW expressed its willingness to take part in the IKCEST's platform development and provide corresponding technology solutions and analytical tools for the IKCEST project.

(IV) Visit to University of Sydney

On the afternoon of February 5, the delegation visited the Faculty of Engineering and Information Technologies of the University of Sydney, where the delegation listened to the briefing by the faculty's dean Prof. Archie Johnston and toured the university's Centre for Advanced Materials Technology. The university's Pro Vice-Chancellor (Strategic Collaborations & Partnerships) Laurent Rivory extended a warm welcome to the delegation.

The Faculty of Engineering and Information Technologies has attained remarkable achievements in aerospace and mechanical engineering, biomedical engineering, chemical and biomolecular engineering, civil engineering, and computer science and technology and developed dozens of academicians of various academies. It is one of the Australian university faculties to have the greatest number of academicians in engineering.

Experts on boths side shared the view that innovation based on low-density data mining, big data analytics and knowledge conversion is a new economic model. The University of Sydney expressed its interest in further discussing matters of cooperation with the IKCEST and invited the Chinese Academy of Engineering to send representatives to a big data technology event jointly organized by it and its Chinese enterprise partners which will soon take place in Beijing.

Visit to University of Sydney

IKCEST representative attended 2015 work seminar of Chinese National Commission for UNESCO

The Chinese National Commission for UNESCO held its 2015 work seminar on March 12, 2015. A total of more than forty representatives attended the seminar including those from relevant departments of the Ministry of Foreign Affairs, Ministry of Science and Technology, Ministry of Culture, Chinese Academy of Social Sciences, Ministry of Housing and Urban-Rural Development, Ministry of Land and Resources, State Oceanic Administration, State Archive Administration, State Administration of Cultural Heritage, Ministry of Education, Tsinghua University, and Beijing Normal University, as well as those from the eight category-2 centres of UNESCO. Mr. Hao Ping, the Chinese Vice Minister of Education, President of the 37th session of the General Conference of UNESCO and Director of the Chinese National Commission for UNESCO attended the seminar. Mr. Du Yue, Secretary-General of the commission presided over the seminar.

The seminar mainly discussed the key tasks for 2015. Participants at the seminar joined heated discussions. They elaborated on key tasks closely related to their job obligations and made various suggestions and comments.

Representatives from the IKCEST joined the seminar and shared its latest developments with other category-2 centres. They reached an initial agreement on holding a joint meeting of category-2 centres in early April.

IKCEST representative attended 2015 work seminar of Chinese NationalCommission for UNESCO

UNESCO programme specialist inspected IKCEST

Ms. Rovani Sigamoney, Assistant Programme Specialist of UNESCO's Natural Sciences Sector, inspected the International Knowledge Centre for Engineering Sciences and Technology (IKCEST), on March 19, 2015 during her trip on the feasibility study of the Chinese Academy of Engineering (CAE) and Tsinghua University's joint bid for a new category 2 centre on engineering education.

Present at the meeting were Wu Guokai, Deputy Secretary General of the CAE; Xu Jin, Deputy Director-general of the International Cooperation Department of the CAE; Tian Qi, Director of Division Two of the International Cooperation Department of the CAE; Yi Jian, Director of the Project Management Office of the China Knowledge Centre for Engineering Sciences and Technology; Gao Xiang and Pan Gang, both Deputy Directors of the CKCEST Project Management Office; Liu Chang, contact person of IKCEST; Mr. Cao Xuejun, Director of the System Platform, as well as all the other members of the Project Management Office.

The IKCEST made a video presentation of the overview of the centre to Ms. Sigamoney, then updated her on the major progress achieved since the signing and unveiling ceremony, especially in resource building, data pooling, platform development and sub-centre building, as well as its key work plan for 2015. The IKCEST also made an online demonstration of the system platform. After that, both sides exchanged views.

Ms. Sigamoney said she was delighted to have the opportunity to make a field study of the centre and meet the management and technical support team following her engagement in the draft and application process of the IKCEST's feasibility report last year. She was pleased to learn that the IKCEST has carried out a lot of significant and productive work which is aligned with the missions and objectives of UNESCO. She said she would make her part to help advance IKCEST's work by linking the IKCEST's website to the portal of UNESCO, bringing back the video on the IKCEST for related

UNESCO programme specialist inspected IKCEST

personnel to watch, helping arrange representatives of UNESCO to attend the international conference on big data to be held by the IKCEST, helping the IKCEST to build relationship with other category 2 centres and gain support in data exchange and sharing through various National Commissions for UNESCO, and helping promote training programs to be organized by the IKCEST, etc.

Ms. Sigamoney also made suggestions for the IKCEST to improve its work, such as to offer English versions of its Chinese language data resources as soon as possible for queries from other countries.

As the meeting concluded, Ms. Sigamoney expressed her good impression on the development of the IKCEST, her confidence for its prospect and her commitment to coordinate with the headquarters to give full support to the IKCEST.

IKCEST popularized science knowledge among young people

In order to accommodate the Campaign on “Teenagers Go into the Chinese Academy of Engineering (CAE)” launched by the CAE, the International Knowledge Centre for Engineering Sciences and Technology (IKCEST) was open to youngsters on January 9 and 27, March 16 and 20 respectively, in order to introduce the concepts of building the centre and popularize related science knowledge.

"Teenagers Go into the Chinese Academy of Engineering" campaign — visiting IKCEST Headquarter

CKCEST News

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

CKCEST held seminar and kickoff meeting for Geology Expert Knowledge Service System

The seminar and the kickoff meeting for Geology Expert Knowledge Service System of the China Knowledge Centre for Engineering Sciences and Technology (CKCEST) was held at the International Conference Centre of China University of Geosciences on January 6, 2015. Attendees included Mr. Zheng Mianping, Member of the Chinese Academy of Engineering (CAE); Mr. Li Tingdong, Member of the Chinese Academy of Sciences (CAS); Mr. Yi Jian, Director of the Project Management Office of CKCEST and relevant leaders and experts from the Science and Technology Department of the Ministry of Land and Resources (MLR), the China Geological Survey under the MLR, and the National Geological Library of China.

Participants of the seminar recognized the significance of launching the Geology Expert Knowledge Service System and expressed the hope that the Geology Sub-centre of CKCEST would make positive contributions to improving the quality of knowledge services in the field, while working towards the overall goal of CKCEST and effectively integrating data, sharing results and gathering experience.

CKCEST new sub-centre selection launched in 2015

According to the annual plan, CKCEST prepared to build five new Expert Knowledge Service Systems respectively on forestry, metallurgy, cartography and geological information, meteorology and water conservancy in 2015. After experts' recommendation and preliminary studies, CKCEST has shortlisted the Chinese Academy of Forestry, China Metallurgical Information and Standardization Institute, Institute of Geographic Sciences and Natural Resources Research (IGSNRR) of the Chinese Academy of Sciences (CAS), National Geomatics Centre of China (NGCC), National Meteorological Information Centre and Information Centre of the Ministry of Water Conservancy as candidates, to which it issued Survey Letters. The first round of survey meeting on the development of new sub-centres in 2015 was held at the Chinese Academy of Engineering on January 14, 2015, where participants shared information on their resources and information development and exchanged ideas.

Kickoff meeting for Information Technology Knowledge Service System program held in Beijing

The kickoff meeting for the Information Technology Knowledge System was held at the Electronic Science and Technology Information Research Institute of the Ministry of Industry and Information on January 27, 2015. Participants at the meeting spoke positively of the program and wished that the program would serve effectively the overall goal of the knowledge centre and make positive contribution to knowledge services in its own field. Dai Hao, Member of the Chinese Academy of Engineering (CAE) attended the meeting.

Working session on Consulting Research Knowledge Service System held in Beijing

The Project Management Office of CKCEST held a working session on Consulting Research Expert Knowledge Service System on January 30, 2015. The team of the Consulting Research Expert Knowledge Service System reported their progress and plan for 2015 with presentations. The meeting concluded with specific requirements and suggestions for the project in 2015. Relevant officials from the Consulting Office of the Chinese Academy of Engineering (CAE) attended the session.

Experts from CKCEST visited IGSNRR, CAS

Some experts from CKCEST visited the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences (CAS) for survey on March 6, 2015. The IGSNRR shared the achievements and experience of the Data Sharing Infrastructure of Earth System Science in project management, system and standards development, data sharing mechanism and effectiveness of platform services, which serves as useful references for the future development and services of the CKCEST.

2015 Seminar on Sub-centre Trial Services Programs held in Beijing

The Seminar on Sub-centre Trial Services Programs was held at the Chinese Academy of Engineering (CAE) on March 11, 2015. The metallic materials, chemical engineering, agricultural, and pharmaceutical sub-centres respectively presented their work plans and put forward related criteria for evaluation. Based on the comments and suggestions made by the experts at the seminar, the sub-centres will revise the service plans and include them to the task reports for 2015.

CKCEST provided training for sub-centres newly established in 2015

The CKCEST held training sessions for its sub-centres newly established in 2015 in Beijing on March 12, 2015. Through the training and face-to-face communication, the sub-centres had a better understanding of the technologies, business target and related management requirements for the projects under the CKCEST.

Manufacturing Sub-centre reported on its progress in Beijing

The Manufacturing sub-centre of the China Knowledge Centre for Engineering Sciences and Technology (CKCEST) reported on its progress in the development of the Manufacturing Knowledge Service System at the Chinese Academy of Engineering (CAE) on March 14, 2015. CAE President Zhou Ji, along with leaders and experts from the Project Management Office of CKCEST, the Chinese Mechanical Engineering Society, the China Academy of Machinery Science and Technology, the China Academy of Machinery Science and Technology, the Machinery Industry Information Institute, the Shenzhou Aerospace Software Technology Co. Ltd., attended the meeting.

The team of the Manufacturing Knowledge Service System program briefed the background and the development of the program. They shared their vision for the sustainable development in the next stage and put forward requests for instructions for related work. They also made presentations on their system. Leaders and experts present at the meeting recognized the achievement made by the project team and proposed suggestions for its future development, which mainly focus on the positioning of targets, resources building, service capability, mechanism and sustainable development.

Top News of Big Data Era

Big data predicting human behavior must be supervised

Jame C. Smith, President and Chief Executive Officer of Thomson Reuters said the popularization and the importance of the Internet is absolutely a double-edged sword. We need to constantly improve such functions as in Internet security and privacy protection. Using big data to understand and predict human behavior must be seriously regulated. Many Internet services are offered for free. To a certain extent, such "free" Internet business models are practiced in a form of "surveillance".

Excerpt from the Beijing News

Gartner debunks five myths on big data

Gartner dispels five myths to help IT leaders evolve their information infrastructure strategies: first, everyone is ahead of us in adopting big data; second, we have so much data, we don't need to worry about every little data flaw; third, big data technology will eliminate the need for data integration; fourth, it's pointless using a data warehouse for advanced analytics; fifth, data lakes will replace the data warehouse.

Excerpt from ZDNetChina

World largest data centre to settle in US

Las Vegas-based telecom company Switch plans to invest 1 billion U.S. dollars to build a 279,000 square meter "superNap" centre. It will be built at the Tahoe Reno Industrial Centre in Nevada, where Tesla Motors and Apple locate and it is also where Tesla currently is building its 5 billion dollar "gigafactory" battery plant. Switch has had two operating data centres in Las Vegas, with over 1,000 clients including eBay, Xerox, Amazon, DreamWorks and the American government. It provides security and energy efficiency services for tens of thousands of servers owned by these institutions. The "Supernap" initiative covers the building of a 500-mile optical network named as "Superloop" which connects Reno, Las Vegas, Los Angeles and San Francisco to greatly improve the information transmission speed among the cities.

Excerpt from Sohu IT

China Industry: China to speed up development of cloud computing and turn it into key form of information technology by 2020

China's State Council issued the Opinions on Promoting the Innovative Development of Cloud Computing and Cultivating New Format of Information Industry on January 30. According to the document, China will step up the development of cloud computing and core technologies of big data and support the integration of cloud computing with the Internet of Things, mobile Internet and Internet financial services for innovative application. By 2020, cloud computing is expected to serve as a major form of China's information technology application and a key pillar for building the nation as a strong cyberpower.

Excerpt from Thomson Reuters China

Survey on China's big data industry in 2014

According to a survey report, 32.5% of companies are setting up big data platforms which are under trial operation. The majority of big data platforms in 40.3% companies handle massive data both offline and in real time. In embracing the big data era, many challenges need to be overcome, especially in security and reliability, and there is also an urgent need for training and educating professional talents.

Excerpt from CSDN

Gartner: eight myths on big data that need busting

Gartner analyst Mark Beyer says there are eight myths on big data that need busting. 1. Big data originate from 100tb. 2. Big data calls for the change of infrastructure. 3. 80 percent of big data are unstructured. 4. Tools will replace data scientists. 5. More data can solve the data quality problem. 6. Real time means faster speed. 7. Data amount supersedes expert knowledge. 8. Data model is useless.

Excerpt from www.techxue.com

Terms on Big Data

Big data

Big data: massive data pooled together from all data with such features as “volume, velocity, variety and value”, unlike the traditional way of data analytics which adopt sample data for random analysis or sampling survey. At the Second Work Conference of the CKCEST in 2014, CAE Member Pan Yunhe specified the three prominent features of big data as “large volume, isomerism and data connectivity”, of which he highlighted the importance of data connectivity and integration. At the work conference in July, 2014, Pan further explained that the CKCEST is “different from digital library, data bank, search engine, or artificial intelligence system” and it is reliant on big data.

Knowledge service

Knowledge Service: is the activity of providing users with targeted, problem-solving knowledge products or services based on the extraction, processing and integration of information resources. Men sort out data from noises and convert it into information before elevating it into knowledge and wisdom. Knowledge service is the advanced form of information service. It is valued-added, creative service. In the context of big data, the knowledge centre provides knowledge services with special features by getting through different sources of data and finding the implied relationship. At the first Work Conference of CKCEST in 2014, CAE Member Pan Yunhe said CKCEST could provide knowledge service in question-oriented way in that it pays adequate attention to hotspot issues in China, such as urbanization and environment protection, and build up data relation and realize knowledge accumulation by transdisciplinary data linkage and integration.

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