



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



ISTIC  
INTERNATIONAL SCIENCE, TECHNOLOGY AND  
INNOVATION CENTRE FOR SOUTH-SOUTH  
COOPERATION UNDER THE AUSPICES OF UNESCO



# INTERNATIONAL TRAINING WORKSHOP ON **BIG DATA** FOR DEVELOPING COUNTRIES

23-27 September 2019  
Trinidad, Trinidad & Tobago



## BACKGROUND

### *Industry 4.0*

Industry 4.0 (sometimes referred to as the fourth industrial revolution) is basically the next stage in the digitization of the manufacturing sector. The three previous major shifts in manufacturing have been the 1970s lean revolution, outsourcing boom in the '90s and automation in the 2000s. Big data, advanced analytics, artificial intelligence, Internet of Things (IoT), human-machine interfaces and digital to physical transfer (3D printing) are all combining to form the fourth industrial revolution.

Many of these aspects are already in evidence for a lot of businesses but in the coming years are bound to become more prominent. Some will affect the whole supply chain or process while others will only impact a small part. Smart factories will be at the forefront of pushing Industry 4.0 through, making the use of such elements to improve cost-effectiveness and product quality.

In many developing countries, many professionals in government, in industry and serving nongovernmental organizations are challenged by the fast pace of technological change. Science and Technology is without doubt a strategic driver that contributes toward the shift from relatively lower end economic activities into high value added activities.

As such, professionals who understand the dynamics of science and technology within the context of economic and market development, are critical to help in designing blueprints and strategic implementation frameworks to lead strategic transformation within countries and organizations.

### *Big Data*

Day by day more data generated in this new age. How knowledge should be acquired, disseminated and then serve the humans pose a new challenge. Mass data distributed across all social institutions feature different backgrounds, structures and constant growth. They are all there, but the professional in STI cannot make full use of them, due to the lack of interconnection among them. Big Data platform provides a potential solution to collect data resources, to integrate science and technology forces and to strengthen academic exchanges and collaboration to address this challenge.

Relevant data is necessary not only in providing required and timely information for efficient planning but also for monitoring. Within the context of the UN Sustainable Goals, big data can be utilised to get relevant high quality information with greater detail as it supports the integration of data from new technologies with traditional data.



With this in mind, ISTIC, IKCEST and CARISCIENCE are committed in ensuring developing countries are not left behind in the pursuit of economic development impeded by the absence of a technological capability to harness new opportunities, that will generate income, jobs and revenue for countries. The Big Data Application in engineering, science and technology provides a potential solution that can enhance/advance the decision making and problem solving in STI into higher level.

#### 5 Advantages of Big Data:

- i. Innovating new business, models, products and services
- ii. Creating transparency in organizational activities that can be used to increase efficiency
- iii. Enabling more thorough analysis of employee and systems performance in ways that allow experiments and feedback
- iv. Segmenting populations in order to customize actions
- v. Replacing/supporting human decision making with automated algorithms

## OBJECTIVE

The main objective of training workshop is to provide the necessary knowledge and skills to participants in the organisation to support STI agenda through the establishment of systematic knowledge management with Big Data Technology Application.

## WORKSHOP CONTENT

### *What Will Participants Get from This Workshop?*

Participants in this workshop will be actively involved in:

- Learning key principles related to Big Data Application and Knowledge Management
- Acquiring key competencies in:
  - Big Data infrastructures
  - Big Data platforms, analytics and data science.
  - Technology Management Best Practices in establishing the Big Data system.
  - Understanding the technology related to Big Data such as MapReduce, Deep Learning, Deep Search, Knowledge Graph Population, Data Analytics etc.



## EXPECTED OUTCOMES

The outcomes of the training workshop are:

- i) All participants will gain the necessary knowledge and experience on how to establish big data system for STI knowledge management strategies for their countries/organisations.
- ii) The establishment of networking among and between participants from the various countries in the Developing Countries.
- iii) Participants trained from the workshop can provide training and leadership on Big Data system formulation to other possible audience from their own organisations/countries.

## PARTICIPANTS

About 30-40 participants from developing countries are expected to participate in this workshop. The combination of participants from other developing countries will allow for exchange of knowledge, ideas and experiences as well as opportunities for networking and collaboration.

### Participants

The organiser will arrange the **related transportation within Trinidad**. Participants are required to **seek travel grant from their organisation to pay their travel expenses to Trinidad & Tobago**.

### Criteria of participants

The participants should possess the following criteria:

- Those who have Diploma, Bachelor's Degree, Master or PhD in science related to ICT are preferred.
- Have experience or involves in big data project.
- Have experience or have been involved in the development and implementation of ICT policy in their home countries.
- Participants who perform management functions in the middle and upper level of a government organization are preferred.
- Participants must have good command of English, both in verbal and writing.
- Participants must be in good health.

## TIME AND VENUE

The training workshop will be held for 5 days at St. Augustine Campus of the University of the West Indies, Trinidad on September 23-27, 2019.



## SPEAKERS

The organiser of the training workshop will invite experienced experts and specialists which involves in Big Data research and implementations.

## MODES OF DELIVERY

The training workshop will be conducted in English.

The training workshop will be delivered by using the combinations of the following methods:

- Series of lectures.
- Discussions and presentations.

Upon completion of training workshop and the presentation, participants will be awarded a certificate issued by the organisers.

## APPLICATION

Applicants are urged to use online application. The link of online application form can be accessed from the website [www.istic-unesco.org](http://www.istic-unesco.org) and [www.ikcest.org](http://www.ikcest.org)

Online application form

<https://goo.gl/forms/8waBprfIVus1eGN22>

**A fee of USD500 will be collected from each participant at the training programme.**

## CLOSING DATE OF APPLICATIONS

All applications should be submitted to the ISTIC secretariat office **before 30 July 2019**.

The organiser will inform the successful applicants to the training workshop **not later than 31 August 2019**. Applicants who do not receive word within this date are consider unsuccessful.



## GENERAL INFORMATION

### **Visa Application**

Participant from the countries that required visa to Trinidad & Tobago should get it before leaving home. To apply for visas, participants will be requested by the Embassy or Consulate of Trinidad and Tobago to submit a letter of invitation. The organiser will send an invitation letter as soon as possible to each accepted overseas applicant.

### **Computer requirement**

Each participant is expected to bring with him/her a computer (laptop/tablet) for the study and presentation preparation and communication during the course.

### **Contact information**

For further information, please contact the Secretariat:

Mr. Mohd Azim Noor

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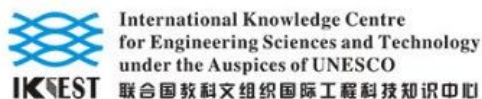
[cariscience.org@gmail.com](mailto:cariscience.org@gmail.com)

CARISCIENCE

## TENTATIVE PROGRAMME

Day	Morning Session				Lunch	Afternoon Session						
	8:00 - 8:30	8:30 - 9:45	9:45 - 10:00	10:00 - 12:30	12:30 - 1:30	1:30 - 3:15	3:15 - 3:30 (Break)	3:30 - 5:00				
Day 1 23/09/2019 Monday	<b>Registration</b>	<b>Opening Ceremony &amp; Introduction of CARISCIENCE, IKCEST &amp; ISTIC</b>	Break	<b>Introduction of Trainees &amp; Overview of Workshop Themes</b> <i>Permanand Mohan (UWI)</i>	<b>Lunch</b>	<b>Data analysis: Organizing, Visualizing, and Modeling</b> <i>HUI Yongchang (IKCEST)</i>						
Day 2 24/09/2019 Tuesday						<b>Big Data Analysis (Hands-on)</b> <i>HUI Yongchang (IKCEST)</i>			<b>Big data and Machine Learning Techniques: Theories and Applications in Smart Cities (1): Theory</b> <i>CAO Buyang (IKCEST)</i>			
Day 3 25/09/2019 Wednesday						<b>Big data and Machine Learning Techniques: Theories and Applications in Smart Cities (2): Practice</b> <i>CAO Buyang (IKCEST)</i>			(12:30 - 2:00) <b>Privacy, Security, Confidentiality, Trust and Other Issues in Big Data</b> <i>Yufei Wu (UTT)</i>	(2:00 - 7:00) <b>Site Visit</b>		
Day 4 26/09/2019 Thursday						<b>Large Scale Knowledge Graph Construction</b> <i>TANG Siliang (IKCEST)</i>			<b>Lunch</b>	<b>Deep Learning for Task-oriented Conversational AI</b> <i>TANG Siliang (IKCEST)</i>		
Day 5 27/09/2019 Friday						<b>Natural Language Processing: Concepts and Tasks</b> <i>LI Chen (IKCEST)</i>				<b>Advanced Natural Language Processing in Biomedicine</b> <i>LI Chen (IKCEST)</i>		<b>Homework Presentations</b> <i>Permanand Mohan (UWI)</i>
						<b>Closing Ceremony</b>						

## ABOUT THE ORGANISER



**INTERNATIONAL KNOWLEDGE CENTRE FOR  
ENGINEERING SCIENCES AND TECHNOLOGY  
UNDER THE AUSPICES OF UNESCO  
(IKCEST)**

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.

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.



**CHINESE ACADEMY OF ENGINEERING**

The Chinese Academy of Engineering (CAE) is a national and independent organization composed of elected members with the highest honor in the community of engineering and technological sciences of the nation. Its missions are to initiate and conduct strategic studies, provide consultancy services for decision-making of nation’s key issues in engineering and technological sciences and promote the development of the undertaking of engineering and technological sciences in China and devote itself to the benefit and welfare of the society.





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**INTERNATIONAL SCIENCE, TECHNOLOGY  
AND INNOVATION CENTRE FOR SOUTH-  
SOUTH COOPERATION UNDER THE AUSPICES  
OF UNESCO  
(ISTIC)**

The creation of the International Science, Technology and Innovation, Centre for South-South Cooperation under the auspices of UNESCO (ISTIC) is a follow up of the Doha Plan of Action which has been adopted by the head of States and Government of the Group of 77 and China, during the meeting in Doha, Qatar, from 12-16 June 2005 on the occasion of the Second South Summit of the Group of 77. The Summit urged UNESCO to develop and implement a programme for South-South cooperation in science and technology with the objective of facilitating the integration of a developmental approach into national science and technology and innovation policies, capacity building in science and technology through providing policy advice and exchange of experience and best practices, and creating a problem solving network of centres of excellence in developing countries as well as supporting the exchange of students, researchers, scientists and technologists among developing countries. ISTIC will act as an international platform for South-South cooperation in science, technology and innovation and make use of the network of the G77 plus China and the Organization of the Islamic Conference (OIC). The overall goal of ISTIC is to increase the capacity for management of science, technology and innovation throughout developing countries.



**CARISCIENCE**

CARISCIENCE is a sub-regional network of scientists bent on upgrading the academic excellence of graduate, postgraduate and R&D programmes in the Caribbean. Cariscience was launched in June 1999 in Jamaica and operates under the auspices of UNESCO. The network strives to strengthen theoretical and practical knowledge in basic and applied sciences in the Caribbean, to increase the number of postgraduate and R&D programmes, and foster ties between these programmes. It also fosters linkages with the productive sector. Cariscience coordinates exchanges between researchers, teachers and students, organizes joint research projects and regional courses, and supports curriculum development and the training of science teachers. It is also supporting the development of an accreditation and evaluation system for postgraduate science programmes.



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## NOTES



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