



The Abdus Salam
International Centre
for Theoretical Physics



IAEA
International Atomic Energy Agency

ITU CoE on IoT and Big Data and Statistics

The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy

Dr. Clement Onime
Information and Communications Technology Section

1st meeting of the ITU Center of Excellence (CoE)
Steering Committees for Europe and CIS Regions
Warsaw, Poland,
7-8 February 2019



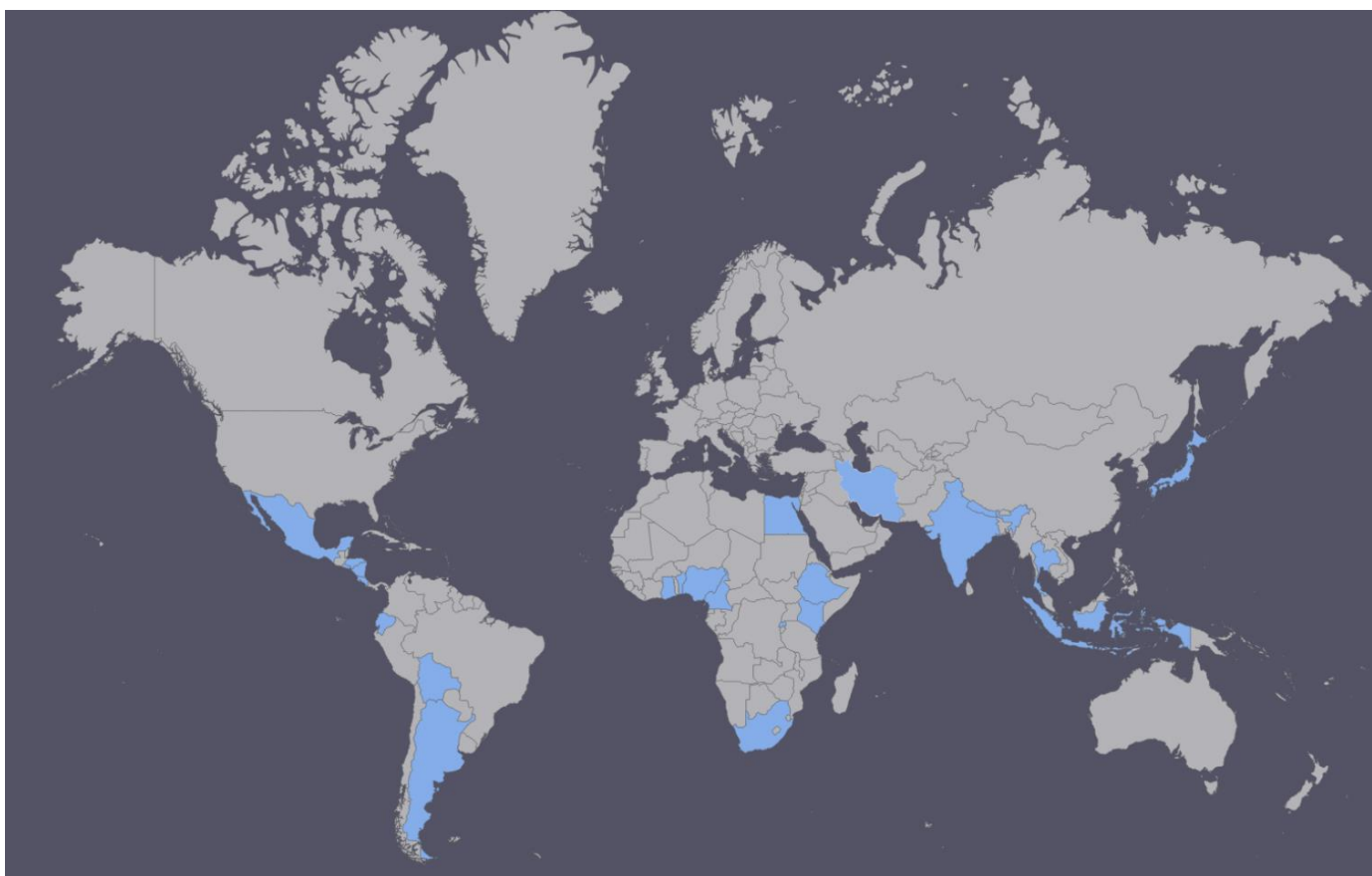
Overview

- Introduction to the CoE
 - Global activities
 - Meet the CoE team
- 2019 activities *(in chronological order)*
- Comments & Questions

Global Activities

- Argentina (2016)
- Benin (2014)
- Brazil (2017, 2018)
- Cameroon (2011)
- Colombia (2016)
- Costa Rica (2015)
- Ecuador (2014)
- Egypt (2015)
- El Salvador (2017)
- Ethiopia (2009, 2017)
- Ghana (2005, 2011)
- Honduras (2017)
- India (2011, 2014)
- Indonesia (2012 and 2017)
- Iran (2017)
- Japan (2014, 2015, 2016, 2017, 2018 for ICT4D students)
- Kenya (2007, 2011)
- Mauritius (2015)
- Mexico (2018)
- Nepal (2018)
- Nicaragua (2013)
- Nigeria (2013, 2014)
- Rwanda (2015, 2018)
- South Africa (2010)
- Thailand (2014, 2016 and 2017)

Map of activities worldwide



Meet the CoE technical team



Dr. Marco Zennaro



Prof. E. Pietrosemoli



Dr. I. Girotto



Dr. Clement Onime

Supported by a network/pool of over 30 international resource persons



Marketing strategy

- World-wide (emphasis on developing countries)
 - Established network of scientific/technical institutions
 - Community of professionals
 - Past participants
- Avenues:
 - mailing lists for
 - posters (paper & PDF)
 - Targeted electronic mails

Training strategy

- Target audience are professionals
- Participants are always treated as peers
 - Sustainable empowerment via hands-on with state-of-art.
 - Post-activity long term interactions
- Promote collaborative self-paced application of knowledge tailored to individual needs

2019 Activity 1

CODATA/RDA Research Data Science Summer School

- Information

- Dates: 12-16 August
- Mode: Face to Face
- Language: English
- Cost: 1000USD
- Location: Trieste, Italy
- 10 participants

- Overview

This course focuses on building a range of data related skills and competence in data analysis techniques for participants from all disciplines and/or backgrounds. Topics to be covered include

- Data visualization,
- Machine Learning,
- Artificial Neural Networks,
- High Throughput Computing (HTC) and
- Cloud Computing.

The activity includes practical hands-on sessions on techniques and applications for large-scale data handling, analysis, visualization and modeling on a variety of compute infrastructure including high performance compute platforms/systems.

Participants are expected to have a working knowledge of the Linux Operating System including using the command line environment as well as the basic level of programming in the R programming Language (via the Rstudio GUI). *Applicants who lack the expected background may arrive 1 week early and participate in a preparatory boot-camp activity aimed at developing R programming and Linux O.S. skills.*

August 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

2019 Activity 2

CODATA/RDA Advanced workshop on IoT and Big-Data Analytics

- Information
 - Dates: 19-23 August
 - Mode: Face to Face
 - Language: English
 - Cost: 1000USD
 - Location: Trieste, Italy
 - 10 participants

August 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- Overview

The Internet of Things (IoT) and the real time data analytics promises many new technological innovations and business benefits. The success of any solution leveraging these technologies lies in the ability to process and analyze the vast amounts of data produced by the millions or even billions of embedded devices, sensors, appliances and other data-collecting systems in real time. It requires new processes and tools for collecting, storing and processing IoT big data. This workshop introduces the data and analytic flows with a specific focus on IoT and real-time processing of event/streaming data.

The workshop first defines IoT and why IoT data processing is very different from typical data analytics, with its unique requirements for big data and real-time processing. Using a hands-on approach with simulated data, participants will learn to build a messaging and data streaming system with Apache Spark and Kafka and perform a real-time analysis with IoT and streaming data.

By the end of the workshop, participants will have learned:

- The characteristics and requirements of IoT specific and streaming data
- How to build a data flow to connect an IoT system or device data to a Big Data platform in specific formats
- How to use Big dTta tools to process IoT and streaming data in distributed computing
- How to use machine learning algorithms to analyze data and extract intelligence.

Participants are expected to have a working knowledge of fundamentals of IoT Data collection from sensors, the Linux Operating System including using the command line environment, software installation and some programming experience in R, Java or Python (one of the three) is required.

2019 Activity 3

TECHNICAL ASPECTS OF WIRELESS SOLUTIONS FOR THE INTERNET OF THINGS (IoT)

- Information
 - Dates: 2-4 September
 - Mode: Face to Face
 - Language: English
 - Cost: 500USD
 - Location: Trieste, Italy

September 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

- Overview

There is general consensus that IoT has enormous potential to deliver great impact on the economy and on society at large. Having a good grasp of the relevant technical aspects is a must for bringing this to fruition. This capacity building course aims to provide the audience with a better technical understanding of wireless solutions for IoT. Participants will be exposed to the general aspects of IoT networks and will then dive into specifics of LPWAN and cellular solutions tailored to IoT like LTE-M and NB-IoT. Practical examples of IoT wireless technologies will be demonstrated.

2019 Activity 4

INTERNET OF THINGS (IoT) ENTREPRENEURSHIP

- Information
 - Dates: 6-8 November
 - Mode: Face to Face
 - Language: English
 - Cost: 500USD
 - Location: Trieste, Italy

November 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

- Overview

The rise of Internet of Things (IoT) has many names, including The Next Industrial Revolution and Industry 4.0. As with any emerging technology, entrepreneurs worldwide are impatient to build IoT businesses. While every company's IoT product offerings will differ, there are some basic items that must be addressed in order to build a successful IoT business. This capacity building course will introduce the general entrepreneurship concepts and will then focus on IoT business models and user cases.

2019 Activity 5

CODATA/RDA/ICTP/TWAS Research Data Science Summer School in West Africa

- Information

- Dates: 18-22 November
- Mode: Face to Face
- Language: English
- Cost: 300USD
- Location: Abuja, Nigeria

- Overview

This course focuses on building a range of data related skills and competence in data analysis techniques for participants from all disciplines and/or backgrounds. Topics to be covered include

- Data visualization,
- Machine Learning,
- Artificial Neural Networks,
- High Throughput Computing (HTC) and
- Cloud Computing.

The activity includes practical hands-on sessions on techniques and applications for large-scale data handling, analysis, visualization and modeling on a variety of compute infrastructure including high performance compute platforms/systems.

Participants are expected to have a working knowledge of the Linux Operating System including using the command line environment as well as the basic level of programming in the R programming Language (via the Rstudio GUI). *Applicants who lack the expected background may arrive 1 week early and participate in a preparatory boot-camp activity aimed at developing R programming and Linux O.S. skills.*

November 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Thank you!

Questions, comments?