

# IST-Africa 2019

## Final Programme

Nairobi, Kenya

08 - 10 May 2019

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Hosted by



MINISTRY OF EDUCATION

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# ISTAfrica

# Introduction

**IST-Africa 2019** Conference takes place 8 -10 May 2018 in Nairobi, Kenya, as part of **IST-Africa Week 2019**. An activity of **IST-Africa**, which is supported by the European Commission and African Union Commission and co-funded under the EU Framework Programme, **IST-Africa 2019** is the fourteenth in an Annual Conference Series bringing together senior representatives from leading public, private, education & research organisations, to discuss ICT policy, showcase research results and share knowledge.

European research activities are structured around consecutive multi-annual programmes, or so-called Framework Programmes. Horizon 2020 sets out the Priorities and thematic areas, including ICT, for 2014 - 2020. Horizon 2020 is fully open to international co-operation with the aim to jointly address major challenges where significant added value is expected to be gained from a world-wide R&D cooperation. In this context, the European Commission co-funded **IST-Africa** from 2006 - 2018, to promote African - European research cooperation and support Information Society and ICT aspects of the Africa-EU Strategic Partnership.

Hosted by the Government of Kenya through the Ministry of Education and Technically Co-Sponsored by IEEE, **IST-Africa 2019** focuses on the the Role of ICT, Research and Innovation in Africa's Development and specifically on Applied ICT research in the areas of eHealth, Technology Enhanced Learning and ICT Skills, eInfrastructures, eAgriculture, Societal Implications of Technology, International Cooperation, ICT4D and eGovernment. **IST-Africa 2019** will provide a collegiate setting for presentations and discussions of national & regional developments, issues of concern & good practice models, and networking with peers. **IST-Africa 2019** will also provide an opportunity to identify potential partners for future proposals under Horizon 2020.

**IST-Africa** directly supports Information Society, Innovation and ICT aspects of the Africa-EU Strategic Partnership and the Science, Technology and Innovation Strategy for Africa (STISA-2024)

The goals of the **IST-Africa** Conference Series are Community Building to facilitate EU-African research cooperation and successful exploitation of research results, to stimulate take-up of RTD results, to promote knowledge sharing between commercial, government and research organisations, to exchange experiences about the current state of eAdoption at a sectoral, national or regional level, and to support International Cooperation and open up the European Research Area (ERA) to Africa.

## Who will you meet?

**IST-Africa 2019** Conference attracts policy makers, practitioners, and researchers from leading commercial, government and research organisations around the world. Unlike many research conferences, **IST-Africa** provides an opportunity to meet with senior managers, practitioners, project managers, software engineers and researchers from industry, government and research organisations. Delegates and speakers attend to share knowledge, experience and lessons learnt, and network with their peers from around the world.

**IST-Africa 2019** Conference also provides the unique opportunity to identify partners and opportunities to co-operate in international ICT research projects co-funded by the European Commission under Horizon 2020. The Programme also facilitates sharing of interim results from ongoing Horizon 2020 projects including projects funded under the ICT-39-2015 and ICT-39-2017 Calls.

## The Venue

**IST-Africa 2019** Conference takes place in Laico Regency Hotel, Loita Street, Nairobi, which is located in the city centre.

## The Programme

The 3-day programme features an invigorating mix of business and government case studies, technical and policy papers and interactive workshops. As well as opening and closing plenary sessions, delegates may participate in 37 thematically focused parallel sessions featuring different aspects of International Cooperation, eHealth, Technology Enhanced Learning and ICT Skills, CyberSecurity, Next Generation Computing including Internet-of-things, eGovernment, ICT4D, eAgriculture, Content Technologies and Societal Implications of Technology. Session Chairs will ensure active discussion and facilitate delegate participation.

In the context of focusing on the Role of ICT, Research and Innovation in Africa's Development, the Opening Plenary on Wednesday 9 May features a high level Roundtable on the Role of ICT, Research and Innovation in Supporting Entrepreneurship and Socio-Economic Development in Africa.

The programme is subject to change and the **IST-Africa 2019** Organising Committee reserves the right to alter the contents, venue and/or speakers. This Programme is accurate as at 03 May 2019.

## Networking

Networking is a key feature of the **IST-Africa** Conference Series. Sessions are designed to maximise knowledge sharing by providing time for interactive discussions during the conference programme itself. Coffee breaks and lunch facilitate informal one-on-one and small group discussions.

The Delegate Showcase on the Conference Portal allows registered delegates, speakers and exhibitors to publish their own short profile and research interests to facilitate networking before, during and after the conference.

## Conference Proceedings

The **IST-Africa 2019** conference proceedings will be published on a USB Drive and published on an open access basis in the Paper Repository on the Conference Portal. Each delegate will receive a free copy of the conference proceedings at Registration.

Papers that are physically presented during the event will also have the option after the event for their paper to be included in the **IST-Africa 2019** Conference Proceedings submitted for publication in IEEE Xplore. Each presenter will present one paper in the Programme.

## Security, Health and Safety

Please wear your name badge for all **IST-Africa** activities, as it is your identification and allows you access to the facilities on offer. It is necessary to take care of bags, personal computers and other personal belongings. The organisers cannot accept any responsibility for losses incurred or for personal health and safety. Delegates should ensure that they have personal health insurance and take due care when exploring Gaborone.

## Hotel Accommodation

Delegates can book accommodation in the Laico Regency Hotel, through online registration for **IST-Africa 2019**, based on payment in advance.

## How to get there

Nairobi is the capital of Kenya. The conference venue is located in the city centre. While in Nairobi, delegates should visit the National Museum, National Park, Bomas of Kenya and the City Market. Given that Nairobi is a large and busy city, delegates should take care when walking around the city centre.

The airport is situated between 45 - 60 minutes drive from the city centre, depending on traffic. An official taxi from the airport to city centre costs in the region of 2,000 KES each way.

## Climate

Nairobi has a moderate climate average temperatures of 22 degrees Celsius. It is cooler in the evening. Rains are possible during May and delegates should bring rain wear.

## Support Organisations

**IST-Africa 2019** is hosted by the Government of Kenya through the Ministry of Education. Support Organisations include the European Commission, National Research Fund Kenya, Global Good and IEEE Humanitarian Activities Committee.

## IST-Africa Initiative

Supported by the European Commission (EC) and African Union Commission (AUC), **IST-Africa** facilitates and supports:

- Strategic engagement with Africa focused on International Research, Innovation and Policy Cooperation
- Knowledge Sharing, Capacity Building and Skills Transfer between IST-Africa Partner Countries
- Collaborative Open Innovation, ICT4D, Technology & Social Entrepreneurship
- Africa – EU Strategic Partnership (ICT, Information Society, Innovation)

**IST-Africa** Activities include:

- Annual IST-Africa Week Hosted by IST-Africa Partner Governments and associated Scientific Proceedings
- Monitoring and Analysis of African Technology-related Research & Innovation Priorities
- Analysis of African Research & Innovation Capacity, and Innovation Spaces
- Horizon 2020 Training Workshops to support Research and Innovation
- Capacity Building and promote Africa - EU Cooperation Opportunities
- Help Desk supports African - European Research Collaboration
- Participation in Technology, ICT4D, Policy and Innovation related International Cooperation Events

The IST-Africa Initiative is a strategic collaboration between IST-Africa Institute (Ireland), IIMC (Ireland, Coordinator), Ministry of Transport and Communications (Botswana); Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (Burundi); Agence Nationale des Technologies de l'Information et de la Communication (Cameroon); Information Technology Industry Development Agency (Egypt); Ministry of Communication and Information Technology (Ethiopia); Ministry of Higher Education, Science and Technology (Kenya); Ministry of Communications, Science and Technology (Lesotho); National Commission for Science and Technology (Malawi); National Computer Board (Mauritius); Instituto Nacional de Tecnologias de Informacao e Comunicacao (Mozambique); National Commission on Research, Science and Technology (Namibia); Ministère de l'Enseignement Supérieur de la Recherche (Senegal); Department of Science and Technology (South Africa); Ministry of Information Communication Technology (Swaziland); COSTECH - Tanzania Commission for Science and Technology; Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (Tunisia) and UNCST (Uganda).

## Plenary Session Speakers



Prof. George Magoha CBS,  
Cabinet Secretary  
MoE, Kenya



Prof. Collette A. Suda,  
PhD, FKNAS, CBS  
PS, MoE, Kenya



Dr. Jemimah Onsare  
Ag. CEO, National Research Fund,  
Kenya



Dr. Gilbert Mugeni  
Ag. Assistant Director,  
Communications Commission of Kenya



Dr. Katherine Getao  
CEO, ICT Authority Kenya



Dr. Moses Rugutt,  
DG. NACOSTI, Kenya



Prof. Meoli Kashorda  
Executive Director  
KENET, Kenya



Megan Bettilyon  
Director  
Global Good



Dr. Salome Guchu,  
CEO  
KENIA



Boniface Akuku,  
Director, ICT  
KALRO

Plenary Speakers as at 03 May 2019 include:

- **Prof. George Magoha CBS**, Cabinet Secretary, Ministry of Education
- **Prof. Collette A. Suda, PhD, FKNAS, CBS**, Chief Administrative Secretary and Principal Secretary, State Department for University Education and Research, Ministry of Education
- **Walter Tretton**, Head of Infrastructure Section, First Counsellor, Delegation of the European Union to the Republic of Kenya
- **Dr. Jemimah Onsare**, Ag. CEO, National Research Fund, Kenya
- **Dr Gilbert Mugeni**, Ag. Assistant Director, Innovation and Research Development, Communications Authority of Kenya
- **Dr Katherine Getao**, CEO, ICT Authority of Kenya
- **Dr. Moses Rugutt**, Director General, National Commission for Science Technology and Innovation (NACOSTI)
- **Prof. Meoli Kashorda**, Executive Director, Kenya Education Network (KENET)
- **Megan Bettilyon**, Director, Renewable Energy and Special Projects, Global Good
- **Dr. Salome Guchu**, Ag. CEO, Kenya National Innovation Agency (KENIA)
- **Dr Charity Wayua**, Senior Manager, IBM Research Africa
- **Dr. Maxwell Otim Onapa**, Director Science, Research and Innovation, Ministry of Science, Technology and Innovation, Uganda
- **Boniface Akuku**, Director, Information and Communication Technology, Kenya Agricultural and Livestock Research Organization

## International Programme Committee

A distinguished Programme Committee has been formed to review and provide feedback on papers and presentations, and chair sessions.

The **IST-Africa 2019** International Programme Committee includes

- **Paul Cunningham** (Conference Chair), IST-Africa Institute / IIMC, Ireland
- **Prof. Manuel Castro**, UNED, Spain
- **Laurens Cloete**, University of Pretoria, South Africa
- **Miriam Cunningham**, IST-Africa Institute / IIMC, Ireland
- **Kim Davis**, Research Council of Norway, Norway
- **Prof. Love Ekenberg**, DSV, University of Stockholm, Sweden
- **Dr Shaikh Fattah**, BUET, Bangladesh
- **Prof. Kenneth Foster**, North Carolina State University, USA
- **Dr Javier Garcia-Zubia**, University of Deusto, Spain
- **Vicky Hailey**, VHailey, USA
- **Dr Haitham Hamza**, ITIDA, Egypt
- **Dr Charmayne Hughes**, Health Equity Institute, San Francisco State University, USA
- **Prof. Mohamed Jmaiel**, University of Sfax, Tunisia
- **Dr Chipso Kanjo**, Chancellor College, University of Malawi, Malawi
- **Vasilis Koulolias**, eGovLab / DSV, Sweden
- **Kristiina Lahde**, Saliens Ltd, Finland
- **Ilari Lindy**, SAIS II, Namibia
- **Gareth MacNaughton**, RMIT University, Spain
- **Morten Møller**, GRENEN, Denmark
- **Dr Tshiamo Motshegwa**, University of Botswana, Botswana
- **Dr Joshua Ndiege**, United States International University - Africa, Kenya
- **Vasilis Koulolias**, eGovLab, Stockholm University, Sweden
- **Dr David Quaglia**, Università degli Studi di Verona, Italy
- **Dr Fungai Bhunu Shava**, NUST, Namibia
- **Prof Darelle van Greunen**, Nelson Mandela University, South Africa

## Organising Committee

- **Miriam Cunningham**, IST-Africa Institute / IIMC, Ireland
- **Paul Cunningham**, IST-Africa Institute / IIMC, Ireland
- **Jacob Njagih**, State Department for University Education and Research, Ministry of Education, Kenya
- **Dr Eric Mwangi**, State Department for University Education and Research, Ministry of Education, Kenya
- **Dr Jemimah Onsare**, Ag. CEO, National Research Fund, Kenya

## Conference Secretariat

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Dublin 3, Ireland  
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e-mail: [secretariat@IST-Africa.org](mailto:secretariat@IST-Africa.org)  
[www.IST-Africa.org/Conference2019](http://www.IST-Africa.org/Conference2019)





# Wednesday, May 8, 2019

08:00

Registration

09:00 Opening Plenary 1a

Moderator: [Dr Eric Mwangi, State Department for University Education and Research, Ministry of Education](#)

**Opening Remarks**

Prof. Collette A. Suda, PhD, FKNAS, CBS, Chief Administrative Secretary and Principal Secretary, State Department for University Education and Research, Ministry of Education

**EU Africa Research and Innovation Cooperation**

Walter Tretton, Head of Infrastructure Section, First Counsellor, Delegation of the European Union to the Republic of Kenya

**Welcome Address**

Prof. George Magoha CBS, Cabinet Secretary, Ministry of Education

10:00

Coffee Break &amp; Networking

10:30 Plenary Session 2a: [High-Level Roundtable focused on Role of Co-Design and Innovation, Science and Technology in Achieving Sustainable Socio-Economic Development in Africa](#)

Moderator: [Paul Cunningham, IIMC, Ireland](#)

Panelists include:

Dr. Jemimah Onsare, Ag. CEO, National Research Fund, Kenya

Dr Gilbert B. Mugeni, Ag Assistant Director, Innovation & Research, Communications Authority of Kenya

Prof. Meoli Kashorda, Executive Director, Kenya Education Network (KENET)

Dr. Moses Rugutt, Director General, National Commission for Science Technology and Innovation (NACOSTI), Kenya

Dr. Maxwell Otim Onapa, Director Science, Research and Innovation, Ministry of Science, Technology and Innovation, Uganda

Boniface Akuku, Director, Information and Communication Technology, Kenya Agricultural and Livestock Research Organization

12:30

Lunch &amp; Networking

14:00 Workshop 3a: [IST-Africa - Research Capacities & Priorities I](#)

Chair: [Paul Cunningham, IIMC / IST-Africa Institute, Ireland](#)

**IST-Africa Initiative & African Engagement in Horizon 2020**

[Paul Cunningham, IIMC / IST-Africa Institute, Ireland](#)

**ICT Initiatives and Research Capacity in Kenya**

[Jacob Njagih, Ministry of Education, Science and Technology, Kenya](#)

**ICT Initiatives and Research Capacity in Burundi**

[Augustin Nsabayumva, Ministry of Higher Education and Scientific Research, Burundi](#)

**ICT Initiatives and Research Capacity in Tanzania**

[Mauridi Abubakari, COSTECH, Tanzania](#)

**ICT Initiatives and Research Capacity in Uganda**

[Loi Namugenyi, Uganda National Council for Science & Technology, Uganda](#)

14:00 Session 3b: [eHealth Issues & Application 1](#)

Chair: [Mohamed Jmaiel, Ministere de l'Enseignement Superieur et de la Recherche Scientifique, Tunisia](#)

**mHealth Apps and Services for Maternal Healthcare in Developing Countries**

[Gloria Iyawa, Namibia University of Science and Technology, Namibia](#)

**Smart-bot Technology: Conversational Agents Role in Maternal Healthcare Support**

[Kevin Mugoye, Maseno University, Kenya](#)

**Automated Diagnosis and Classification of Cervical Cancer from pap-smear Images**

**P r o g r a m m e**

[William Wasswa, Mbarara University of Science and Technology, Uganda](#)

14:00 Workshop 3c: [Innovation in STEM Education using Technology-enhanced Learning: the GO-GA Experience](#)

Chair: [Célia Gavaud, MITO Technology, Italy](#)

**Introduction**

[Célia Gavaud, MITO Technology, Italy](#)

**The Go-Lab Ecosystem**

[Denis Gillet, EPFL, Switzerland](#)

**Inquiry Based Learning in the Context of Technology Enhanced Learning and Teacher Training**

[Rosa Doran, NUCLIO - Núcleo Interativo de Astronomia, Portugal](#)

**Ongoing GO-GA Pilots**

[Fer Coenders, University of Twente, Netherlands](#)

**Interim Pilot Results, Kenya**

[Isaac Kinyanjui, eLimu eLearning Company, Kenya](#)

**Interim Pilot Results, Nigeria**

[Olatunbosun Tijani, Co-creation Hub, United Kingdom](#)

**Wrap Up & Discussion**

[Célia Gavaud, MITO Technology, Italy](#)

14:00 Session 3d: [Content Technology Applications 1](#)

Chair: [Gift Kadzamera, National Commission for Science and Technology, Malawi](#)

**DBI : A Model for Drive-By Intelligence**

[Laurie Butgereit, Nelson Mandela University, South Africa](#)

**FileLinker: Simple Peer-to-Peer File Sharing Using Wi-Fi Direct and NFC**

[Brian Greaves, University of Johannesburg, South Africa](#)

**Ontology-driven Open Data Enrichment Framework for Value Optimisation: The Case of National**

[Performance Indicators for Botswana](#)

[Oarabile Sebubi, BUIST, Botswana](#)

14:00 Session 3e: [eGovernment I](#)

Chair: [Njei Check, National Agency for Information and Communication Technologies \(ANTIC\), Cameroon](#)

**Improving capacity for knowledge management in county governments: Perspectives from selected counties in Kenya**

[Joshua Ndiege, United States International University-Africa, Kenya](#)

**An e-Government Assessment Framework for Service Delivery in South Africa's Municipalities: Rational Choice Theory Approach**

[Muthoni Masinde, Central University of Technology, South Africa](#)

**Analysis of the adoption and use of ICT for e-government services: The case of Mozambique**

[Domingos Luis Rhongo, Catholic University of Mozambique\(FGTI\), Mozambique](#)

**Adoption of Virtualization by Government Organizations in Kenya**

[Tabitha Kihara, Moi University, Kenya](#)

15:30

Coffee Break &amp; Networking

16:00 Workshop 4a: [IST-Africa - Research Capacities and Priorities II](#)

Chair: [Paul Cunningham, IIMC / IST-Africa Institute, Ireland](#)

**ICT Initiatives and Research Capacity in Cameroon**

[Njei Check, National Agency for Information and Communication Technologies \(ANTIC\), Cameroon](#)

**ICT Initiatives and Research Capacity in Egypt**

[Haitham Hamza, ITIDA, Egypt](#)

**ICT Initiatives and Research Capacity in Senegal**

[Toumane Doumbouya, Ministère de l'Enseignement Supérieur et de la Recherche, Senegal](#)

**ICT Initiatives and Research Capacity in Tunisia**

[Mohamed Jmaiel, Ministere de l'Enseignement Superieur et de la Recherche Scientifique, Tunisia](#)

**ICT Initiatives and Research Capacity in Lesotho**

[Lieketseng Tjokotsi, Department of Science and Technology, Lesotho](#)

**08 - 10 May 2019**

**ICT Initiatives and Research Capacity in Namibia**  
Ebenhezer Kauhonina, National Commission on Research, Science and Technology, Namibia

16:00 Session 4b: [eHealth Applications & Case Studies 2](#)

Chair: [Augusto Nunes, INTIC, Mozambique](#)

**Re-visiting National eHealth Strategies in the IoT and Big Data Era**

Anthony Maina, Dedan Kimathi University of Technology, Kenya

**Developing a Mobile Application to Simulate Surgeries without the Use of a Cadaver**

Suama Hamunyela, Namibia University of Science and Technology, Namibia

**Standards for Sensor Technologies that Support Mobile Patient Health Monitoring in Resource Constrained Settings**

Andrew Alunyu Egwar, Busitema University, Uganda

**IoT based Appliances Identification Techniques with Fog Computing for e-Health**

Amleset Kelati, Royal Institute of Technology (KTH), Sweden

16:00 Session 4c: [Technology-enhanced Learning I](#)

Chair: [Lefa Thamae, Department of Science and Technology, Lesotho](#)

**A Learner Model for Adaptive e-Learning Based on Learning Theories**

Selina Atwani Ochukut, University of Nairobi, Kenya

**Contributions and Shortcomings of Classical Learning Theories as Applied to E-Learning: A Literature Review**

Rachael Kibuku, KCA University, Kenya

**Perceptions on Using E-learning in Preserving Knowledge on Namibia's Indigenous Medicinal Plants**

Katazo Amunkete, Namibia University of Science and Technology, Namibia

16:00 Session 4d: [Content Technology Applications 2](#)

Chair: [Zacheous Kantchowa, NCST, Malawi](#)

**Mobile Technology as an Enabler of Innovation in Kenya's Micro, Small and Medium Establishments**

Eliud Moyi, Kenya Institute for Public Policy Research and Analysis (KIPPRA), Kenya

**An Extensible Framework for Developing Android Image Processing Applications.**

Bulelani Gunu, University of Fort Hare, South Africa

**A Noticeboard Application Using Context Aware Services: Case of Strathmore University, Kenya**

Bernard Shibwabo, Strathmore University, Kenya

16:00 Session 4e: [eGovernment II](#)

Chair: [Joshua Ndiege, United States International University-Africa, Kenya](#)

**Empirical Assessment of the Effectiveness of Business Intelligence Tools: Case of Free State Government Departments**

Tanki Eusebia Masekoala Moloabi, Central University of Technology, South Africa

**Development of Extension Procedures to enhance web based e-Government System with SMS Mobile based Service.**

Akhan M. Majaliwa, University of Dar es Salaam, Tanzania

**Proposed Model for Visual and Intuitive Crime Investigation Based on Associative Rule Mining Technique (VICIBARM): A Case Study of Kenya**

Edigar Adero, Technical University of Kenya (TUK), Kenya

17:30 **End of Parallel Sessions**



Thursday,  
May 9, 2019

09:00 Workshop 5a: [IST-Africa - Research Capacities & Priorities III](#)

Chair: [Paul Cunningham, IIMC / IST-Africa Institute, Ireland](#)

**ICT Initiatives and Research Capacity in Mozambique**

Augusto Nunes, INTIC, Mozambique

**ICT Initiatives and Research Capacity in Malawi**

Gift Kadzamura, National Commission for Science and Technology, Malawi

**ICT Initiatives and Research Capacity in Botswana**

Phodiso Potesh Phole, Ministry of Transport and Communications, Botswana

ICT Initiatives and Research Capacity in Eswatini

Lwandle Simelane, Ministry of Information Communication Technology, Eswatini

**ICT Initiatives and Research Capacity in South Africa**

Zamokwakhe Dlamini, Department of Science and Technology, South Africa

**ICT Initiatives and Research Capacity in Mauritius**

Ashwin Seegolam, National Computer Board, Mauritius

09:00 Session 5b: [eHealth Applications 3](#)

Chair: [Charmayne Hughes, San Francisco State University, United States](#)

**Development of an Upper Extremity Stroke Rehabilitation**

mHealth Application for sub-Saharan Africa: A Usability Study  
Charmayne Hughes, San Francisco State University, United States

**Enabling Semantic Interoperability of Crowdsourced Disease Surveillance Data for Namibia through a Health-Standards-Based Approach**

Nikodemus Angula, Durban University of Technology, South Africa

**Application of Data Visualization for Improved Health Care**

Insurance Management using QlikView

Mwirigi Kiula, JKUAT, Kenya

**eHealth in Hospital Information Management**

Mateus Padoca Calado, Universidade Agostinho Neto, Angola

09:00 Session 5c: [Technology Enhanced Learning Issues 2](#)

Chair: [Lieketseng Tjokotsi, Department of Science and Technology, Lesotho](#)

**A Generic Framework for eLearning adoption**

Zebiba Abegaz, Wollo University, Ethiopia

**A Gamification Model for eLearning Platforms**

Samuel Kamunya, South eastern University, Kenya

**A Review of Mobile Learning Considerations in Open Distance Learning and Access to Higher Education**

Elizaphan Maina, Kenyatta University, Kenya

09:00 Session 5d: [Societal Implications of Technology - Innovation](#)

Chair: [Mauridi Abubakari, COSTECH, Tanzania](#)

**Contextualising Innovation in Africa: Knowledge Modes and Actors in Local Innovation Development**

Antero Järvi, University of Turku, Finland

**Creation of CERID: Challenge, Education, Research, Innovation, and Deployment "In the Context of Smart MicroGrid"**

Masoumeh Ebrahimi, KTH, Sweden

10:30 **Coffee Break & Networking**

11:00 Session 6a: [Cyber Security Issues 1](#)Chair: [Haitham Hamza, ITIDA, Egypt](#)**Fostering the Culture of Cyber Security**

Alfredo M. Ronchi, Politecnico di Milano, Italy

**A Review of Security Techniques against Black hole Attacks in Mobile Ad hoc Networks**

Ephantus Gichuki Mwangi, Kirinyaga University, Kenya

**Verifying Literal and Conceptual Consistency for Anti-Phishing**

Nureni Azeez, North-West University, South Africa

11:00 Workshop 6b [mHealth4Afrika](#)Chair: [Paul Cunningham, IIMC / IST-Africa Institute, Ireland](#)**mHealth4Afrika Initiative**

Paul Cunningham, IIMC / IST-Africa Institute, Ireland

**mHealth4Afrika System**

Miriam Cunningham, IIMC / IST-Africa Institute, Ireland

**Results from mHealth4Afrika pilot sites in Ethiopia**

Binyam Tilahun, University of Gondar, Ethiopia

**Results from mHealth4Afrika pilot sites in Kenya**

Emmanuel Kweyu, Strathmore University, Kenya

**Results from mHealth4Afrika pilot sites in Malawi**

Chipo Kanjo, University of Malawi, Chancellor College, Malawi

11:00 Session 6c: [Technology Enhanced Learning Applications 1](#)Chair: [Lwandle Simelane, Ministry of Information Communication Technology, Eswatini](#)**Glove Based Sign Interpreter for Medical Emergencies**

Sheila Mugala, Makerere University, Uganda

**WhatsApp as Part of Blended Learning Model to Help Programming Novices**

Tlou Ramabu, Tshwane University of Technology, South Africa

**CS Challenger: Gamifying the Learning of Computer Science Concepts through a Mobile Application Platform**

Collins Oduor Ondiek, United States International University- Africa, Kenya

**Cloud Based Tutorial Management System to Enhance Student Participation in Learning**

John K. Thuku, Kenyatta University, Kenya

11:00 Session 6d: [Societal Implications of Technology](#)Chair: [Ebenhezer Kauhonina, National Commission on Research, Science and Technology, Namibia](#)**Television White Space Opportunities and Challenges: What Next for the Developing Countries?**

Moses Ismail, University of Dar es Salaam, Tanzania

**Performance Monitoring of Mobile Broadband in a Developing Country**

Folasade Dahunsi, Federal University of Technology, Akure, Nigeria

**Investigating Software Development Methodologies and Practices in Software Industry in Tanzania**

Joel Mtebe, University of Dar es Salaam, Tanzania

**The Role of Leadership in Building the Foundations for Data Analytics, Visualization and Business Intelligence**

Mwirigi Kiula, JKUAT, Kenya

12:30

Lunch

14:00 Session 7a: [Cyber Security Issues 2](#)Chairs: [Njei Check, National Agency for Information and Communication Technologies \(ANTIC\), Cameroon](#)**Weeping Louder than the Bereaved: Discussing the Influence Africa's Adoption of the EU Notion of Personal Data on the Management of Examination Results**

Alunge Rogers, University of Turin, Italy

**Review: Sensitive data leakage through Android Applications in a Bring Your Own Device (BYOD) Workplace**

Mamoqenelo Morolong, Namibia University of Science and Technology, Namibia

**An assessment of BYOD control in Higher Learning Institutions: A Namibian Perspective**

Fungai Bhunu Shava, Namibia University of Science and Technology, Namibia

**The Role of Blockchain in Development**

Catrina Sheridan, NAFASI, Ireland

14:00 Workshop 7b: [IEEE Humanitarian Activities Committee Participatory Workshop](#)Chair: [Paul Cunningham, IIMC / IST-Africa Institute, Ireland](#)14:00 Session 7c: [Technology Enhanced Learning - Case Studies](#)Chair: [Augustin Nsabyumva, Ministry of Higher Education and Scientific Research, Burundi](#)**Behavior prediction in a Learning Management System**

Charles Omondi Lwande, University of Nairobi, Kenya

**Towards a Personalized Adaptive Remedial e-Learning Model**

George Musumba, University of the Free State, South Africa

**A Conceptual Model for Measuring and Supporting Self-Regulated Learning using Educational Data Mining on Learning Management Systems**

Eric Araka, Technical University of Kenya, Kenya

**Exploring the Adoption of Virtual and Augmented Reality in Enhancing Interactive Learning in Tanzania**

Angelina Misso, University of Dar es Salaam, Tanzania

14:00 Session 7d: [Societal Implications of Technology - Case Studies](#)Chair: [Toumane Doumbouya, Ministère de l'Enseignement Supérieur et de la Recherche, Senegal](#)**Annotation Framework for Hate Speech Identification in Tweets: Case Study of Tweets during Kenyan Elections**

Edward Ombui, Africa Nazarene University, Kenya

**Situation Analysis and Technology Value Proposition for Geriatric Care for Philanthropic Social Homes in Kenya.**

Njeri Ngaruiya, University of Nairobi, Kenya

**Role of Mobile Apps in Absorptive Capabilities of Small and Medium-sized Enterprises in Nigeria**

Adedamola Tolani, University of South Africa, South Africa

**A Pilot E-literacy Environmental Scan in the Northern Cape Province of South Africa**

Antoinette Lombard, Vaal University of Technology, South Africa

15:30

Coffee Break &amp; Networking

16:00 Session 8a: [Cyber Security 3](#)Chair: [Mohamed Jmaiel, Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, Tunisia](#)**Botnet's Obfuscated C&C Infrastructure Take-down Approaches Based on Monitoring Centralized Zeus Bot Variant's Propagation Model**

Victor Rigworo KEBANDE, Malmö Universitet, Sweden

**Analysis of BitTorrent P2P network as a strategy for survivability of networks using NS-3**

Bongisa Dyosoba, University of Fort Hare, South Africa

**Scenario-Based Digital Forensic Investigation of Compromised MySQL Database**

Taurai Hungwe, Sefako Makgatho Health Sciences University, South Africa

16:00 Workshop 8b: [WS: IoT – From idea to reality \(WAZIUP/WAZIHUB\)](#)Chair: [Abdur Rahim, FBK, Italy](#)**WAZIUP cost-effective and open IoT solutions**

Abdur Rahim, FBK, Italy

**WAZIHUB IoT Innovation Program**

Fiiifi Baidoo, iSpace Foundation, Ghana

**WAZIHUB IoT start-ups in iLabs**

Margaret Njenga, Strathmore University, Kenya

**ACEIoT and WAZIUP collaboration**

Santhi Kumaran, University of Rwanda, Rwanda

16:00 Session 8c: [Technology Enhanced Learning Case Studies 1](#)Chair: [Madoda Mdziniso, Ministry of Information Communication Technology, Eswatini](#)**MPhil in IT Governance - a postgraduate qualification for all**

Rossouw Von Solms, Nelson Mandela university, South Africa

**The Role of Technology in Monitoring Inter-institutional Lecturers' Teaching Workload in Kenya**

Evans Ombati, Kabarak University, Kenya

**ICT support environment in developing countries: The multiple cases of school teachers in rural South Africa**

Samwel Mwapwele, UNISA, South Africa

16:00 Session 8d: **ICT & Financial Services**

Chair: **Amancio Ubisse, INTIC, Mozambique**

**An Enquiry into Digital Inequality Implications for Central Bank Digital Currency**

Thabo J. Gopane, University of Johannesburg, South Africa

**IT governance frameworks and their impact on strategic alignment in the South African banking industry**

Mpho Leketi, University of Johannesburg, South Africa

**The Determinants of Mobile Phone Users' Intention to Use mobile Phone Money Services: A Qualitative Understanding**

Odoyo Collins, Masinde Muliro University of Science and Technology, Kenya

17:30

End of Parallel Sessions



Friday,  
May 10, 2019

09:00 Session 9a: **eAgriculture**

Chair: **Phodiso Poteshe Phole, Ministry of Transport and Communications, Botswana**

**Long Range Low Power Sensor Networks for Agricultural Monitoring - A Case Study in Kenya**

Jared Makario, Dedan Kimathi University of Technology, Kenya

**e-Pest Surveillance: Large Scale Crop Pest Surveillance and Control**

Fredrick Awuor, Kisii University, Kenya

**Design and Implementation of a Smart Bee Hiving & Monitoring System**

Santhi Kumaran, University of Rwanda, Rwanda

09:00 Session 9b: **Next Generation Computing**

Chair: **Zamokwakhe Dlamini, Department of Science and Technology, South Africa**

**Edge Computing for Emerging Markets Addressing African Needs**  
Mxolisi Mtshali, Council for Scientific and Industrial Research, South Africa

**A Novel Integrated Conceptual Smart Cities Framework Leveraging on Open Data towards UN SDGs.**

Obwaya Mogire, SEKU, Kenya

**High performance computing (HPC) in Africa – A status mapping and potential hybridization**

Francis Xavier Ochieng, University of Nottingham Ningbo CHina, China

**Institutional Pressures and Cloud Computing Adoption: The Moderating Effect of Organizational Mindfulness**

John Oredo, University of Nairobi, Kenya

09:00 Session 9c: **Technology Enhanced Learning Case Studies 2**

Chair: **Loi Namugenyi, Uganda National Council for Science & Technology, Uganda**

**The Reality of Library E-resources Acceptance by Postgraduate students of Digital School of virtual and Open Learning, Kenyatta University, Kenya**

Michael Maua, Pwani University, Kenya

**Use and Acceptance of E-Books among Undergraduate Students**

Martin Ujakpa, International University of Management, Namibia

**Enabling Quality Education In Namibia Through Mobile Learning Technologies. The High School Teachers' Perspective**

Jude Osakwe, Namibia University of Science and Technology, Namibia

09:00 Session 9d: **WS: Nairobi INSPIRE Hackathon 2019 Results**

Chair: **Bente Bye, Plan4All, Norway**

**What is the INSPIRE Hackathon**

Bente Bye, Plan4All, Norway

The Results from the Nairobi INSPIRE Hackathon 2019

**Food Security in Relation to Earth Observation (GEOSS and COPERNICUS Relevance)**

Karel Charvat, Club of Ossiach, Austria

**Climatic Services for Africa**

Karel Jedlička, University of West Bohemia, Czech Republic

**Open Land Use for Africa (OLU4Africa)**

Karel Charvat, Club of Ossiach, Austria

**IoT Technologies for Africa**

Michal Kepka, University of West Bohemia, Czech Republic

**Agriculture Innovation Hub for Africa**

Karel Charvat, Club of Ossiach, Austria

**Open Data and Data Sharing in Agri-Food Chains in Africa**

Runar Bergheim, Avinet

**Smart Points of Interest - Publication of Open Data in Africa as****5-star Linked Open**

Miriam Cunningham, IIMC / IST-Africa Institute, Ireland

**Citizen Science in Africa to Ground Truth & Exploit Earth****Observation data**

Otakar Cerba, Plan4all z.s., Czech Republic

**Open Transport Map (OTM) Applications for Africa**

Daniel Beran, University of West Bohemia, Czech Republic

**Summary/Conclusions**

Karel Charvat, Club of Ossiach, Austria

10:30 Coffee Break &amp; Networking

11:00 Session 10a: **Environmental Sustainability**Chair: **Maxwell Otim Onapa, Uganda National Council for Science and Technology, Uganda****Leveraging Data Analytics for Sustainable Agriculture**

Isaac Chann, Oakar Services Ltd, Kenya

**The Role of ICT Tools in the Access of Climate Information in Rural Communities**

Michaelina Yohannis, University of Nairobi, Kenya

**Exploitation of calculated local temperature topography variations - a case study in Kenya**

Karel Jedlička, University of West Bohemia, Czech Republic

11:00 Session 10b: **Global Development Case Studies**Chair: **Chipo Kanjo, Chancellor College, University of Malawi****Women and ICT in South Africa: Mental Models on Gender and ICT in Marginalised Communities**

Carlynn Pokpas, CoLab for eInclusion and Social Innovation - University of the Western Cape, South Africa

**Unravelling Development Capabilities Enhanced by ICT in Informal Micro-finance Settings. Case of Women Village Banks in Blantyre, Malawi.**

Martin Bright Msendema, University of Malawi, Malawi

**Using Social Media to Support Community Development: A Case Study of E-Inclusion Intermediaries in Underprivileged Communities of South Africa**

Natasha Katunga, University of the Western Cape, South Africa

11:00 Session 10c: **Technology Enhanced Learning Case Studies 3**Chair: **Frederic Banginama, Ministere de l'Enseignement Superieur et de la Recherche Scientifique, Burundi****Framework for Technology Enriched Active Class Learning of Physics in Secondary Schools in Kenya**

Elijah Okono, Masinde Muliro University of Science and Technology, Kenya

**Effectiveness of using WhatsApp for Grade 12 Learners in Teaching Mathematics in South Africa**

Jose Manappattukunnel Lukose, Walter Sisulu University, South Africa

**Sports Coaching in Impoverished Communities Through the use of Virtual Reality**

Riedwaan Fakier, University of the Western Cape, South Africa

11:00 Session 10d: **Technology Enhanced Learning Case Studies 4**Chair: **Jacob Njagih, Ministry of Education, Science and Technology, Kenya****Adoption of Self-Directed Learning: A Case Study of Kenya Jua Kali Sector**

Elizabeth Muli, Technical University of Kenya, Kenya

**An Overview of the Eastern Cape eSkills CoLab Training and Awareness Programmes**

Mnoneleli Nogwina, Eastern Cape eSkills Colab, Walter Sisulu University, South Africa

**Modelling TVET College's as Alternative Centres To Deliver eSkill's Training in Rural Communities of Eastern Cape**

Ndiyakholwa Ngqulu, NEMISA-Walter Sisulu University, South Africa

12:30 Lunch &amp; Networking

13:30 Closing Plenary 11a: **Strategic and Multi-stakeholder Partnerships**Chair: **Paul Cunningham, IIMC / IST-Africa Institute, Ireland**

Dr Katherine Getao, CEO, ICT Authority of Kenya

Megan Bettilyon, Director, Renewable Energy and Special Projects, Global Good, US

Dr. Salome Guchu, Ag. CEO, Kenya National Innovation Agency (KENIA)

Dr Charity Wayua, Senior Manager, IBM Research Africa