

IST-Africa 2017

Final Programme

Windhoek, Namibia

31 May - 02 June 2017

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ISTAfrica

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Introduction

IST-Africa 2017 Conference takes place 31 May - 02 June 2017 in Windhoek, Namibia, as part of **IST-Africa Week 2017**. 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 2017** is the twelfth 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 has co-funded **IST-Africa** since 2006, to promote African - European research cooperation and support Information Society and ICT aspects of the Africa-EU Strategic Partnership.

Hosted by the Government of Namibia through the National Commission on Research, Science and Technology and Technically Co-Sponsored by IEEE, **IST-Africa 2017** 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 2017** 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 2017** 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, the African Ministerial Council on Science and Technology (AMCOST) and the Consolidated Plan of Action for the African Regional Action Plan on the Knowledge Economy (ARAPKE).

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 2017 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 2017 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 Call.

The Venue

IST-Africa 2017 Conference takes place in Safari Hotel Conference Centre, Corner of Auas & Aviation Streets, Windhoek, Namibia.

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 40 thematically focused parallel sessions featuring different aspects of International Cooperation, eHealth, Technology Enhanced Learning and ICT Skills, CyberSecurity, Privacy and Trust, 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 31 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 2017** Organising Committee reserves the right to alter the contents, venue and/or speakers. This Programme is accurate as at 18 May '17.

Networking

Networking is a key feature of the **IST-Africa** Conference Series. Paper and workshop 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 following paper or workshop sessions.

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. Leverage this functionality to contact potential partners in advance and arrange to meet during the conference.

Networking Dinner, 31 May

The National Commission on Research, Science and Technology is kindly hosting a Networking Dinner on Wednesday 31 May at 18:30. There is limited capacity and it is necessary for delegate to confirm participation by 22 May. Places were allocated on a first confirmed basis. Dress Code: Smart Casual.

IEEE Experts in Technology and Policy (ETAP) Forum, 30 May

IST-Africa is cooperating with IEEE to organise the first IEEE Experts in Technology and Policy (ETAP) Forum on Internet Governance, Cybersecurity, Privacy and Inclusion to take place in Africa as the pre-conference event on Tuesday 30 May.

This pre-conference workshop is designed to bring together technology developers and policy makers to debate current and future Internet governance, cybersecurity and privacy issues across the African continent. Presentations will share experiences from Namibia, South Africa, Cameroon and NEPAD, followed by group work around specific topics.

This is an invitation only event, If you believe that you can make an active contribution to this discussion, please contact the Conference Secretariat at secretariat@IST-Africa.org

Conference Proceedings

The **IST-Africa 2017** 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 2017** Conference Proceedings submitted for publication in IEEE Xplore.

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 Windhoek. Any special needs or requirements should be notified to the Conference Secretariat as far in advance of the event as possible.

Hotel Accommodation

Delegates can book accommodation in the Safari Court Hotel (4*) and Hotel Safari (3*) at discounted rates through online registration for **IST-Africa 2017**, based on payment in advance. Both hotels are within the complex where the conference is taking place.

Delegates are strongly recommended to book their accommodation early as it will be allocated on a first-paid basis. Hotel accommodation can only be confirmed upon receipt of the associated payment. For further information, please visit:

www.IST-Africa.org/Conference2017

How to get there

Windhoek is the capital of Namibia. The city centre is quite compact and it is possible to walk to all major sites. Walking Tours are available from the Tourist Information office. Safari Hotel is on the outskirts of the city.

While in Windhoek, delegates and accompanying persons should ensure they visit the Christuskirche; St Georges Cathedral, Das Reiterdankmal, Tintenpalast, Alte Feste, Zoo Park, Independence Avenue and Clock Tower, the Namibian Craft Centre and Daan Viljoen Game Park (20km east of Windhoek).

After the conference, delegates should also try to visit Swakopmund, Walvis Bay, Skeleton Coast and Etosha National Park.

Climate

Average temperatures in Windhoek in May are temperate, ranging from 12 to 23 degrees Celsius

Sponsors

IST-Africa 2017 offers a variety of Sponsorship Opportunities to enhance your organisation's image & standing with the international IST research community. Prominent notice will be given to sponsors on the conference portal, in press releases, together with other benefits and promotional opportunities.

IST-Africa 2017 is hosted by the Government of Namibia through the National Commission on Research, Science and Technology.

For further information in relation to providing support, please contact the Conference Secretariat at secretariat@IST-Africa.org

Plenary Session Speakers



H.E. Dr Nickey Iyambo
Vice President, Republic of Namibia



Hon. Dr Itah Kandjii - Murangi
Minister of Higher Education,
Training and Innovation



Hon. Tjekero Tweya
Minister of Information and
Communication Technology



Dr Eino Mvula
CEO
NCRST



Mr Mbeuta Ua-Ndjarakana
Permanent Secretary
Ministry of ICT



Mr Festus K. Mbandeka
CEO,
CRAN



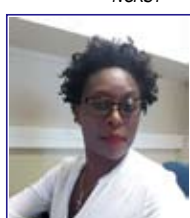
Prof Kingo Mchombu
Pro-Vice Chancellor Academic
and Research, IUM



Dr Anicia Peters
Dean, Faculty of Computing
and Informatics, NUST



Mr Theo Klein
Managing Director
Telecom Namibia



Mrs Karin Fröhlich
DPSITM, Office of Prime
Minister



Mr John Sifani
Centre for Innovation and
Development, UNAM

Plenary Speakers & Panelists as at 18 May 2017 include:

- **His Excellency Dr Nickey Iyambo**, Vice President, Republic of Namibia
- **Hon. Dr. Itah Kandjii-Murangi**, Minister of Higher Education, Training and Innovation, Namibia
- **Hon. Tjekero Tweya**, Minister of Information and Communication Technology, Namibia
- **H.E. Ambassador Jana Hybaskova**, European Union Delegation to Namibia
- **Presenter to be confirmed**, African Union Commission
- **Dr Eino Mvula**, CEO, National Commission on Research Science and Technology, Namibia
- **Mr Festus K. Mbandeka**, CEO, Communications Regulatory Authority of Namibia
- **Mr Mbeuta Ua-Ndjarakana**, Permanent Secretary, Ministry of ICT, Namibia
- **Mrs Karin Amukugo**, Department of Public Service Information Technology Management, Office of Prime Minister, Namibia

- **Wilfred Kuria**, CEO, Xnet Development Trust, Namibia
- **Prof Kingo Mchombu**, Pro-Vice Chancellor Academic and Research, International University of Management
- **Dr Anicia Peters**, Dean: Faculty of Computing and Informatics, Namibia University of Science and Technology
- **Mr. John Sifani**, Director: Centre for Innovation and Development, Office of PVC: Research, Innovation and Development University of Namibia
- **Mr Theo Klein**, Managing Director, Telecom Namibia
- **Mr Francesco Affinito**, Head of Sector for Research and Innovation, DG DEVCO, European Commission
- **Towela Nyirenda-Jere**, NEPAD Agency, South Africa
- **Mrs Ndeshipanda Ndilula**, Former Director, DPSITM, Office of the Prime Minister, Namibia
- **Flora Ismail Tibazarwa**, SAIS II, Namibia
- **Dr Maïke Luiken**, IEEE, Canada

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 2017** International Programme Committee includes

- **Paul Cunningham** (Conference Chair), IIMC International Information Management Corporation Ltd, Ireland
- **Oscar Alvear Alvear**, Universitat Politècnica de València, Spain
- **Tiwonge Msulira Banda**, Ubuntunet Alliance, Malawi
- **Dr. Philip A. Catherwood**, NIBEC Research Labs, Ulster University, Northern Ireland
- **Laurens Cloete**, Meraka Institute, CSIR, South Africa
- **Miriam Cunningham**, IIMC International Information Management Corporation Ltd, Ireland
- **Kim Davis**, Research Council of Norway, Norway
- **Dr Shirley Davey**, School of Engineering, Ulster University, Northern Ireland
- **Prof. Nomusa Dlodlo**, Informatics Department, Namibia University of Science and Technology, Namibia
- **Prof. Love Ekenberg**, DSV, University of Stockholm, Sweden
- **Leonardo Chancay Garcia**, Universitat Politècnica de València, Spain
- **Attlee Gamundani**, Computer Science Department, Namibia University of Science and Technology, Namibia
- **Seilendria A. Hadiwardoyo**, Universitat Politècnica de València, Spain
- **Dr. Charmayne Hughes**, Health Equity Institute, San Francisco State University, USA
- **Dr. Mike Joy**, University of Warwick, United Kingdom
- **Dr. Chipo Kanjo**, Department of Computer Science, Chancellor College, University of Malawi, Malawi
- **Vasilis Koulolias**, eGovLab, Stockholm University, Sweden
- **Kristiina Lahde**, 4Front, Finland
- **Jorge E. Luzuriaga**, Universitat Politècnica de València, Spain
- **Dr. Sirkku Männikkö Barbuti**, DSV, Stockholm University, Sweden
- **Dr. Johann Marquez-Barja**, Trinity College Dublin, Ireland
- **Jorge Luis Zambrano Martinez**, Universitat Politècnica de València, Spain
- **Prof. Maurice Mars**, University of KwaZulu-Natal, South Africa

- **William Zamora Mero**, Universidad Laica Eloy Alfaro de Manabí, Ecuador
- **Morten Møller**, GRENEN, Denmark
- **Dr Fungai Bhunu Shava**, Computer Science Department, Namibia University of Science and Technology, Namibia
- **Richard Stevens**, IDC, Italy
- **Jorge Herrera-Tapia**, Universidad Laica Eloy Alfaro de Manabí, Ecuador
- **Dr Marita Turpin**, Department of Informatics, University of Pretoria, South Africa
- **Prof. Darelle Van Greunen**, Nelson Mandela Metropolitan University, South Africa

Organising Committee

- **Miriam Cunningham**, IIMC, Ireland
- **Paul Cunningham**, IIMC, Ireland
- **Diina Shuuluka**, National Commission on Research Science and Technology, Namibia
- **Gernot Piepmeyer**, National Commission on Research Science and Technology, Namibia
- **Ebenhezer Kauhonina**, National Commission on Research Science and Technology, Namibia



Conference Secretariat

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www.IST-Africa.org/Conference2017



Wednesday, May 31, 2017

08:00

Registration

09:00 Opening Plenary 1a: [Opening Plenary](#)**Opening Remarks**

Dr Eino Mvula, CEO, National Commission on Research Science and Technology, Namibia

EU Africa Research and Innovation Cooperation

H.E. Ambassador Jana Hybaskova, European Union Delegation to Namibia

African Union Commission Address

Presenter to be confirmed, African Union Commission

Importance of Research and Innovation within the Higher Education sector in Namibia

Hon. Dr. Itah Kandjii-Murangi, Minister of Higher Education, Training and Innovation, Namibia

Importance of ICT in Namibia

Honourable Tjekero Tweya, Minister of Information and Communication Technology, Namibia

Official Welcome

His Excellency Dr Nickey Iyambo, Vice President, Republic of Namibia

10:30

Coffee Break

11:00 Plenary Session 2a: [High-Level Roundtable focused on Role of ICT, Research and Innovation in Supporting Entrepreneurship and Socio-Economic Development in Africa](#)

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

Panelists include:

Dr Eino Mvula, CEO, National Commission on Research Science and Technology, Namibia

Dr Alfred van Kent, Permanent Secretary, Ministry of Higher Education, Training and Innovation, Namibia (tbc)

Mr Mbeuta Ua-Ndjarakana, Permanent Secretary, Ministry of ICT, Namibia

Mr Festus K. Mbandeka, CEO, CRAN

Mrs Karin Fröhlich, Department of Public Service Information Technology Management, Office of Prime Minister

Wilfred Kuria, CEO, Xnet Development Trust, Namibia

Prof Kingo Mchombu, Pro-Vice Chancellor Academic and Research, International University of Management

Dr Anicia Peters, Dean: Faculty of Computing and Informatics, Namibia University of Science and Technology

Mr. John Sifani, Director: Centre for Innovation and Development,

Office of PVC: Research, Innovation and Development, UNAM

Mr Theo Klein, Managing Director, Telecom Namibia

12:30

Lunch

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

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

IST-Africa Initiative

Paul Cunningham, IIMC, Ireland

ICT Initiatives and Research Capacity in Namibia

Ebenhezer Kauhonina, NCRST, Namibia

ICT Initiatives and Research Capacity in Mozambique

Augusto Nunes, National Institute for ICT, Mozambique

ICT Initiatives and Research Capacity in Botswana

Phodiso Phole, Ministry of Transport and Communications, Botswana

ICT Initiatives and Research Capacity in Lesotho

Lieketseng Tjokotsi, Department of Science and Technology, Lesotho

ICT Initiatives and Research Capacity in South Africa

Peacemaker Dlamini, Department of Science and Technology, South Africa

14:00 Session 3b: [eHealth I](#)

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

mHealth in Palliative Care for Cancer Patients & Care givers

Newton Andebe, University of Nairobi, Kenya

Enhancing Management of Nutrition Information Using Mobile Application: Prenatal and Postnatal Requirements

Neema Mduma, The Nelson Mandela African Institution of Science and Technology, Tanzania

The Feasibility of Using an Android-Based Infant Fingerprint Biometrics System For Treatment Follow-Up

Paul Macharia, Ministry of Health, Kenya

Mobile Technology for Health Information Dissemination

Nikodemus Angula, Namibia University of Science and Technology, Namibia

14:00 Session 3c: [Technology-enhanced Learning I](#)

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

Results of Smart Device Based Arithmetic Competition in Blue Nile State, Sudan, in Hindi-Arabic Script

Mohammed Elbasheir, Sudan University of Sciences and IT, Sudan

Introducing Computer Programming in Secondary Schools: A Case Study of NAMTOSS

Tulimevava Mufeti, University of Namibia, Namibia

Rethinking Tertiary Computer Science Education: Let's have Pi

Anton Limbo, University of Namibia, Namibia

An e-Converter: Digitizing Manual Conversions of Mathematics and Physics Quantities

Bongisa Dyosoba, University of Fort Hare, South Africa

Agile Software Development Methods Practise in Computer Science Education: Adoption and Recommendations in Tanzania

Diana Severine Rwegasira, University of Dar es Salaam, Tanzania

14:00 Session 3d: [CyberSecurity, Privacy and Trust I](#)

Chair: [Njei Check, ANTIC, Cameroon](#)

Measuring Cyber Security Capacity Building in Africa

Basie von Solms, University of Johannesburg, South Africa

Towards Quantifying and Defining Privacy Metrics for Online Users

Frans Blauw, University of Johannesburg, South Africa

Do Users Know or Care About What is Done with their Personal Data: A South African Study

Paula Kotze, Council for Scientific and Industrial Research, South Africa

Are Organisations in South Africa Ready to Comply with Personal Data Protection or Privacy Legislation and Regulations?

Ntsako Baloyi, Council for Scientific and Industrial Research, South Africa

Privacy in Social Media: Big Data Perspective

Nobubele Shoji, CSIR, South Africa

Cyber Security, Privacy and Trust

Alfredo M. Ronchi, Politecnico di Milano, Italy

14:00 Session 3e: [Next Generation Computing I](#)

Chair: [Fungai Bhunu Shava, Namibia University of Science and Technology](#)

Smart Renewable Energy Systems: A Great Opportunity for Developing Countries

Zenville Erasmus, University of the Western Cape, South Africa

An Efficient Cluster-Based and Energy Aware Scheme for M2M Communication Networks

Isaac Woungang, Ryerson University, Canada

BER Performance for Feasible FSOC Deployment in Namibia and South Africa

Abraham Salom, University of Namibia, Namibia

Assessing the Effects of Various SchedTypes and CoS

Combinations on WiMAX QoS and GoS

Phumzile Nomnga, University of Fort Hare, South Africa

15:45

Coffee Break

16:15 Workshop 4a: [IST-Africa - Research Capacities & Priorities II](#)

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

ICT Initiatives and Research Capacity in Malawi

Gift Kadzamira, National Commission for Science and Technology, Malawi

ICT Initiatives and Research Capacity in Swaziland

Rejoice Maseko, MICT, Swaziland

ICT Initiatives and Research Capacity in Mauritius

Ashwin Seegolam, National Computer Board, Mauritius

ICT Initiatives and Research Capacity in Kenya
Jacob Njagih, Ministry of Education, Science and Technology, Kenya
ICT Initiatives and Research Capacity in Ethiopia
Leulseged Alemie, MCIT, Ethiopia
ICT Initiatives and Research Capacity in Tanzania
Mauridi Abubakari, COSTECH, Tanzania

16:15 Session 4b: [eHealth II](#)

Chair: [Chipo Kanjo, Chancellor College, University of Malawi, Malawi](#)

A Reflective Analysis of the North and South Research Collaboration in Mobile Health Projects

Felix Ntawanga, University of South Africa, South Africa

Agent-based Interoperability System in Health Insurance

James Liech, National Hospital Insurance Fund, Kenya

A Framework for Low Cost Automatic Pill Dispensing Unit for Medication Management

Gift Arnold Mugisha, Uganda Martyrs Secondary School, Uganda

Structuring Information on the Web, An Example with Pharmacies Services

Mateus Padoca Calado, Universidade Agostinho Neto, Angola

16:15 Session 4c: [Technology-enhanced Learning II](#)

Chair: [Mweneni Shahungu, NCRST, Namibia](#)

Technology in Education and Training – Opportunities to transform Learning

Maike Luiken, IEEE, Canada

Learner Experience of E-learning Mode in Institutions of Higher Learning: A Case of Kenyan Universities

Elizaphan Maina, Kenyatta University, Kenya

An Assessment of Predictors of Learner's Attention and their Influence to Learner's Engagement and Learning outcomes in a Mobile Learning Classroom

Ruth Wario, University of the Free State, South Africa

Student's Experiences of Using Blogs to Promote Experiential Learning in a Blended Classroom: A Case of a Kenyan Public University

Rhoda Gitonga, Kenyatta University, Kenya

Using Log Data of Virtual Learning Environments to Examine the Effectiveness of Online Learning for Teacher Education in Rwanda

Jean Claude Byungura, Stockholm University, Rwanda

16:15 Session 4d: [CyberSecurity, Privacy and Trust II](#)

Chair: [Haitham Hamza, ITIDA, Egypt](#)

Towards a Conceptual Framework for Information Security Digital Divide

Emmanuel Chisanga, CITC Namibia, Namibia

A Gap Analysis of the ISO/IEC 27000 Standard Implementation in Namibia

Diana Tjirare, Namibia University of Science and Technology, Namibia

Developing a Cyber Counterintelligence Maturity Model for Developing Countries

Victor Jaquire, University of Johannesburg, South Africa

A Proposed Digital Forensic Investigation Framework for an eGovernment Structure for Uganda

Hein Venter, University of Pretoria, South Africa

A Security Model for Namibian Government Services

Licky Erastus, Namibia University of Science and Technology, Namibia

A Secure Cloud Storage System for Small and Medium Enterprises

Basie von Solms, University of Johannesburg, South Africa

16:15 Session 4e: [Next Generation Computing II](#)

Chair: [Attlee Gamundani, Namibia University of Science and Technology](#)

Adoption of RFID in Large Scale Organisations – A review of challenges and solutions

Abdulbaqi Badru, University of KwaZulu-Natal, South Africa

A Data Management and Analytic Model for Business Intelligence Applications

Misheck Banda, University of South Africa, South Africa

Features of Conceptual Blending in the Context of Visualisation

Coral Featherstone, Meraka Institute, South Africa

Elastic everything, what of the developing world?

Diarmuid O'Brian, netLabs!UG Research Centre, Makerere University, Uganda

An IoT Architecture for Financial Services in Developing Countries

Suvendi Rimer, Nedbank, South Africa



DAY

Thursday,
June 01, 2017

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

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

ICT Initiatives and Research Capacity in Uganda

Loi Namugenyi, Uganda National Council for Science & Technology, Uganda

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, Information Technology Industry Development Agency (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

Mourad Zghal, Ministry of Higher Education and Scientific Research, Tunisia

09:00 Session 5b: [eHealth III - Health Information Systems](#)

Chair: [Darelle Van Greunen, Nelson Mandela University, South Africa](#)

Exploring Information Assurance to support Electronic Health Record Systems

Liesel Cilliers, University of Fort Hare, South Africa

Digitization of Antenatal Health Card and Integration with OpenMRS Platform: System Analysis and Design

Erica Kimei, Nelson Mandela African Institution of Science and Technology, Tanzania

Design of Tooltips for Health Data

Mari Iversen and Helene Isaksen, University of Oslo, Norway

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

Chair: [Maggy Beukes-Amiss, University of Namibia](#)

ICT Based Professional Development Programmes: Impact of Demographic Factors on Teachers' Attitude

Lovemore Motsi, Unisa, South Africa

Barriers in Rural Technology Integration: A Case Study from the Trenches

Adele Botha, CSIR Meraka Institute, South Africa

Using Digital Badges in South Africa informing the validation of a multi-channel Open Badge system at a German University

Marlien Herselman, Meraka Institute, CSIR, South Africa

Electronic Proofs in Mathematics Education - A South African

Teacher Professional Development (TPD) course informing the conceptualisation of an E-proof System Authoring Support Workshop

Melanie Platz, University of Koblenz Landau, Campus Landau, Germany

09:00 Session 5d: [CyberSecurity, Privacy and Trust III](#)

Chair: [Towela Nyirenda-Jere, NEPAD Planning and Coordinating Agency, South Africa](#)

Advances Towards a Secure IoT through Trust Management

Caroline Gurajena, University of Fort Hare, South Africa

Beyond the Convenience of Internet of Things: Security and Privacy Concerns

Sophia Moganedi, CSIR, South Africa

Mobile Subscribers Vulnerability to Financial Crime over the SMS Platform

Evanson Kiburio, Africa Nazarene University, Kenya

Session Hijacking Attacks in Wireless Networks: A review of existing mitigation techniques

Enos Letsoalo, Tshwane University of Technology, South Africa

Pick Location Security: Seamless Integrated Multi-Factor Authentication

Icconies Ramatsakane, PwC, South Africa

18:00

End of Parallel Sessions

[6 - 7] F i n a l

Potential Digital Evidence Acquisition and Retention

Stacey Omeleze, University of Pretoria, South Africa

09:00 Session 5e: **Next Generation Computing IIII**Chair: **Peacemaker Dlamini, Department of Science and Technology, South Africa****Lightweight Cloud Computing for Development: A Graph Based Data Model**

Antoine Bagula, University of the Western cape, South Africa

Cloud Computing Adoption in The Kenya's Banking Sector: An Institutional Perspective

John Oredo, Kisii University, Kenya

Securing M-voting using Cloud Intrusion Detection and Prevention system: A new dawn

Dina Moloja, Central University of Technology, South Africa

Critical Success Factor Categories for Big Data: A Preliminary Analysis of the Current Academic Landscape

Sunet Eybers, University of Pretoria, South Africa

Big Data: We're Almost at Infinity

Valerianus Hashiyana, University of Namibia, Namibia

10:45

Coffee Break

11:15 Session 6a: **eGovernment I**Chair: **Vasilis Koulolias, eGovlab, Sweden****An Integrated Framework for Benchmarking e-Governance Projects**

Sylvester Hatsu, University of South Africa/Accra Polytechnic, Ghana

A Citizen-Centric Framework for Government e-Services Uptake

Mohammad Abu Dawood Mulung, University of Mauritius, Mauritius

Evaluating the Effects of e-Government Initiatives on Citizen-centric Goals at Selected Namibian Government Ministry

Karin Fröhlich, DPSITM, Office of the Prime Minister, Namibia

A Citizen-Oriented e-Municipality System for Service Delivery Improvement: A Case Study of Raymond Mhlaba Local Municipality

Thabo Linake, University of Fort Hare, South Africa

Challenges to the Successful Implementation of E-Governance Systems in Africa: A Case of Taita Taveta County, Kenya.

Tabitha Mberi, Strathmore University, Kenya

11:15 Session 6b: **eHealth IV - Health Information Systems**Chair: **Joseph Mudjuu, Ministry of Health and Social Services, Namibia****Boundary Object in HIS: Designing and Implementation of a Regional Scorecard**

Wilfred Senyoni, University of Dar es Salaam, Tanzania

Exploring Integrative Approach of GIS Implementation: The Case of GIS in Health Management in Malawi

Patrick Chikumba, University of Malawi

Usability for Novices and Experts: a layered design in a case study in Malawi

Jens Kaasbøll, University of Oslo, Norway

Pooling Human Resources Needed to Leverage Open Source Health Information Software Platforms in Developing Countries

Brown Msiska, University of Oslo, Norway

11:15 Session 6c: **Technology Enhanced Learning IV**Chair: **Martin Ujakpa, International University of Management, Namibia****An Implementation Readiness Framework for Education Systems: Integrating ICT into Teaching and Learning**

Sifiso Dlamini, CSIR Meraka Institute, South Africa

An Adaptive Recommender-System Based Framework for Personalised Teaching and Learning on E-Learning Platforms

Munyaradzi Maravanyika, Namibia University of Science and Technology, Namibia

Elearning Induction Model for the Uptake of Online Courses: A Case of Kenyatta University

Rose Njoroge, Kenyatta University, Kenya

Technology-Enhanced Learning Through Sakai (Thuto) at The National University of Lesotho

Lebajoa Mphatsi, National University of Lesotho, Lesotho

Determinants of eLearning Adoption Among Instructors in Ugandan Public Universities

Sonny Nyeko, Makerere University Business School, Uganda

11:15 Session 6d: **CyberSecurity, Privacy and Trust IV**Chair: **Chipo Kanjo, Chancellor College, University of Malawi****A Review of Security Challenges for Control of Access to Wi-Fi Networks in Tertiary Institutions**

Stanford Musarurwa, Namibia University of Science and Technology, Namibia

Design and Implementation of an Intrusion Detection System using MLP-NN for MANET

Innocent Mapanga, Harare Institute of Technology, Zimbabwe

Vulnerability Testing in the Development Cycle

Alice van Rensburg, University of Johannesburg, South Africa

Development of an SMS System Used to Access Bitcoin Wallets

Nelisiwe Dlamini, CSIR, South Africa

Requirements for Stereovision-based Access Control for Physical Spaces

Brian Greaves, University of Johannesburg, South Africa

11:15 Session 6e: **Next Generation Computing IV**Chair: **Peacemaker Dlamini, Department of Science and Technology, South Africa****Spectrum Regulation for Future Internet Networks in Developing Economies**

Luzango Mfupe, CSIR Meraka Institute, South Africa

A Scalable Zigbee WPAN for Water Flow Telemetry

Kirori Mindo, Kabarak University, Kenya

Home Intercommunication System using Visible Light Communications

Olorato Precious Lekgotle, University of Johannesburg, South Africa

13:00

Lunch

14:00 Session 7a: **eGovernment II**Chair: **Augusto Nunes, National Institute for ICT, Mozambique****Understanding eGovernment Utilisation within the SADC**

Willard Munyoka, University of Venda, South Africa

Towards an eGovernment Framework for the Republic of Uganda

Ivans Kigwana, University of Pretoria, South Africa

Evaluating a Mobile Visualization System for Service Delivery Problems in Developing Countries

Ingrid Sieborger, Rhodes University, South Africa

The Use of Sentiment Analysis and Topic Modelling to Understand Online Communicative Ecologies in MobisAM

Hannah Thinyane, Rhodes University/United Nations University, South Africa

Understanding how the City of Johannesburg Metropolitan Municipality's Social Media Platforms are Perceived by Young Citizens

Lutendo Phuluwa, University of Pretoria, South Africa

14:00 Session 7b: **eHealth V**Chair: **Ashwin Seegolam, National Computer Board, Mauritius****A Scoping Review of Digital Health Innovation Ecosystems in Developed and Developing Countries**

Gloria Iyawa, University of Namibia/University of South Africa, Namibia

Comparative Usability Evaluation of a Mobile Health App

Alida Veldsman, Nelson Mandela University, South Africa

A Model for Telemedicine Adoption in Remote Healthcare Settings

Gilbert Maiga, Makerere University, Uganda

Upper Extremity Injuries in Sub-Saharan Africa

Charmayne Hughes, San Francisco State University, United States

14:00 Session 7c: **Technology Enhanced Learning V**Chair: **Sashah Mutasa, International University of Management, Namibia****Evaluating the Impact of Digital Divide on the Performance of First Year IT Students: A Case of UKZN**

Victor Faniran, University of KwaZulu-Natal, South Africa

Designing and Exploring Study Field Recommender System for Prospective Students

Tlou Ramabu, Tshwane University of Technology, South Africa

Barriers Towards the Adoption of a Practical Training Management System at the University of Dar es Salaam

Christine Mwase, University of Dar es Salaam, Tanzania

Towards the Development of an Agent-based Model for Increased Access to Knowledge

Elizabeth Muli, Technical University of Kenya, Kenya

Using Data Mining Techniques for the Prediction of Student Dropouts from University Science Programs

William Tichaona Vambe, University of Fort Hare, South Africa

Information and Communication Technology Platforms Deployment: Technology Access Reaches South African Rural Areas

Tumiso Thulare, CSIR, South Africa

Learners' Perceptions on the Adoption of Mobile Technology in High Schools: A Case of Otjozondjupa Region in Namibia

Jude Osakwe, Namibia University of Science and Technology, Namibia

14:00 Session 7d: **CyberSecurity, Privacy and Trust V**

Chair: **Robert Jere, Namibia University of Science and Technology**

From Risk Factors to Detection and Intervention: A Metareview and Practical Proposal for Research on Cyberbullying

Panayiotis Zaphiris, Cyprus University of Technology, Cyprus

Cyber-Smart Children, Cyber-Safe Teenagers: Enhancing Internet Safety for Children

Tracy Weru, Strathmore University, Kenya

Humanitarian Perspective of Cybersecurity and Cybersecurity Governance

Rossouw de Bruin, University of Johannesburg, South Africa

Applying the Gordon & Ford categorisation and the Routine Activities Theory to Cybercrime: A Suitable Target

Sagwadi Mabunda, University of the Western Cape, South Africa

An Evaluation of Security Issues in Cloud-Based File Sharing Technologies

Sikhumbuzo Ngwenya, University of Fort Hare, South Africa

16:15 Session 8d: **ICT4D I**

Chair: **Marita Turpin, University of Pretoria, South Africa**

Development Aid 2.0 – Towards Innovation-Centric Development Co-operation: The Case of Finland in Southern Africa

Lauri Johannes Hooli, University of Turku, Finland

Mozambique/Norway Accessibility Partnership

G. Anthony Giannoumis, Oslo and Akershus University College of Applied Sciences, Norway

Social Mapping for Supporting Sensemaking and Collaboration: the Case of Development Informatics Research in South Africa

Mario Marais, CSIR, South Africa

Evolving a new community through Tuckman model and WhatsApp messaging platform

Adebowale Owoseni, UNISA / Union Bank of Nigeria Plc, Nigeria

The Usage of Khudze Multipurpose Community Telecentre in Mwanza District, Malawi

Sellina Khumbo Kapondera, Mzuzu University, Malawi

14:00 Workshop 7e: **WAZIUP**

Chair: **Md Abdur Rahim, Create-net, Italy**

WAZIUP - Affordable IoT and Big Data Solution in Africa

Md Abdur Rahim, Create-net, Italy

IoT, An Affordable Technology to Empower Africans Addressing Needs in Africa

Philippe Cousin, Easy Global Market, France

IoT, Big Data, and Cloud Platform for Rural African Needs

Mehdi Sheikhalishahi, InnoTec21 GmbH, Germany

IoT Innovation Community Building and Business Spin-off

Amy Ndiaye, CTIC Dakar, Senegal

Panel Discussion

16:15 Session 8e: **Internet of Things**

Chair: **Njei Check, National Agency for Information and Communication Technologies (ANTIC), Cameroon**

Internet of Things Data Integrity

Zinhle Mngomezulu, University of Johannesburg, South Africa

Re-Using Old Cellphones for IoT Applications

Karabo Modise, University of Johannesburg, South Africa

How an IoT-enabled "Smart Refrigerator" can play a Clandestine Role in Perpetuating Cyber-crime

Victor Rigworo Kemande, University of Pretoria, South Africa

Internet Society Chapter Activities in Namibia

Nashilongo Gervasius & Annastasia Shipepe, Internet Society Chapter, Namibia

15:45

Coffee Break

16:15 Session 8a: **eGovernment III**

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

The ITS4LAND Project

John Horn, Faculty for Geo-Information Science and Earth Observation (ITC), Netherlands

Quantitative Metadata on e-Government Ontologies in the oeGov Repository

Jean Vincent Fonou Dombeu, Vaal University of Technology, South Africa

Validation of the Framework for Corporate Governance of ICT in Local Government

Petrus Delpont, Nelson Mandela Metropolitan University, South Africa

Managing IT Skills Transfer in an Outsourcing Partnership within the Namibian Ministries Computing Environment

Irja Shaanika, Namibia University of Science and Technology, Namibia

IT Project Management Maturity in South African Municipalities

Silma Koekemoer, Nelson Mandela University, South Africa

16:15 Workshop 8b: **mHealth4Afrika**

Chair: **Paul Cunningham, IIMC, Ireland**

mHealth4Afrika Initiative

Paul Cunningham, IIMC, Ireland

Implications of Baseline Study Findings from Rural and Deep Rural Clinics in Ethiopia, Kenya, Malawi and South Africa for the co-design of mHealth4Afrika

Miriam Cunningham, IIMC, Ireland

mHealth4Afrika Alpha Validation Results

Darelle Van Greunen, Nelson Mandela University, South Africa

16:15 Session 8c: **Technology Enhanced Learning VI**

Chair: **Gift Kadzamira, National Commission for Science and Technology, Malawi**

Systemic Levers for Change Towards Sustainable Institutionalisation of ICT in Schools

Isabel Meyer, Impact Advantage, South Africa

18:00

End of Parallel Sessions



Friday,
June 02, 2017

09:00 Session 9a: **eGovernment IV**

Chair: **Leulseged Alemie, Ministry of Communications and Information Technology, Ethiopia**

Accessibility and Usability of Government Websites in Tanzania
Joel Mtebe, University of Dar es Salaam, Tanzania

Unlocking the Supply of Open Government Data for SDGs: A Case of Kenya National Bureau of Statistics (KNBS)
Lorna Mutege, Strathmore University, Kenya

E-voting Experiences: A Case of Namibia and Estonia
Noluntu Mpekoa, Central University of Technology, South Africa

The Role of ICT in Enhancing Transparency and Accountability in Public Funds Management in DRC

Itulelo Matiyabu Imaja, University of KwaZulu-Natal, Congo (DRC)

Addressing Service Delivery in Rural Areas through Deployment of Information and Communication Technology Platforms
Lebogang Legare, CSIR, South Africa

09:00 Session 9b: **eHealth VI**

Chair: **Joseph Mudjuu, Ministry of Health and Social Services, Namibia**

Towards a Deployment Model for E-Monitoring of Geriatric Persons in Rural Developing Countries. Case of Kenya
Njeri Ngaruiya, University of Nairobi, Kenya

Fighting Obesity: A Proposed Formula for Calculating Gamified Airtime Rewards for Using Public Exercise Equipment
Laura Martinus, CSIR, South Africa

Managing Diseases Thru' Asclepios: An Agile Information Exploitation Framework

Lakshmi Narasimhan, University of Botswana, Botswana

A Web-Based Health Patient Information Sharing Model for Namibia (WBHPISM): Case Study of Windhoek Health Centres
Sinte Mutelo, Namibia University of Science and Technology, Namibia

09:00 Session 9c: **Technology Enhanced Learning VII**

Chair: **Jacob Njagih, Ministry of Education, Science and Technology, Kenya**

Learning in a Virtual Classroom: Efforts to Improve Ways of Learning and the Environment

Francis Mungofa Manzira, University of Venda, South Africa

Exploring How Technology Complements Constructivism Using A Lesson Plan

Gorge Onyango, Kenyatta University, Kenya

An Overview of FunGIS: Functional Geospatial Information System with an Emphasis on Aiding Disabled People

V Sampath Kumar, Botho University, Botswana

Amateur Radio as a Vehicle for Technology Literacy
Chris Burger, CSIR Meraka Institute, South Africa

09:00 Session 9d: **ICT4D II**

Chair: **Rejoice Maseko, Ministry of Information Communication Technology, Swaziland**

Complex Societal Problem Related to the Internet Access and Electricity access in DRC

Isaac Kamiba, Ecole Supérieure d'Informatique Salama, Congo (DRC)

ICT and COMPRAM to Assess Road Traffic Congestion Management in Kinshasa

Antoine Kayisu, University of Johannesburg, South Africa

Network Monitoring System for Network Equipment Availability and Performance Reporting

Baphumelele Masikisiki, University of Fort Hare, South Africa

09:00 Session 9e: **eAgriculture**

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

IoT at the Grassroots – Exploring the Use of Sensors for Livestock Monitoring in Low Resourced Farms

Ciira Maina, Dedan Kimathi University of Technology, Kenya

Jaguza Livestock App, the App Transforming Livestock Production and Strengthening Food Security

Ronald Katamba, AFROSOFT IT Solutions, Uganda

The Development of a Mobile Information System to Assess the Food Security of Rural Communities in South Africa

Marita Turpin, University of Pretoria, South Africa

Farmers' Perceptions of ICTs and its Effects on Agricultural Input Information in Developing Countries: Case of Sikasso, Mali

Suama Hamunyela, Namibia University of Science and Technology, Namibia

10:45

Coffee Break

11:15 Session 10a: **ICT & Financial Services**

Chair: **Mauridi Abubakari, COSTECH, Tanzania**

ICT Solutions for Financial Inclusion: Reaching Out to the Unbanked in Low Resource Settings

Chipo Kanjo, Chancellor College, University of Malawi

Understanding User Experience of Mobile Money Services in Emerging Markets

Gorretti Byomire, Makerere University Business School, Uganda

Assessing the Diffusion and Use of Mobile Payment Solutions: a Case of South African Townships

Jabu Mtsweni, CSIR, South Africa

A Zero Effort Technology-enabled Automated Teller Machine for the Blind

Bekithemba Ntini, University of Fort Hare, South Africa

11:00 Session 10b: **eHealth VII**

Chair: **Puumue Katjuanjjo, Ministry of Health and Social Services, Namibia**

eSurveillance for Public Health – An Implementation Approach for sub-Saharan Africa

Karl Stroetmann, empirica GmbH, Germany

Modelling Health Information during Catastrophic Events - A Disaster Management System for Sudan

Ahmed Mustafa, SUST, Sudan

Mitigating Vulnerabilities and Threats for Patient-centric Healthcare Systems in Low Income Developing Countries

Darelle Van Greunen, Nelson Mandela Metropolitan University, South Africa

Blockchain as an Enabler for Public mHealth Solutions in South Africa
Martin Weiss, South African Medical Research Council, South Africa

11:00 Session 10c: **Content Technologies**

Chair: **Gift Kadzamira, National Commission for Science and Technology, Malawi**

Digitisation as a Preservation Strategy of National Heritage: A case of the Owela Museum, Windhoek

Isobel Green, Namibia University of Science and Technology, Namibia

Digitisation Technologies for Newspaper Archives in Zimbabwe: The ICT Requirements for Digitising a Selected Bulawayo Newspaper Publication at the National Archives of Zimbabwe

Delight Sigauke, National University of Science and Technology, Zimbabwe

Universal Design (Ud) and Visual Impairment: Can Ud Principles be Applied for Mobile Sharing Platform?

Tuliameni Kanyemba, Namibia University of Science and Technology

Named Entity Recognition for Amharic Using Deep Learning

Bjørn Gambäck, Norwegian University of Science and Technology, Norway

11:15 Session 10d: **Societal Implications of Technology**

Chair: **Ebenhezer Kauhonina, National Commission on Research, Science and Technology, Namibia**

African Ethics for Enhancing Soft Skills in Young IT Professionals in Southern Africa

Wai Sze Leung, University of Johannesburg, South Africa

Broadband in Schools: Towards a Definition and Model of Broadband for South African Schools

Merryl Ford, Meraka Institute, CSIR, South Africa

**Investigating Battery Consumption in Low-end Smartphones:
Preliminary Results**

Shree Om, University of the Western Cape, South Africa

'Jobs256' Mobile App Linking Job Seekers to Job Opportunities

Emily Bagarukayo, Makerere University, Uganda

**Understanding ICT Students' Knowledge and Awareness on e-
Waste Management in Tanzania**

Zaituni Kaijage, University of Dar es Salaam, Tanzania

11:15 Session 10e: **eAgriculture and Environmental Sustainability**

Chair: **Lieketseng Tjokotsi, Department of Science and Technology,
Lesotho**

**"Virtuous Cycles" for Rural Innovation and Agri-
Entrepreneurship Development**

Johann (Rensie) Janse van Rensburg, CSIR, South Africa

**Demonstrating Communications and Control Systems for Smart
Irrigation**

Robert Basomingerera, Carnegie Mellon University, Rwanda

**MCDA Criteria Elicitation For Dams In Conflicted Regions
- Merowe Case Study**

Mohamed Abdallah, Sudan University of Science and Technology,
Sudan

**Leakage Detection In Tsumeb East Water Distribution Network
Using Epanet and Support Vector Regression**

Joseph Kemba, University of Namibia, Namibia

**Linking Climate Information to Livelihood Strategies through
ICTs: the Role of Integrated Sustainable Livelihoods Framework**

Michaelina Yohannis, University of Nairobi, Kenya

13:00

Lunch

14:00 Closing Plenary 11a

Chair: **Paul Cunningham, IIMC, Ireland**

**Development Instrument funding of ICT R&I in the ACP
countries and sub-Saharan Africa**

Francesco Affinito, DG DEVCO, European Commission, Belgium

NEPAD Activities Supporting Infrastructure and ICTs

Towela Nyirenda-Jere, NEPAD Agency, South Africa

e-Government Initiative - Lesson Learned

Ndeshipanda Ndilula, Former Director, DPSITM, Office of the Prime
Minister, Namibia

Growth through Stronger Innovation Systems - SAIS II

Flora Ismail Tibazarwa, SAIS II, Namibia

Preliminary Outputs from IEEE ETAP Forum

Maike Luiken, IEEE, Canada

Best Paper Award

Registration Information

It is necessary for all **IST-Africa 2017** delegates to register online. Each delegate should be registered separately.

Conference Fees

Authors Fees (Due by 20 March)

- Authors - African States **€100**
- Authors - EU New Member States, EU Candidate & Developing Countries **€200**
- Authors - All countries except above **€300**

Please note that the author fee is only available to accepted presenters in the Programme (**one presenter per paper**). Co-authors who wish to participate should register as Delegates.

Delegates' Fees - Early Bird up to 31 March

- Delegate Early Bird - African States **€200**
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- Delegate Early Bird - All countries except above **€400**

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- Delegate Full Price - African States **€250**
- Delegate Full Price - EU New Member States, EU Candidate & Developing Countries **€400**
- Delegate Full Price - All countries except above **€500**

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- Entrance to all plenary and parallel sessions
- Documentation with proceedings on CD-Rom
- Three luncheons and refreshments at morning and afternoon breaks

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12. The registration desk will open on Tuesday 30 May

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