Conference

IST-Africa 2017
Advance Programme
Windhoek, Namibia

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31 May - 02 June 2017

IST*frica*

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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 10 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.

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. This is an invtiation 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
Miinister 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

Dr Pascal Hoba
CEO UbuntuNet Alliance

Mr Theo Klein
Managing Director Telecom Namibia

Mrs Karin Fröhlich
DPSITM, Offfice of Prime Minister

Mr John Sifani
Centre for Innovation and Development, UNAM

Plenary Speakers as at 10 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
- **Dr Eino Mvula,** CEO, National Commission on Research Science and Technology, Namibia
- **Presenter to be confirmed**, African Union Commission
- **Mr Mbeuta Ua-Ndjarakana**, Permanent Secretary, Ministry of ICT, Namibia
- **Mr Festus K. Mbandeka**, CEO, Communications Regulatory Authority of Namibia
- **Mrs Karin Amukugo,** Department of Public Service Information Technology Management, Office of Prime Minister, Namibia
- **Dr Pascal Hoba**, CEO, UbuntuNet Alliance, Malawi
- **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, University of Namibia
- **Mr Theo Klein**, Managing Director, Telecom Namibia
- **Dr Maike Luiken**, IEEE, Canada
- **Mr Francesco Affinito**, Head of Sector for Research for Development, DG DEVCO, European Commission

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

Spain
- **Prof. Maurice Mars**, University of KwaZulu-Natal, South Africa
- **Willian 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

Conference Secretariat

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www.IST-Africa.org/Conference2017

1 DAY

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

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

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

Dr Pascal Hoba, CEO, UbuntuNet Alliance

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, 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, National Agency for Information and Communication Technologies (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 Shozi, 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, Namibia

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 Namugongo, 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: tbc

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
H.S 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'Briain, netLabs!UG Research Centre, Makerere University, Uganda

An IoT Architecture for Fnancial Services in Developing Countries
Suvendi Rimer, Nedbank, South Africa

18:00   End of Parallel Sessions

2 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
Liezel 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

Potential Digital Evidence Acquisition and Retention
Stacey Omeleze, University of Pretoria, South Africa

09:00 Session 5e: Next Generation Computing IIII

Chair: tbc

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

A Citizen-Centric Framework for Government e-Services Uptake
Mohammud 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

Regional Scorecard as a Boundary Object: A new way of looking at Scorecard Design and Implementation
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: tbc

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

The Impact of Sensor Area Types on Worm Propagation Using SEIR and SEIR-V Models: A Preliminary Investigation
Chukwunonso Nwokoye, Nnamdi Azikiwe University, Awka, Nigeria

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
Rachel Kobo, 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

South Africa's e-Skills Policy. From e-Skills to Media Literacy?
Wouter Grove, University of the Western Cape, South Africa

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

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

Chair: tbc

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 Kenyan Children in the Digital World of Texting, Social Media and Internet Usage
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

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 African addressing needs in Africa
Philippe Cousin, Easy Global Market, France

IoT and big data for Africa: the Waziup platform and use cases
Mehdi Sheikhalishahi, InnoTec21 GmbH, Germany

IoT Innovation Community Building and Business Spin-off
Amy Ndiaye, CTIC Dakar, Senegal

Panel Discussion

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 Delport, 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: tbc

Systemic levers for change towards sustainable institutionalisation of ICT in schools
Isabel Meyer, Impact Advantage, 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

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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

16:15 Session 8e: Internet of Things

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

Internet of Things Data Integrity
Richard Ndjiongue, 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 Kebande, University of Pretoria, South Africa

Internet Society Chapter Activities in Namibia
Nashilongo Gervasius & Annastasia Shipepe, Internet Society Chapter, Namibia

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18:00   **End of Parallel Sessions**

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3 DAY

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 Mutegi, 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

An Overview of Asclepios: An Agile Information Exploitation for Managing Communicable Diseases
Lakshmi Narasimhan, University of Botswana, Botswana

Promoting Effective National E-health Communication Campaigns to Attain the SDG 3 Progress in Uganda
Wilson Okaka, Kyambogo University, Uganda

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: tbc

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, Uganda

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
Katamba Ronald, 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, Malawi

Understanding the Proliferation 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 Katjiuanjo, Ministry of Health and Social Services, Namibia

eSurveillance for public health – an implementation approach for sub-Saharan Africa
Karl Stroetmann, empirica GmbH, Germany

Modeling health information during catastrophic events-Disaster management system in Sudan
Ahmed Mustafa, SUST, Sudan

Mitigating vulnerabilities and threats for patient-centric healthcare systems in resource constrained setting
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 Impairement: Can Ud Principles be Applied for Mobile Sharing Platform?
Tuliameni Kanyemba, Namibia University of Science and Technology, Namibia

Named Entity Recognition for Amharic Using Deep Learning
Björn Gambäck, NTNU, Norway and SICS, Sweden, 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

Mobile Technology Linking Job Seekers to Job Opportunities.
Emily Bagarukayo, Makerere University, Uganda

Understanding public 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 Smart Irrigation Control and Communications Systems for Rural Farms
Robert Basomingera, 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 11: Closing Plenary

Chair: tbc

Development Instrument funding of ICT R&I in the ACP countries and sub-Saharan Africa
Francesco Affinito, DG DEVCO, European Commission, Belgium

Preliminary Outputs from IEEE ETAP Forum
Maike Luiken, IEEE, Canada

Other presenters will be included during May

[1 0 - 1 1] A d v a n c e

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,
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- 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**
- Delegate Early Bird - EU New Member States, EU Candidate Countries and Developing Countries **€300**
- Delegate Early Bird - All countries except above **€400**

Delegates' Fees - Full Fee from 01 April

- Delegate Full Price - African States **€250**
- Delegate Full Price - EU New Member States,
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- Delegate Full Price - All countries except above **€500**

The Conference Fee includes:

- 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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2. In the case where a paper is jointly authored, the presenter of the paper is considered to be the author/presenter from a payment registration point of view. All co-authors are considered to be delegates.

3. Each presenter will present one paper in the Programme.

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7. Each individual must be registered separately on the IST-Africa Conference portal.

8. Payment may be made by bank transfer or credit card (with some restrictions). Payments made by bank transfer must be **net of any bank charges** and the payment instruction should refer to "IST-Africa 2017 Conference", your name, organisation and invoice number (if relevant).

9. Receipts are automatically issued electronically upon receipt of payment. If your organisation requires an invoice to process payment registration by bank transfer, please contact the Conference Secretariat.

10. Conference registration or hotel accommodation is not confirmed until full payment is received.

11. Letters of invitation can only be issued following delegate registration online and receipt of payment.

12. The registration desk will open on Tuesday 30 May from 18:000 to 19:00 and will remain open during normal conference hours from 08:00 on Wednesday.

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Supported by the European Commission (EC) and African Union Commission (AUC), and Co-Funded under Horizon 2020 (Contract 723240), **IST-Africa** facilitates and supports:

- International Innovation, Research and Policy Cooperation
- Knowledge Sharing and Skills Transfer between IST-Africa Partners
- Collaborative Innovation, Entrepreneurship & Adoption of Living Labs
- Africa – EU Strategic Partnership (Information Society, ICT, Innovation)

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- Monitoring and Analysis of ICT-related research and Innovation Activities in IST-Africa Partner countries
- Coordination of national Innovation ecosystem stake-holders to formulate Research and Innovation priorties
- Awareness raising of Research and Innovation Cooperation opportunities between Africa and Europe
- Horizon 2020 Training Workshops in IST-Africa Partner Countries to Support Research Capacity Building
- Horizon 2020 Help Desk supporting African - European Research Collaboration
- Participation in Information Society, ICT and Innovation related International Cooperation