

International Telecommunication Union

Report of the Fourth ITU Kaleidoscope Academic Conference

The fully networked human?

Innovations for future networks and services
Cape Town, South Africa, 12-14 December 2011

Host:



Organizer:



Technical co-sponsor:



Supporters:

Nokia Siemens
Networks



BlackBerry

Report of the Fourth ITU Kaleidoscope Academic Conference
“The fully networked human? –
Innovations for future networks and services”
Cape Town, South Africa, 12-14 December 2011

TABLE OF CONTENTS

1. ITU Kaleidoscope 2011 overview	2
2. Papers	2
3. Conference programme	3
4. Next Kaleidoscope event	5
Annex - Special session “ITU and academia”, Part II: ITU Standards and academia - Breakout session reports	6

1. ITU Kaleidoscope 2011 overview

The [ITU Kaleidoscope conference 2011](#) was held at the kind invitation of the Ministry of Communications of South Africa, and hosted by the University of Cape Town (UCT), South Africa. This year's theme was *"The fully networked human? – Innovations for future networks and services"*. **127 delegates** from **23 countries** participated in the conference. About 25 people used the remote participation facilities. The archived webcast and photos of the event are available on the Kaleidoscope [webpage](#).

Kaleidoscope 2011 was supported by Nokia Siemens Networks and Telkom SA, allowing ITU to award cash prizes to the best papers, and Research in Motion which donated two BlackBerry PlayBooks. Special recognition must go to the host, the Department of Communications of South Africa, for the excellent logistics provided, and to the University of Cape Town.

A substantial preparatory process is required for a Kaleidoscope conference. This process involves the efforts and collaboration of TSB staff, the Kaleidoscope Organizing Committee (OC, [14 members](#)) and the Kaleidoscope Programme Committee (PC, [150 members](#)), all internationally recognized ICT experts from academia, research institutes and the private sector.

A special thanks goes to [Dr Mostafa Hashem Sherif](#) (AT&T, USA), General Chairman of Kaleidoscope 2011, and to the Programme Committee Chairman, [Dr Kai Jakobs](#) (RWTH Aachen University, Germany), for ensuring transparency through the double-blind peer-review process. Dr Jakobs also kindly chaired the meeting of the Award Committee members, which selected the winners of the awards for best papers. The Award Committee was composed of six conference attendees: Mostafa Hashem Sherif, Yoshikazu Ikeda (Otani University, Japan), Ian Graham (University of Edinburgh, United Kingdom), Armando Ferro (University of the Basque Country, Spain) and Martin Adolph (ITU/TSB).

2. Papers

84 papers were submitted for review 30 of which were accepted for publication and presentation (21 in the lecture sessions, 9 in the poster sessions). The research results submitted are related to various ITU-T activities, including quality of service (QoS), cybersecurity, future networks, cloud computing, multimedia and web applications, telemedicine/e-health, disaster resilience of telecommunications infrastructure, smart grid and other technologies which can be associated with the Internet of Things (IoT). As in previous editions of the conference, a number of papers address radio-related issues such as cognitive radio and spectrum management.

The authors of the award winning papers shared the prize fund of 10,000 USD.

- **1st prize** (5,000 USD): *“Transmission Analysis of Digital TV Signals over a Radio-on-FSO Channel”* by **Chedlia Ben Naila**, Kazuhiko Wakamori and Mitsuji Matsumoto (Waseda University, Japan); Katsutoshi Tsukamoto (Osaka University, Japan). The topic is related to work of ITU-T Study Group 15 and ITU-R.
- **2nd prize** (3,000 USD): *“SOA Driven Architectures for Service Creation through Enablers in an IMS Testbed”* by **Mosiuoa Tsietsi**, Alfredo Terzoli, and George Wells (Rhodes University, South Africa). The topic is related to work of ITU-T Study Group 13.
- **3rd prize** (2,000 USD) was awarded to two papers (1,000 USD each):
 - *“A Hybrid MAC with Intelligent Sleep Scheduling for Wireless Sensor Networks”* by **Mohammad Arifuzzaman**, Mohammad Shah Alam, and Mitsuji Matsumoto (Waseda University, Japan). The topic is related to work of ITU-T Study Group 13 and ITU-T activities on the Internet of Things.
 - *“Accessibility support for persons with disabilities by Total Conversation Service Mobility Management in Next Generation Networks”* by **Leo Lehmann** (OFCOM, Switzerland). The topic is related to work of ITU-T focus group AVA and ITU-T Study Groups 13 and 16.

Alongside the winners of cash prizes, 6 entrants - Mayamiko Nkoloma Mononts'i Nthontho, Kanagaraj Nachimuthu Nallasamy, Papa Ousmane Sangharé, Boyan Soubachov, and Michael Andres Feliu Gutierrez - received **Young Author Recognition Certificates** (2 of them received the BlackBerry PlayBooks, the others received books kindly donated by publishers (Taylor & Francis, IEEE Press/John Wiley and IGI Global).

All accepted papers are included in the [Conference Proceedings](#), which are freely available for download on the Kaleidoscope 2011 webpage. They will be also listed in the IEEE Xplore digital library.

3. Conference programme

Programme, presentations, abstracts and biographies are available [online](#).

The **opening ceremony** included welcome remarks from [Prof. Francis William Petersen](#) (Dean of the Faculty of Engineering & Built Environment, University of Cape Town); from a K-2011 partner, Waseda University (Prof Mitsuji Matsumoto); and from a K-2011 supporter, Telkom SA. The opening address was delivered by [Mr Malcolm Johnson](#), Director of the TSB, and the inaugural speech was given by Mr Gift Buthelezi, Deputy Director General, Department of Communications, Republic of South Africa, who was also representing H.E. Ms Dina Pule, Minister of Communications, South Africa.

Three **keynote speeches** were delivered by:

- [Rufus Andrew](#) (Managing Director, Nokia Siemens Networks, South Africa): *“2020: The Ubiquitous Heterogeneous Network - Beyond 4G”*

- [Hirofumi Horikoshi](#) (Technology Planning Department, NTT Corporation, Japan): *“Recovery from the Communication Disturbance by the Tohoku Earthquake and Actions toward the Future”*
- [Alfredo Terzoli](#) (Rhodes University, South Africa): *“The fully networked human-ity? - Innovations for the un-networked human”*

The two **invited papers** dealt with the following topics:

- *“Cooperative Wi-Fi-Sharing: Encouraging Fair Play”* by Hanno Wirtz, René Hummen, Nicolai Viol, Tobias Heer, Mónica Alejandra Lora Girón, Klaus Wehrle (RWTH Aachen University, Germany)
- *“Effective Collaborative Monitoring In Smart Cities: Converging MANET And WSN For Fast Data Collection”* by Giuseppe Cardone, Paolo Bellavista, Antonio Corradi, Luca Foschini (University of Bologna, Italy)

In the seven **lecture sessions**, 21 papers were presented. Relevant recommendations and conclusions from the technical sessions, as drafted and presented by the Session Chairs, are available online in PDF format on the programme webpage, [Wrap up session](#).

For the first time at a Kaleidoscope conference, a short session in the conference plenary allowed poster presenters to raise awareness of their work. The session entitled *“Fast-forward Poster Preview”* took place on 13 December. Each presenter had 1 minute and not more than 2 Powerpoint slides to present his/her research, and to motivate Kaleidoscope participants to take an interest in his/her work at the following **poster session**. Only one poster paper was not presented at the conference.

The event included **three special sessions**: the second edition of the *“Jules Verne’s corner”*, *“ITU and Academia”* and the tutorial on *“Future Internet Impacts on the Evolution of Next Generation Network Infrastructures and Services”*. The sessions were well attended and appreciated by Kaleidoscope’s participants.

“The Chip in the Brain” was the theme for the second [Jules Verne’s corner \(JVC\)](#), held on Tuesday 13 December. JVC is dedicated to science fiction writers and thinkers; those with minds ambitious enough to imagine technology’s implications for our future. Its objective is to share thoughts that might aid in the development of communications concepts for the latter half of the 21st century. [Paolo Rosa](#) (TSB) moderated the session, hosting three speakers: [Roberto Saracco](#) (Telecom Italia, Italy), [Vasileios P. Spyropoulos](#) (Medical Instrumentation Technology Department, Technological Education Institute of Athens, Greece) and [Rias J van Wyk](#) (Technoscan Centre, USA).

The [ITU and academia](#) special session was divided into two parts. (1) An **interactive panel** on how to strengthen collaboration between ITU and Academia. This part was led by facilitators from the three ITU Sectors and was designed to discover areas for collaboration. Representing an ITU-T academia member (The University of the Basque Country, Spain), Eva

Ibarrola, provided a case study showing how ITU membership has benefited her institution. (2) A **breakout session** on ITU Standards and academia, to highlight the importance of standards education, and to encourage the participation of academia in ITU's standardization work. Topics discussed: the importance of standards and standards education; ITU standards and ICT innovation; ITU academia members and ITU standardization.

A 3 hour [tutorial session](#) on "*Future Internet Impacts on the Evolution of Next Generation Network Infrastructures and Services*" was given by Prof Thomas Magedanz (TU Berlin / Fraunhofer Institute FOKUS, Germany). The tutor gave an overview of the ongoing global research into the future internet, and discussed the impacts of related technology trends on the evolution of NGNs. He also addressed the impact of emerging mobile broadband networks. Material from the tutorial is available at:

www.fokus.fraunhofer.de/en/ngni/downloads/request/index.html

All participants received a CD which included an electronic version of the proceedings. In addition, TSB distributed promotional material (flyers, brochures and CDs on ITU-T activities). The Department of Communications of South Africa, Telkom SA and NSN also had stands at the exhibition.

The [Local University Exhibition](#) offered South African universities the opportunity to promote their ICT activities. Participants:

- Department of Electrical, Electronic and Computer Engineering, **University of Pretoria**
- **Rhodes University**
- **Fort Hare University**
- **University of the Western Cape**
- SASL Research Group, University of the Western Cape
- Centre for Broadband Networks, **University of Cape Town**
- Centre for Telecommunications Access & Services, **Wits University**

4. Next Kaleidoscope event

At the [closing session](#) it was announced that the next Kaleidoscope conference will probably take place in Japan from 27 to 30 March 2013. As agreed with the TSB Director, due to major ITU-T events (WTSA 2012 in particular) taking place in the second half of 2012, it was decided to postpone the conference to the beginning of 2013.

The preparation will start in January 2012 and the Call for Papers will be issued in February 2012. Additional information will be available at <http://itu-kaleidoscope.org/>.

Annex - Special session “ITU and academia”, Part II: ITU Standards and academia - [Breakout session](#) reports

1. The importance of standards and standards education

Kai Jakobs (Professor, RWTH Aachen University, Germany)

Paolo Rosa (Head of Workshops and Promotion Division, ITU-T)

- A proposal: establish a “think-tank” task force led by ITU to:
 - Investigate the viability of tutorial courses in Universities;
 - Focus on candidate universities for a “credited” trial;
 - Supervise/prepare a Text-Book to support the courses;
 - Individuate potential partners.

2. ITU standards and ICT innovation

Robert Shaw (Head of Innovation, ITU-D)

Alfredo Terzoli (Rhodes University, South Africa)

Martin Adolph (Project Officer, Standardization Policy Division, ITU-T)

- There is a slight tension between the need for standardization to reach larger markets and have economies of scale versus the need for constant evolution and innovation in technologies.
- Today, high-speed communication networks support innovation throughout the economy much as electricity and transport networks spurred innovation in the past.
- Governments should promote information and communication technologies (ICTs) as general-purpose platforms for innovation.
- Reverse innovation originating in developing countries is a new phenomenon responding to local needs. M-Pesa is an example of how mobile technologies met a clear market need (lack of banking infrastructure).
- Our definitions of innovation are changing and therefore it is difficult to measure it. Phenomenon such as “grass roots and social innovation” are new and attempt to tackle government and/or market failures.

3. ITU academia members and ITU standardization

Chris Clark (Head of Sector membership, ITU)

Sabrina Camp (Membership officer, ITU-T)

Norifumi Yamaguchi (Engineer, ITU-R)

Mitsuji Matsumoto (Professor, Waseda University, Japan)

- **Networking** is a key benefit – especially the opportunity to meet with industry and governments (globally and regionally) that academia would not otherwise meet and find funding for their research.
- **Profile:** ITU staff reported that new Academia members are given a slot (tutorial) in the Study Group meetings to showcase their work.
- **Access to information:** opportunity to learn from others in the Study Groups and to understand the process of standards development, instead of just accessing the final standards. This provides context.
- **Feedback** is important for Academia including from experts and decision makers in industry, government and other academia. This especially in areas of applied research, given the opportunity for the private sector to see application of research. K-2011 was an example where presenters got interesting feedback and thought-provoking questions.
- **Recognition** of one's work is important:
 - Professors need to publish for advancement. Challenge: ITU Standards, once finalized, do not reference the written contributions. ITU Secretariat following up on the issue of referencing for Standards.
 - In some countries, academics have their publications evaluated by national body. ITU contributions should be seen by administrations as a form of publication, as it is the case in Japan.
- **Intellectual Property (IP):** There was concern about how to protect IP once a written contribution is made. The Secretariat explained that when protecting IP is a concern, patents should be sought before written contributions are made to a Study Group.
- **Promotion:** We need to promote ITU Academia category and benefits more. While there are other global and regional organizations where Academia can participate in technical work and standards development, ITU offers some unique benefits, but this is not well known. We also need to raise the profile of Kaleidoscope among Academia community.
- **Cost of Membership:** While ITU established reduced fees, for some schools, they are still too high.
- **Internships:** This is generally valued by Academia as a way of exposing their students to the Standardization process. The secretariat noted that ITU prioritizing applications from member universities.
- **Secondments:** Some were interested in seconding professors to ITU. Universities would pay salary, but some contribution from ITU would be required.

