Closing Session

Alessia Magliarditi, ITU Kaleidoscope Coordinator

ITU Kaleidoscope 2011

University of Cape Town, South Africa, 12-14 December 2011

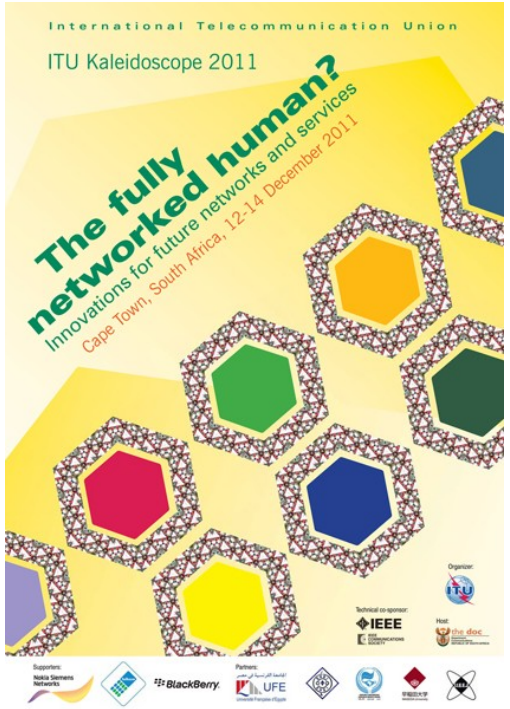
- Invitation of South African Government
- Hosted by:
- Technically co-sponsored by:
- Supported by:
- Partnership with:

ITU Kaleidoscope 2011

The fully networked human?

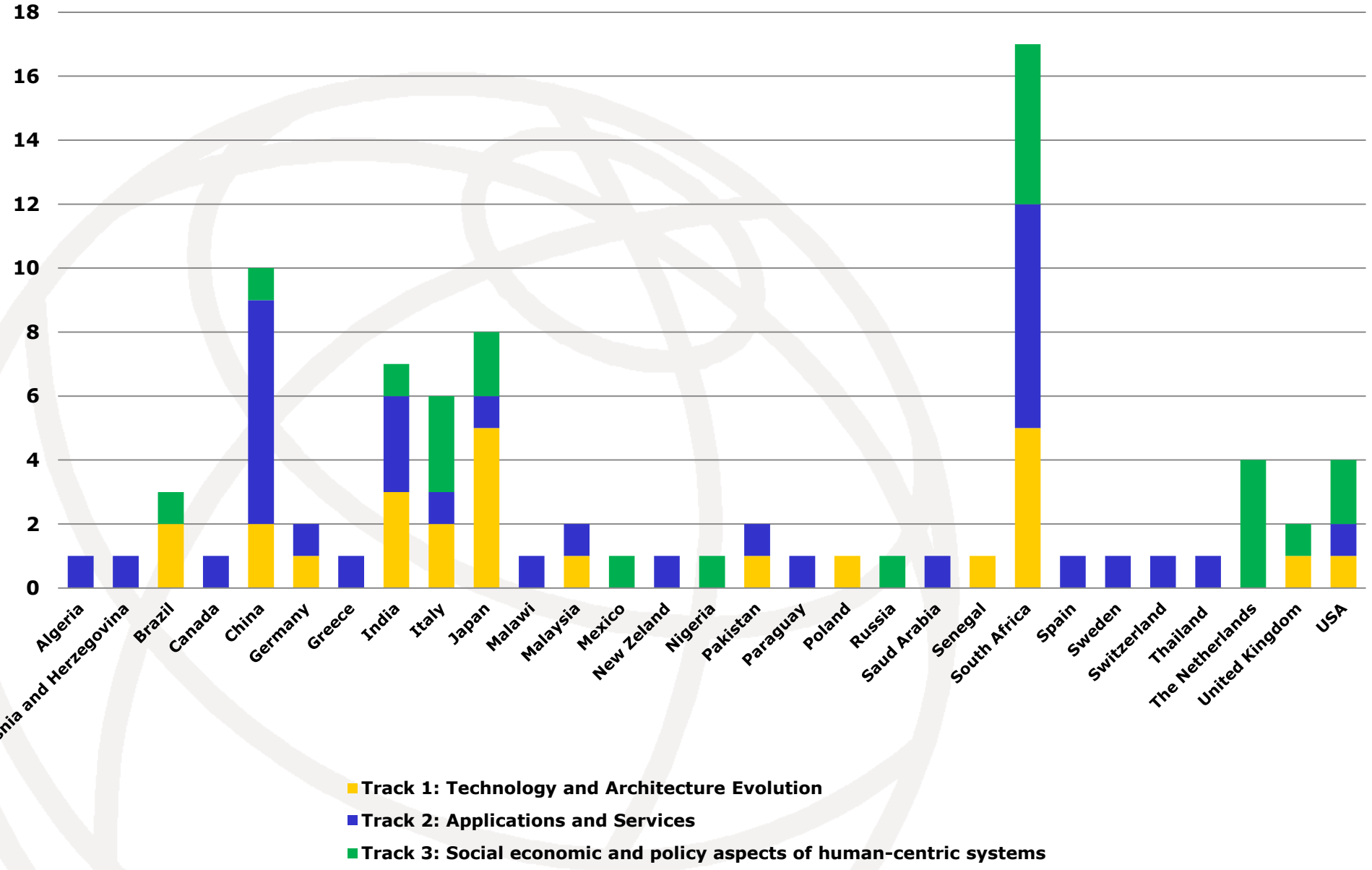
Innovations for future networks and services

- 84 Papers submitted for review
- 30 Papers accepted for publication and presentation (21 Lecture / 9 Poster)
- 2 Invited papers
- 3 Keynote speakers

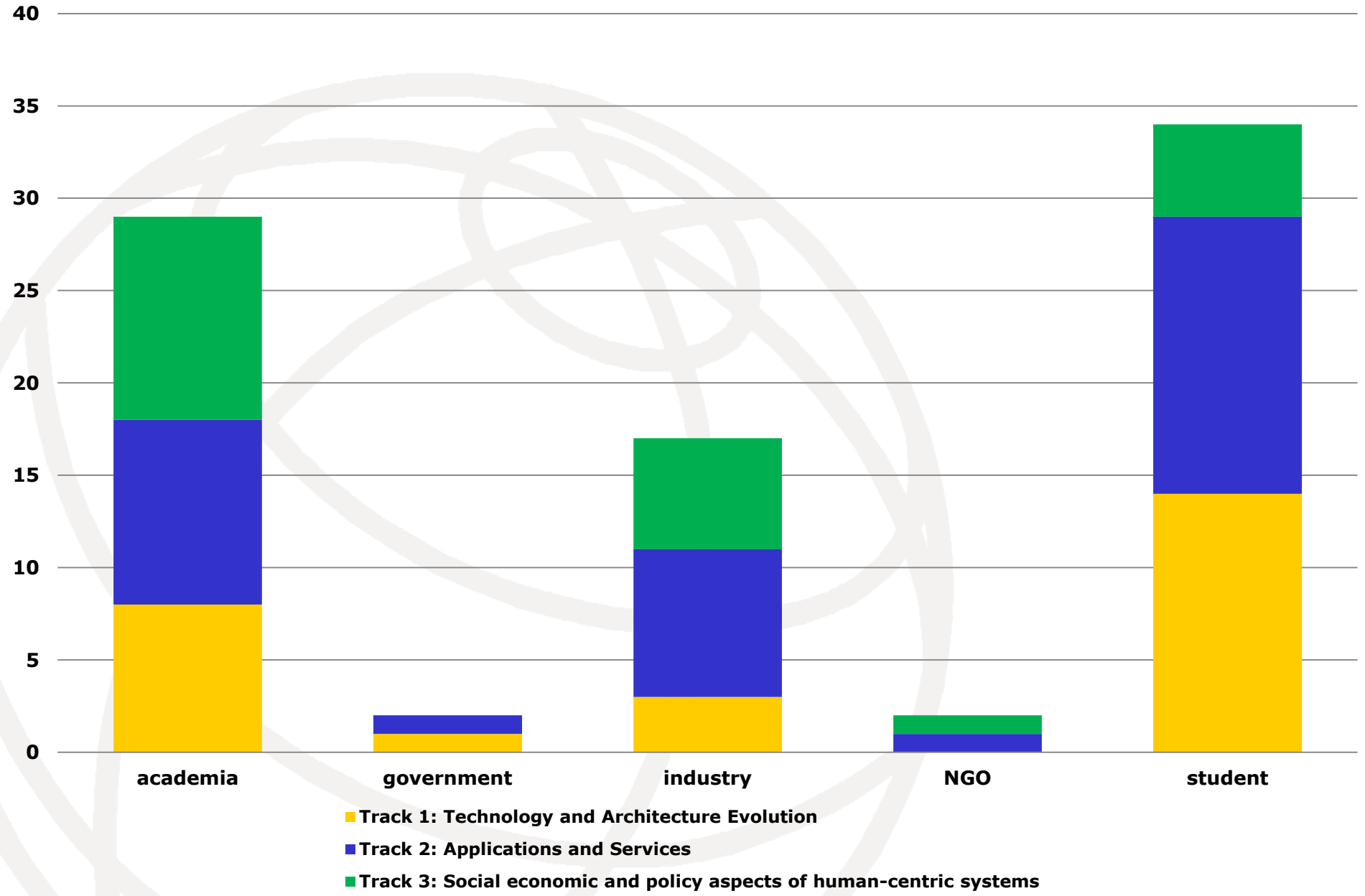


www.itu-kaleidoscope.org/2011

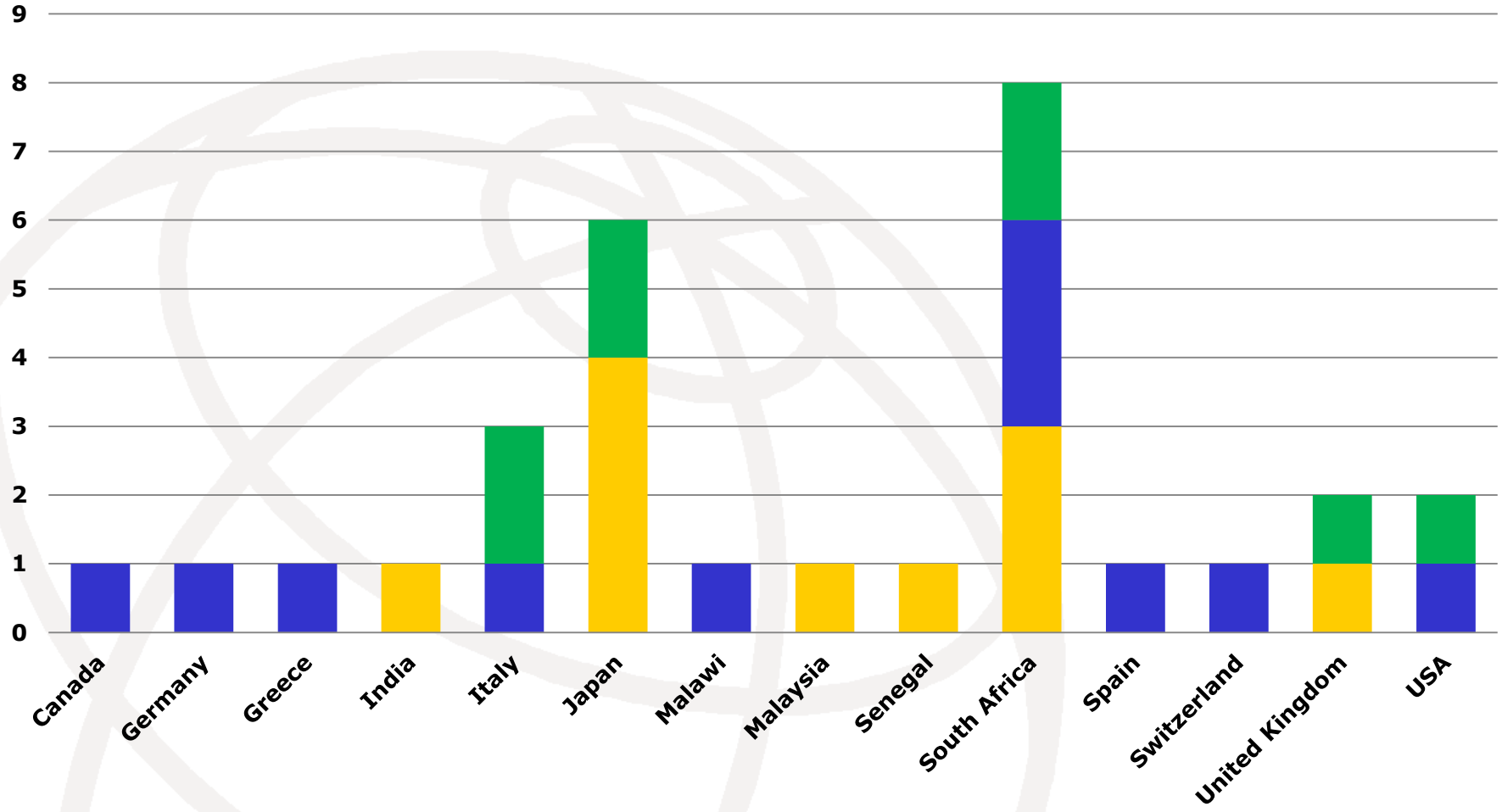
Submitted Papers per Country



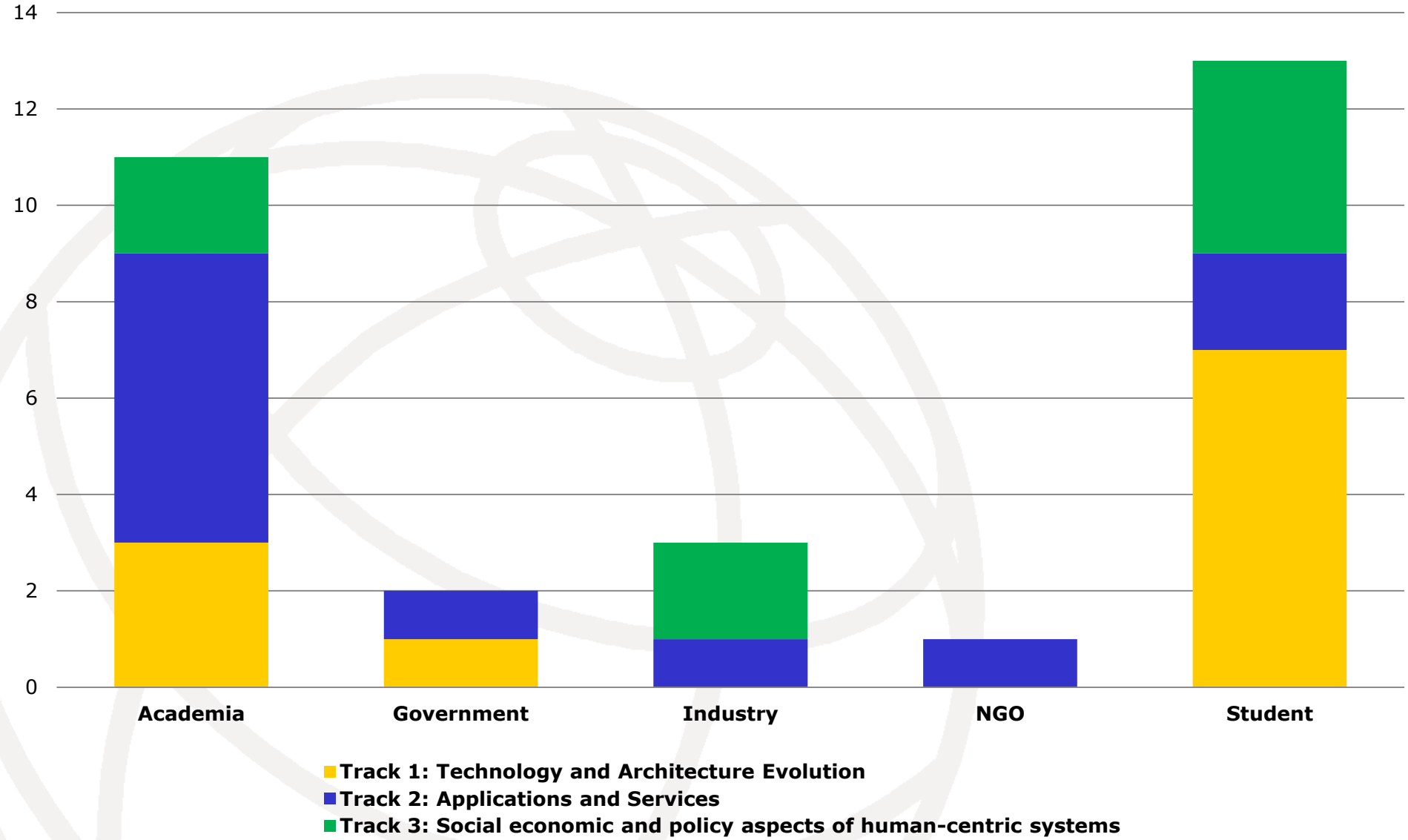
Submitted Papers per Category



Accepted Papers per Country

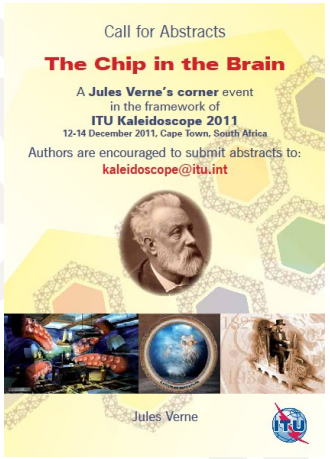


Accepted Papers per Category



Special Sessions

- Jules Verne's corner



- ITU and Academia

- Future Internet Impacts on the Evolution of Next Generation Network Infrastructures and Services

Local University Exhibit

- 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**

Attendees

- **127 participants** from **23 countries**
- **25 remote participants**

Evaluation form

http://itu-kaleidoscope.org/2011

Evalutation Form **New**

… featuring Kaleidoscope 2008

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Issue May 2009

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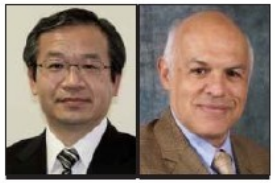

Yoichi Maeda | Mostafa Hashem Sherif

THE FIRST ITU-T KALEIDOSCOPE EVENT: "INNOVATIONS IN NGN"

The Feature Topic of this issue is about the first International Telecommunication Union — Telecommunication Standardization Sector (ITU-T) Kaleidoscope event that took place in Geneva, Switzerland on 12–13 May 2008. This was an academic conference on "Innovations in NGN (Next Generation Networks)" that brought together over 220 participants from 48 countries, including students and professors from 43 academic institutions.

In organizing this conference, the goals of the ITU-T were to increase collaboration among academia and experts working on the standardization of information and telecommunications technologies (ICTs) to identify possible applications of the NGN that may require standardization. The conference was technically co-sponsored by the IEEE Communications Society, and the *Proceedings* are now available electronically via IEEE Xplore. Cisco Systems donated a total of US$10,000 for the three best paper awards (respectively $5000, $3000 and $2000). Other sponsors were Intel, the International Communications Foundation (ICF) of Japan, and Sun Microsystems.

A total of 141 papers were submitted and underwent a double-blind peer review process. Each proposal received at least three full paper reviews. The three best papers were selected from nine nominations following the presentation of all papers, and a number of young authors were recognized. The awards recipients were:

- First prize: "Architecture and Business Model of Open Heterogeneous Mobile Network," by Yoshitoshi Murata, Mikio Hasegawa, Homare Murakami, Hiroshi Harada, and Shuzo Kato
- Second prize: "Differential Phase Shift Quantum Key Distribution" by Hiroki Takesue, Toshimori Honjo, Kiyoshi Tamaki, and Yasuhiro Tokura
- Third prize: "Open API Standardization for the NGN Platform" by Catherine Mulligan

The keynote speech was given by Professor Myung Oh, President of Konkuk University, Korea, on the importance of research and development (R&D) and its socio-economic implications, and the need to balance profit-driven industry and innovation-led academia in standardization. Mr. Alexander D. Gelman, Director of Standards, IEEE Communications Society, gave a keynote presentation on IEEE standards and future collaborations between the ITU-T and the IEEE in the area of standardization. Three papers were invited for each track of the conference. For Track 1, this paper was "A New Generation Network — Beyond NGN" by Professor Tomonori Aoyama, Research Institute for Digital Media and Content, Keio University, Japan. Track 2's invited paper was by Dr. Martin Körling from Ericsson on "Evolution of Open IPTV Standards and Services." The invited paper for track 3 was "Open Standards: A Call for Action" by Mr. Ken Krechmer, University of Colorado.

This issue of the Standards Series contains updated versions of the winning papers and two of the three invited papers. The first article, "A New Generation Network:Beyond the Internet and NGN" by Tomonori Aoyama, describes the requirements and fundamental technologies to provide a new generation network beyond the Internet and the next generation network (NGN), both of which are based on IP protocols. Although the Internet has grown into a social infrastructure, and the NGN is expected to replace both legacy telephone networks and cellular phone networks in the near future, there are many technological, economic, and societal factors pushing the search for revolutionary network technologies and a clean-slate designed architecture beyond the IP structure.

The second article, "Open Standards: A Call for Change" by Ken Krechmer, reviews the different needs of specific groups of society and develops 10 different requirements for open standards. Digital communications is both pervasive and vital across society. This creates growing public interest in the technical standards that proscribe public communications. While there is public demand for "open standards," this rallying cry means different things to different groups. To implement these requirements, changes to the rules and procedures of standardization organizations, international bodies, and national patent office rules are proposed. Interestingly, technical changes, in the form of new standardized protocols rather than legal or policy changes, appear to be the most important to meet the requirements of open standards.

The third article, "The Architecture and a Business Model for the Open Heterogeneous Mobile Network" by Yoshitoshi Murata, proposes revised architectures for TISPAN-NGN that correspond to heterogeneous networks and open mobile markets, and present new business models. The mobile communications market has grown rapidly over the past 10 years, but the market may reach saturation in the foreseeable future. More flexible mobile networks able to meet various user demands and create new market openings are needed for further growth. Heterogeneous networks are more suitable than homogeneous networks for meeting a wide variety of user demands. There are two types of heterogeneous network: a closed type whose network resources are deployed and operated by communication carriers, and an open type whose network resources would be deployed not only by existing operators but also by companies, universities, and so on. It will be easy for newcomers to enter mobile businesses in an open heterogeneous mobile network, so many innovative services are likely to be provided through cooperation between various companies or organizations.

The fourth article, "Differential Phase Shift Quantum Key Distribution" by Hiroki Takesue, describes quantum key distribution (QKD), which has been studied as an ultimate method for secure communication and is now emerging as a technology that can be deployed in real fiber networks. The authors present their QKD experiments based on the differential phase shift QKD (DPS-QKD) protocol. A DPS-QKD system has a simple configuration that is easy to implement with conventional optical communication components, and is suitable for a high clock rate system. Moreover, although the DPS-QKD system is implemented with an attenuated laser source, it is inherently secure against strong eavesdropping attacks called photon number splitting attacks, which pose a serious threat to conventional QKD systems with attenuated laser sources. It also describes three types of single photon detectors that are suitable for high-speed long-distance QKD: an up-conversion detector, a superconducting single photon detector, and a sinusoidally gated InGaAs avalanche photodiode. The article presents the record setting QKD experiments that employed those detectors.

The last article, "Open API Standardization for the NGN Platform" by Catherine Mulligan, offers outlines the importance of open APIs, what currently exists in the standards bodies, and concludes with a brief set of issues standards bodies need to resolve in relation to these APIs. NGNs are meant to enable a richer set of applications to the end user, creating a network platform that allows rapid creation of new services. Significant progress has been made in the standardization of NGN architecture and protocols, but little progress has been made on open APIs.

The Organizing Committee was chaired by Mr. Yoichi Maeda (NTT, Japan), and the Program Committee was chaired by Mr. Pierre-André Probst (OFCOM, Switzerland). He was assisted by Messrs. Mostafa Hashem Sherif (AT&T, United States), Mitsuji Matsumoto (Waseda University, Japan), and James Carlo (JC Consulting, United States).

The Guest Editors would like to express their sincere thanks to all the authors for this Feature Topic, and to the reviewers for the Kaleidoscope event and for this issue for their helpful remarks that contributed to the outstanding quality of the articles. They would like to express their gratitude to the Editor-in-Chief and production staff for their strong support.

The second Kaleidoscope academic conference will take place in Argentina, 31 August–1 September 2009, just before the NGN-GSI event in the same venue. Additional information is available at http://www.itu.int/ITU-T/uni/kaleidoscope/2009.

BIOGRAPHIES

YOICHI MAEDA [M] (yoichi.maeda@ntt-at.co.jp) received B.E. and M.E. degrees in electronic engineering from Shizuoka University, Japan, in 1978 and 1980, respectively. Since joining NTT in 1980, for the last 26 years he has been engaged in research and development on access network transport systems for broadband communications including SDH, ATM, and IP. From 1988 to 1989 he worked for British Telecom Research Laboratories in the UK as an exchange research engineer. He currently leads the standardization promotion section in NTT Advanced Technology Corporation and is NTT's Senior Adviser on Standardization. In October 2008 at the World Telecommunication Standardization Assembly (WTSA-08), he was appointed to the chair of ITU-T SG15 for the 2009–2012 study period for his second term. He is a Fellow of the IEICE of Japan. He has been a feature editor of the Standards Series in IEEE Communications Magazine since 1999.

MOSTAFA HASHEM SHERIF (mhsherif@att.com) has been with AT&T in various capacities since 1983. He has a Ph.D. from the University of California, Los Angeles, an M.S. in management of technology from Stevens Institute of Technology, New Jersey, and is a certified project manager from the Project Management Institute (PMI). Among the books he authored are *Protocols for Secure Electronic Commerce* (2nd ed. CRC Press, 2003), *Paiements électroniques sécurisés, Presses polytechniques et universitaires romandes*, 2006, and *Managing Projects in Telecommunication Services* (Wiley, 2006). He is a co-editor of two books on management of technology published by Elsevier Science and World Scientific Publications in 2006 and 2008, respectively, and is the editor of the forthcoming *Handbook of Enterprise Integration* (3rd ed.), Auerbach. He is also a standards editor for *IEEE Communications Magazine*, an associate editor of the *International Journal of IT Standards & Standardization Research*, and a member of the editorial board of the *International Journal of Marketing*.

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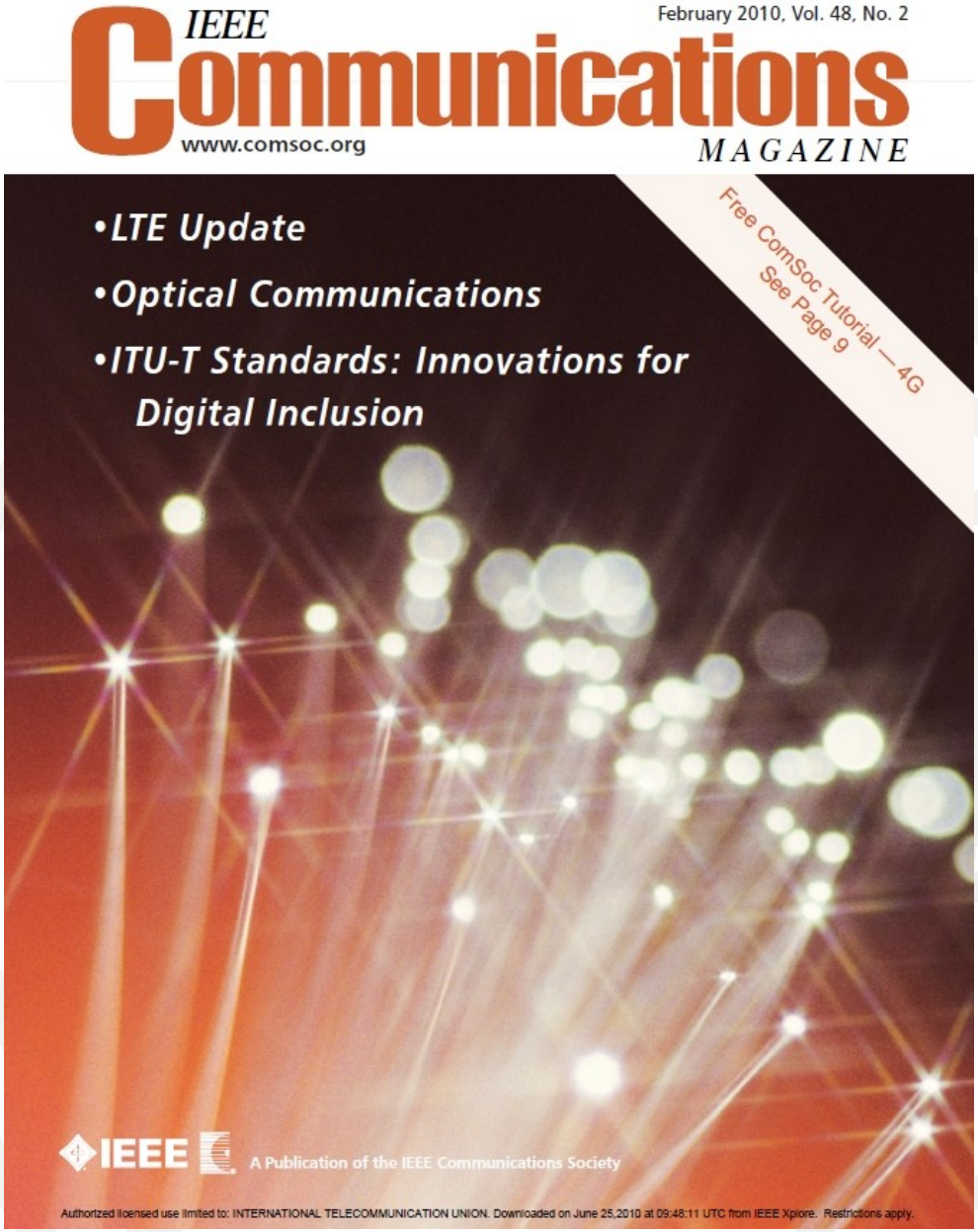
ITU Kaleidoscope 2011 – *The fully networked human? Innovations for future networks and services*



… featuring Kaleidoscope 2009

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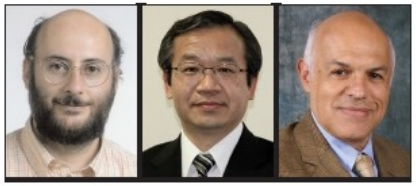
THE SECOND ITU-T KALEIDOSCOPE CONFERENCE: "INNOVATIONS FOR DIGITAL INCLUSION"



Simão Ferraz de Campos Neto *Yoichi Maeda* *Mostafa Hashem Sherif*

This Standards section presents selected articles from the second International Telecommunication Union — Telecommunication Standardization Sector (ITU-T) Kaleidoscope Academic Conference, which was technically co-sponsored by the IEEE Communications Society and took place in Mar del Plata, Argentina, 31 August–1 September 2009. The conference focus was on the role that standards play in "Innovations for Digital Inclusion."

The selection illustrates the reciprocal influences of technological innovations and standardization as they relate to various aspects of digital inclusion. It comprises two sets of articles: invited and awarded. The first invited paper, by Richard Stallman, founder of the GNU Linux project and now President of the Free Software Foundation, asked two fundamental questions: "Is Digital Inclusion a Good Thing? How We Can Make Sure It Is?" These questions set the tone of the conference, and stimulated many interesting discussions in the session where it was presented and during coffee breaks (some of the exchanges are available at http://www.sabermenos.com.ar/richard-stallman-en-mar-del-plata). The gist of the argument is that digital inclusion should not be at the expense of privacy rights and freedom of choice, a side-effect that many technologists tend to overlook. Discussions turned around whether the proposed solution (using free, i.e., untethered or libre, software) would fit current business models and the pressures for shorter development cycles.

The provocative title of the second article, by Erkki Sutinen, from the University of Joensuu, Finland, "Technology for Losers: Re-Equipping The Excluded," was meant to shake up patronizing and condescending attitudes toward "losers." These people are marginalized because of unemployment, special needs, poverty, or lack of development. In other words, they are those who, for any number of reasons, have been deprived of something valuable they possessed. From that perspective, losers are the majority of humanity. To work with and for losers, the author proposes that designers learn how to focus on urgent, relevant, and concrete problems, and to supplement needs-based requirements with a strength-based approach.

The final invited article, by Louis Masi and Dawn Tew, "Interplay and Implications of Intellectual Property and Academic-Industry Collaboration to Foster Digital Innovation," summarizes lessons that IBM, together with the Kauffman Foundation, has learned from experimentation with new styles of collaboration. The authors offer 10 key points to guide and challenge the academic and industrial communities into thinking of innovative ways to accelerate economic development for all.

The remaining articles are revised versions of contributions chosen by an award committee to share a prize of $10,000 funded by Nokia and Cisco Systems. The committee included representatives of both industry and universities, whose names and affiliations are listed in alphabetical order: Thoru Asami (University of Tokyo, Japan), Kai Jakobs (RWTH Aachen University, Germany), Louis Masi (IBM, USA), Helmut Schink (Nokia Siemens Networks, Germany), and Erkki Allan Sutinen (University of Joensuu, Finland). The committee was chaired by Mostafa Hashem Sherif (AT&T, USA).

The original intention was to have three prizes only. However, after reviewing the articles and evaluating the actual presentations, it was decided to share the second prize among three papers that were deemed of equal quality and relevance to the theme of the conference.

The first prize went to Kazaura *et al.* for the article entitled "RoFSO: A Universal Platform for Convergence of Fiber and Free-Space Optical Communication Networks." This is a description of a joint project by Waseda and Osaka Universities, both in Japan, regarding the use of analog/digital radio frequency (RF) signals over fiber and free-space optics (FSO) links. Based on their experimental results, the authors consider that FSO offers a viable alternative for high-speed data transmission in rural and remote areas, and over difficult terrainsm

The article "An ID/Locator Split Architecture of Future Networks" by Kafle *et al.*, from the National Institute of Information Communications Technology in Japan, is a contribution to the current discussions in the ITU-T, Internet Engineering Task Force (IETF), and Internet Research Task Force (IRTF) on ways to distinguish between the two roles IP addresses play in IP networks. Currently, the IP address is a locator for forwarding packets toward their final destination at the network layer and a host identifier at the higher layers. This dual role poses unnecessary constraints on new mobility applications that would require rapid changes of the locator while preserving the host identifier. The authors define a network architecture with several new entities (registries, gateways, etc.) to track various bindings between host names, host identifiers, locators and security keys, and so on, and a new naming system with several components: a host identifier with a one-way cryptographic hash of the local host name and domain name, and, depending on the application, one or more locators corresponding to that host identifier. The large-scale applicability of the proposal, however, is still open for future investigations.

The *ex aequo* second prize went to the article "Quality of Service Management for ISP: A Model and Implementation Methodology Based on ITU-T Rec. E.802 Framework" by Ibarrola *et al.*, a joint contribution from the University of the Basque Country in Spain and the University of Waterloo in Canada. ITU-T E.802 provides guidelines on how to define and prioritize quality of service (QoS) requirements. The significance of this article is that it is one of the first attempts to apply that framework to assist Internet service providers in defining the quality policies of their service offers to residential customers.

The final awarded article, "Discrimination in NGN Service Markets: Opportunity or Barrier to Digital Inclusion" by Beltrán and Gómez, from the University of Auckland in New Zealand and the Colombian Telecommunications Research Center, respectively, is a contribution to the current "net neutrality" debate. The core issue is whether a mandate for network access or discrimination based on pricing, QoS, or content would encourage innovation and competition. The basis of the discussion is a model the first author developed with W. Sharkey from the Federal Communications Commission (FCC) to investigate pricing structures in next-generation networks (NGN). Although the article does not give explicit recommendations, it provides a framework to discuss the effects of policy and regulations using a two-sided market model.

The conference was chaired by Yoichi Maeda (NTT, Japan) and was piggybacked on an NGN-GSI (Global Standards Initiative)[1] event. Participation statistics show that the target public (academia and R&D) was well represented. The program comprised 20 papers and 12 poster presentations, selected out of the original 83 submissions with the help of 113 subject matter experts. All these papers are available through the IEEE Xplore digital library. The conference included an exhibit where six South American universities presented their activities.

The theme of the Kaleidoscope 2010 conference is "Beyond the Internet? Innovations for Future Networks and Services." The conference venue will be near Bombay, India, 13–15 December 2010. Further information will be posted at http://itu-kaleidoscope.org/2010.

BIOGRAPHIES

SIMÃO FERRAZ DE CAMPOS NETO [SM] (simao.campos@itu.int) joined the secretariat of the ITU Standardization Sector in 2002, and is the Counselor for ITU-T Study Group 16 (for standardization work on multimedia services, protocols, systems, terminals, and media coding). He has organized several workshops (e.g. Multimedia in NGN, Telecoms for Disaster Relief, RFID, Standardization in E-health; SIIT2005) and was the editor of the first version of the ITU-T Security Manual. Prior to joining ITU in 2002, he worked for eight years as a scientist in COMSAT Laboratories performing standards representation and quality assessment for digital voice coding systems, and before that he was a researcher at Telebras's R&D Center (CPqD). He authored several academic papers and position papers, served on the review committee of several IEEE-sponsored conferences, and organized the first ITU-T Kaleidoscope Conference. He is a graduate of the State University of Campinas, Brazil (B.Sc., 1986; M.Sc., 1993).

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[1] *GSI is an ITU initiative to promote the research and standardization of NGN technologies. The first NGN-GSI event took place in Beijing, China, in August 2007. Meetings are held regularly, three to four times a year.*

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GUEST EDITORIAL

THE THIRD ITU KALEIDOSCOPE CONFERENCE: "INNOVATIONS FOR DIGITAL INCLUSION"

Mostafa Hashem Sherif *Yoichi Maeda* *Stefano Polidori*

This Standards section contains selected papers from the third International Telecommunication Union Telecommunication Standardization Sector (ITU-T) Kaleidoscope Academic Conference, organized with the technical co-sponsorship of the IEEE Communications Society. The aim of the Kaleidoscope conference series is to identify emerging developments in information and communication technologies (ICTs) at an early stage to generate successful products and services through the development of international and open standards.

The 2010 conference took place at the Narhe Campus, Pune, Maharashtra, India, 13–17 December. It was hosted by the Sinhgad Technical Education Society (STES), at the invitation of the Ministry of Communications and Information Technology of India. The local partners, the Global ICT Standardization Forum for India (GISFI), the ITU-APT Foundation of India, and the CMAI Association of India were successful in increasing awareness of the event; 79 percent of the audience was from India. In addition, several Indian institutions contributed to an exhibit that paralleled the conference: Anna University, MIT Campus, Chennai; Telecom Centres of Excellence, New Delhi; College of Engineering (COEP), Pune; Sinhgad College of Engineering, Sinhgad Technical Education Society, Pune; Bharati Vidyapeeth Deemed University, Pune; and MIT School of Telecom Management, Pune.

Three other ITU events took place in parallel with the conference: the ITU IPTV Global Standards Initiative[1] (IPTV-GSI), 13–17 December, and the ITU IPTV Interoperability event, 14–17 December, as well as an IPTV Workshop on 17 December. The workshop included a panel moderated and broadcast by Bloomberg TV with a "Bollywood" producer among the panelists. In addition, the Global ICT Standardization Forum for India (GISFI) had their meeting on 13–15 December, while the European MyFIRE project had theirs on 16–17 December. Finally, a Standardization Tutorial was organized for the conference attendees on 16 December 2010.

The *IPTV interoperability event* is a response to resolutions from the ITU-D (Development Sector) to assist developing countries in selecting equipment from multiple vendors and ensure that they can work together to provide IPTV services. This was the third such event; the previous two took place in Geneva and Singapore. This time, however, the participant companies were restricted to Japanese and Korean manufacturers, and their number was low (4), because their Chinese counterparts experienced visa difficulties. *GIFSI* (http://www.gisfi.org) is a new public-private partnership that started in 2009 to provide a neutral ground for all Indian stakeholders to harmonize their position in the knowledge-based economy [1]. The project *MyFIRE* is funded by the European Union to develop the use of experimental facilities in Europe and increase awareness of best practices in testing. The framework is interdisciplinary, engaging network researchers with experts from key areas of sociology, policy makers, economic models, and standardization. The *CMAI Association of India* is a professional association for the promotion of the Indian IT and telecom sector (http://www.cmai.asia). Lastly, the *ITU-APT Foundation of India* is an Indian society related to activities concerning research and study on telecommunications with special emphasis on rural development (http://itu-apt.org).

The conference title was "Beyond the Internet?—Innovations for Future Networks and Services." Judging by the number of similar activities on that subject, this seems to be a pressing issue. One possible reason is that the original architecture of the Internet was based on the so-called end-to-end argument: that the final decisions should be made by the users themselves, that network intelligence is unnecessary and that networking functions should be done as much as possible outside the network [2]. In other words, advanced networking services violate the fundamental postulate of network transparency; a service-based network connectivity must provide means to differentiate traffic based on individual criteria (traffic class, customer, etc.) Furthermore, security considerations are constantly threatening the resilience and availability of network connectivity [3]. Next-generation networks (NGN) are one short- to medium-term solution to ensure the quality of service by fusing the concepts of the telecommunication network with those of the Internet. In 2007, however, Stanford University, Deutsche Telekom, and NEC formed a Clean Slate Laboratory to prototype "disruptive" new Internet technologies rather than "incremental patches and work-arounds," given that the spread of mobile technologies has changed the landscape within which the protocols were initially designed [4]. The founders were joined by Cisco, NTT DoCoMo, Xilink, and Ericsson. In Europe, the Forum Atena invited many of the Internet founders (e.g., Vinton Cerf, John Day, Bob Kahn, and Louis Pouzin) to two sets of conferences in January and June 2010 to investigate new resilient architectures and governance models that could handle new applications such as the Internet of things and the concomitant rise of security needs [5]. The Kaleidoscope 2010 contributed to this ongoing search for architectures and infrastructures that could accommodate future applications and services and their expected growth of convergent traffic, with an emphasis on the reciprocal influences of technological innovation and standardization. (Note: The July 2011 issue of IEEE *Communications Magazine* presented six articles on current design efforts worldwide for the future Internet).

Of the 115 papers submitted for review, 37 papers were accepted for publication and presentation (23 in the lecture sessions and 14 in a poster session). Accepted papers came from 24 countries; but participants from China and Iran did not receive their visas in time, and two presentations had to be done via teleconferencing. The conference proceedings are available from the IEEE Xplore online repository as well as from the ITU publications page, and the archived webcast of the event can be seen at http://www.itu.int/ibs/ITU-T/201012kaleido/index.html.

The conference supporters (Cisco, Nokia Siemens Networks, and MyFIRE) funded award prizes to the three best papers. The following award committee, whose names and affiliations are listed in alphabetical order by last name, made the final section of the three best papers: Simão Campos Neto (ITU), Alex Galis (University College London, United Kingdom), Abhay Karandikar (Indian Institute of Technology Bombay, India), Mitsuji Matsumoto (Waseda University, Japan), and Detlev Otto (Nokia Siemens Networks, Germany). The award committee was chaired by Mostafa Hashem Sherif (AT&T, United States). The awardees were as follows:

- 1st prize (US$5000): "A User-Centric Approach to QoS Regulation in Future Networks," presented by Eva Ibarrola (University of the Basque Country, Spain), co-authored by Fidel Liberal, Armando Ferro (University of the Basque Country, Spain), and Jin Xiao (University of Waterloo, Canada)
- 2nd prize (US$3000): "How Can an ISP Merge with a CDN (Content Delivery Network)?" presented by Kideok Cho (Seoul National University, Korea) and co-authored by Hakyung Jung, Munyoung Lee, Diko Ko, Taekyoung Kwon, and Yanghee Choi (Seoul National University, Korea)
- 3rd prize (US$2000): "Introducing Elasticity and Adaptation into the Optical Domain Toward More Efficient and Scalable Optical Transport Networks," presented by Masahiko Jinno (NTT, Japan) and co-authored by Yoshiaki Sone, Osamu Ishida, Takuya Ohara, Akira Hirano, and Tomizawa (NTT, Japan)

These papers have been revised to meet the requirements of *IEEE Communication Magazine* before their inclusion in this section. In addition, a revised version of one of the invited papers, "Toward A Polymorphic Future Internet: A Networking Science Approach" by Kavé Salamatian (Université de Savoie, France) is also made available.

Unfortunately, not all excellent papers could be recognized monetarily. For example, an interesting paper by Brad Biddle, Andrew White, and Sean Woods (Arizona State University Sandra Day O'Connor College of Law) considered "Ho… Other Empirical … of the number o… typical manufactu… The presenter, M… ad hoc group of … S6.1 T2904000007). F… ple indicates tha… are meeting the l… ed in various asp… side the traditio… science.

One particular special session … designed to stim… telecommunicati… futurists with bac… lege of Engineering, Electronics & Telecommunication Engineering, India … neering, chemistr… more fields. The … Impossible," ger… who were fascina… float and dream… Another special s… ed highlights on … ITU-T, which w… also introduced … Tutorial" organiz… The next Kale… Town, South Af… theme is "The F… for Future Netwo… responding Jul… Brain" on the p… chips into human

GUEST EDITORIAL

In closing, the editors would like to thank the authors for their cooperation in making the requested revisions. In addition, the 17 reviewers listed below in alphabetical order helped select among the invited papers and provided indispensable comments that have shaped and improved the initial submissions to *IEEE Communication Magazine*.

Aquiar, Javier, University of Valladolid, Spain
Botta, Alessia, University of Napoli, Federico II, Italy
Campos-Neto, Simão, ITU, Switzerland
Corradi, Antonio, DEIS, University of Bologna, Italy
Denning, Peter, Naval Postgraduate School, USA.
Jakobs, Kai, RWTH Aachen University, Germany
Klekamp, Axel, Alcatel-Lucent, Bell Labs, Germany
Markande, Shriram, STES's Smt. Kashibai Navale College of Engineering, Electronics & Telecommunication Engineering, India
Morea, Analisa, Alcatel-Lucent, Bell Labs, France
Olivieri, Jose Manuel, INSEC Porto, Portugal
Pathan, Mukkadim , CSIRO ICT Center, Australia
Pulafito, Antonio, University of Messina, Italy
Rutkowski, Tony, Netmagic Associates, United States
Salvadori, Elio, CREATE-NET, Italy
Shenker, Scott, University of California, Berkeley, United States
Van Eeten, Michel, Delft University of Technology, The Netherlands
Wing, Jeannette, Carnegie Mellon University, United States

REFERENCES

[1] C. Huitema, *Routing in the Internet*, Prentice Hall PTR, 1995, p. 8.
[2] R. Prasad, Ed., *Future Trends and Challenges for ICT Standardization*, River Publishers, 2010.
[3] T. Saadawi and L. Jordan, Jr., Eds., *Cyber Infrastructure Protection*, Strategic Studies Inst., U.S. War College/City Univ. of New York, May 9, 2010, http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=1067.
[4] "Stanford, Deutsche Telekom, NEC form Clean Slate Lab to Prototype 'Disruptive' New Internet Technologies," Dec. 2, 2008; http://cleanslate.stanford.edu/cslab-pressrelease-finalcandidate-11-19-4p.php.
[5] Forum Atena, "Quel future pour l'Internet" (What Is the Internet Future?) and "Quel future pour le socle de l'Internet?" (What Is the Future Foundation of the Internet?), presentations in English and French; http://www.forumatena.org/?q=node/255 and http://www.forumatena.org/?q=269.

BIOGRAPHIES

MOSTAFA HASHEM SHERIF (ms5285@att.com) has been with AT&T in various capacities since 1983. He has a Ph.D. from the University of California, Los Angeles, an M.S. in the management of technology from Stevens Institute of Technology, New Jersey, and is a certified project manager of the Project Management Institute (PMI). Among the books he authored are *Protocols for Secure Electronic Commerce* (2nd ed., CRC Press, 2003), *Payments électroniques sécurisés* (Presses polytechniques et universitaires romandes, 2006), and *Managing Projects in Telecommunication Services* (Wiley, 2006). He is a co-editor of two books on the management of technology published by Elsevier Science and World Scientific Publications in 2006 and 2008, respectively, and is the editor of the *Handbook of Enterprise Integration* (3rd ed., Auerbach, 2009).

YOICHI MAEDA [M] (yoichi.maeda@ntt at.co.jp) received B.E. and M.E. degrees in electronic engineering from Shizuoka University, Japan, in 1978 and 1980, respectively. Since joining NTT in 1980, for the last 26 years he has been engaged in research and development on access network transport systems for broadband communications including SDH, ATM, and IP. From 1988 to 1989 he worked for British Telecom Research Laboratories in the United Kingdom as an exchange research engineer. He currently leads the standardization promotion section of NTT Advanced Technology Corporation and is NTT's senior adviser on standardization. In October 2008 at the World Telecommunication Standardization Assembly (WTSA-08), he was appointed chair of ITU-T SG15 for the 2009–2012 study period for his second term. He is a Fellow of the IEICE of Japan. He has been a Series Editor of the Standards Series in *IEE Communications Magazine* since 1999.

STEFANO POLIDORI has been working as a study group engineer at the Telecommunication Standardization Bureau of the International Telecommunication Union (ITU) since 2004. In 2001 he received his Master's degree in electronic engineering from the University of Rome "Tor Vergata," Italy, and a Master of Science in engineering with specialization in mobile communication from Aalborg University, Denmark. After a few years in the private sector, working as system analyst in the electronic warfare business, he joined ITU and is currently engaged to raise the Standardization Sector profile. He is in charge of the secretariat of Study Group 9, "Television and sound transmission and integrated broadband cable networks," and Study Group 11, "Signaling requirements, protocols and test specifications." He is also in charge of the secretariat of the Joint Coordination Activity on the Internet of Things (JCA-IoT), the Internet of Things Global Standards Initiative (IoT-GSI), as well as the IPTV Global Standards Initiative (IPTV-GSI). Since 2007 he is a member of the European Commission ICT Steering Committee for a New European Standardization Policy. He was responsible for the organization of the ITU Kaleidoscope academic conferences up to 2010.

[1] See http://www.itu.int/en/ITU-T/gsi. Other ITU global standard initiatives concern Next Generation Networks (NGN-GSI) and the Internet of Things (IoT-GSI).

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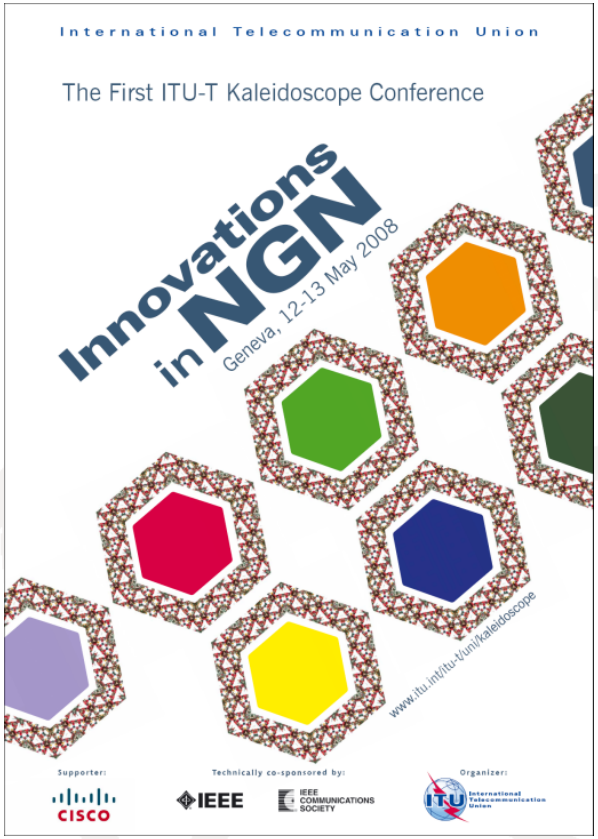

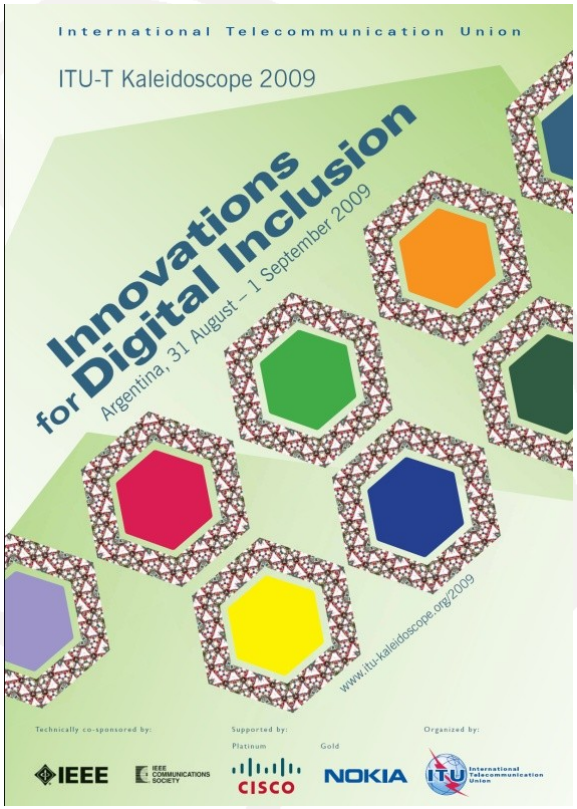

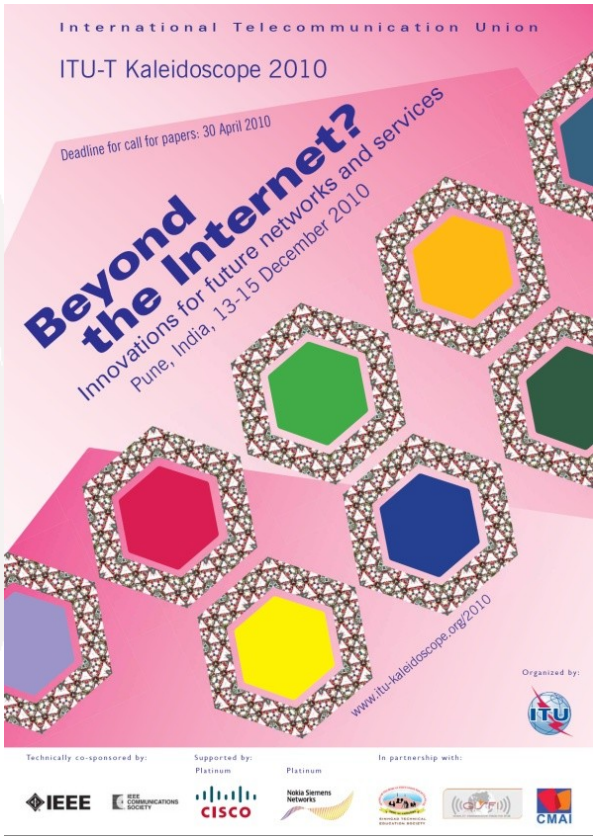

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