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| Director, TSB |
| EVALUATION OF KALEIDOSCOPE 2014 PAPERS WITH RESPECT TO RELEVANCE IN ITU ACTIVITIES |

The [ITU Kaleidoscope conference 2014](http://www.itu.int/ITU-T/uni/kaleidoscope/2014/index.html) (K-2014) was held at the kind invitation of the Ministry of Communications and Mass Media of the Russian Federation, and hosted by the Bonch-Bruevich Saint-Petersburg State University of Telecommunications (SPbSUT), which provided excellent logistics

**Over 120 delegates** from **28 countries** participated in the conference. About 10 people used the remote participation facilities. The events have been broadcasted and the archived webcast are available at the Kaleidoscope webpage.

SES (Luxembourg), Platinum supporter, kindly offered the prize money that is awarded to the authors of the best papers. The Host, with the support of Expo Telecom (Russian Federation), generously offered coffee breaks and lunches to the participants, and supported the logistics expenses for the events.

The event was technically co-sponsored by the Popov Society of the Russian Federation; the Institute of Electrical and Electronics Engineers (IEEE) and IEEE ComSoc; and the Institute of Electronics, Information and Communication Engineers of Japan (IEICE).

K-2014 partnering organizations supported the promotion of the conference: TTC (Japan), Waseda University (Japan), the Institute of Image Electronics Engineers of Japan (I.I.E.E.J.), the European Academy for Standardization (EURAS), the University of the Basque Country (Spain), and Tampere University of Technology (Finland).

The **opening ceremony** included welcome remarks from the **Host,** Sergey Bachevsky (Rector, SPbSUT, Russian Federation; Kaleidoscope 2014 General Chairman); [Opening Address](http://www.itu.int/en/ITU-T/tsbdir/sap2014/Pages/ITU-IEICE-IEEE-Workshop-on-Education-about-Standardization.aspx) **by** Malcolm Johnson; and inaugural speeches were given by high level representatives of the Russian Federation.

**Four keynote speeches** were included in the programme and shared insight into the potential of nanoscale communications and developments in cloud computing, sensor networks and ICT-enabled healthcare. Of particular interest the speech of Prof.I.F. Akyildiz (Georgia Institute of Technology, USA, ITU-T academia member), entitled “*Internet of Nanothings”.* Prof. Y. Koucheryavy (Tampere University of Technology, Finland) offered “*Experimental Biology and Molecular Communications”*. Antonio Puliafito (University of Messina, Italy) presented strategies for managing sensing resources into the Cloud in “*Data vs Device-centric Cloud services for resource monitoring*”. Ole Hanseth (University of Oslo, Norway) in his keynote summary critiqued the emerging needs of the healthcare industry, a sector with an ICT-rich future, in “ICT architectures, standardization strategies and service innovation in healthcare”. Unfortunately he could not join the event due to personal issues.

**Three invited papers** presented on the role of software-defined networking and network virtualization in the transition to IPv6, the accessibility of broadcasting and broadband technologies to the older persons with age related disabilities and persons with disabilities, and the workings of the world of ICT standardization. “*A Software Defined Approach to Unified IPv6 Transition*” was outlined by Kevin Hu (Huawei Technologies, China). Christoph Dosch (IRT GmbH, Germany and Chairman of ITU-R Study Group 6 (Broadcasting Service)) spoke on developments in work to create more inclusive communications in “*Conversion of Broadcasting and Broadband Internet - A benefit for people with disabilities (and for us all)”.* In “*Standardization: A primer”,* Ken Krechmer (University of Colorado, USA) offered an insider’s view into ICT standardization processes geared towards an audience certain to contain a wealth of future standardization experts.

98 papers from 39 countries were submitted for review, 34 of which were accepted for publication and presentation (23 in the lecture sessions, 11 in the poster session). Relevant recommendations and conclusions from the technical sessions, as drafted and presented by the Session Chairs, are available [online](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/K-2014_Wrap%20up%20Session.pdf).

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

* **1st prize** (5,000 USD): “*Towards Converged 5G Mobile Networks - Challenges and Current Trends”* by Anna Zakrzewska, Sarah Ruepp and Michael S. Berger (Technical University of Denmark, Denmark)”.
* **2nd prize** (3,000 USD): “*Dynamic Mobile Sensor Network Platform for ID-based Communication.” by* Ved P. Kafle, Yusuke Fukushima and Hiroaki Harai (NICT, Japan). Ved P. Kafle is active in ITU-T Study Group 13 (“Future Networks”), Question 15 “Data-aware networking in future networks” and his position as new co-rapporteur for Q15/13 will be formalized on 7 July. One of the authors of a poster paper (P.2 *Content Distribution in Information Centric Network: Economic Incentive Analysis in Game Theoretic Approach*) Takuro Sato, from an ITU-T academia member, Waseda University, Japan, is very interested in reflecting the outcome of his research projects in the area of information-centric networks (ICN) in international standards, which is within the scope of Q15/13. Prof. Sato will evaluate the options with his colleagues and in the TTC coordination group and maybe contribute to the SG13 upcoming meeting.
* **3rd prize** (2,000 USD): “*Combining ICT-Standards Essential-Patents and Medical-managerial Guidelines towards sustainable Assisted-living and home-care*” Vasileios P. Spyropoulos (Technological Education Institute of Athens, Greece).

Representatives of **ten ITU academia members** are included in the conference programme. Two ITU-T academia members already expressed interest in submitting contributions to ITU-T study groups based on their paper proposals: University of Rome Tor Vergata, Italy, will submit a contribution to the next SG 17 meeting (“*Global Convergence in Digital Identity and Attribute Management: Emerging Needs for Standardization*”); University of the Basque Country, Spain, would like to contribute to SG11 (“*Global standards, the key enablers for deploying next generation emergency communications networks*”). This paper proposed an IMS-based emergency inter-networking system capable of connecting existing first responder communication systems and enabling the integration of next-generation mobile networks.

The Annex to this document presents accepted papers, invited papers and keynote speeches selected by the steering and technical programme committees of the 2014 ITU Kaleidoscope conference and identifies links to related activities in ITU-T and other ITU sectors.

Upon request the ITU Kaleidoscope secretariat can establish contact between Study Groups and authors, e.g., to arrange for a remote presentation of the findings of the paper during a Study Group meeting.

The Annex is structured as follows: Table 1 gives an overview of all papers and keynote speeches. Table 2 maps the papers to ongoing ITU-T activities, if applicable.

Table 2 also includes links to the respective full papers reproduced in the conference proceedings, which are available at:
<http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/Kaleidoscope2014Proceedings.pdf> .

All papers will also be made available in the [IEEE Xplore digital library](http://ieeexplore.ieee.org/Xplore/guesthome.jsp). Please contact kaleidoscope@itu.int for any queries.

# Annex: Evaluation of Kaleidoscope 2014 papers with respect to relevance in ITU activities

## Table 1: Titles of ITU Kaleidoscope 2014 papers and keynotes

| # | Title |
| --- | --- |
| K1 | Internet of Nanothings |
| K1 | Experimental Biology and Molecular Communications |
| K2 | Data vs Device-centric Cloud services for monitoring resource provisioning |
| S1.1 | A Software Defined Approach to Unified IPv6 Transition |
| S1.2 | Global Convergence in Digital Identity and Attribute Management: Emerging Needs for Standardization |
| S1.3 | Distributed Demand-Side Management with Load Uncertainty |
| S1.4 | Proposal of "Cyber Parallel Traffic World" Cloud Service |
| S2.1 | Towards Converged 5G Mobile Networks- Challenges and Current Trends |
| S2.2 | Comparison of WiBro and TD-LTE through the Social Network Analysis |
| S2.3 | Modelling and performance analysis of pre-emption based radio admission control scheme for video conferencing over LTE |
| S2.4 | IMT Standardisation and Spectrum Identification: Regulatory and Technology Implications |
| S2.5 | Spectrum occupation and perspectives millimeter band utilization for 5G networks |
| S2.6 | A Non-cooperative TV White Space Broadband Market Model for Rural Entrepreneurs |
| S3.1 | Conversion of Broadcasting and Broadband Internet - A benefit for people with disabilities (and for us all) |
| S3.2 | SQUALES: A QT-based Application for Full-Reference Objective Stereoscopic Video Quality Measurement |
| S3.3 | Design and Specifications of a Repository for Real-Time Open Data |
| S3.4 | A Cross-Country Comparison on User Acceptance of Multimedia Cloud Services - Germany and Japan |
| S4.1 | Combining ICT-Standards Essential-Patents and Medical-managerial Guidelines towards sustainable Assisted-living and home-care |
| S4.2 | E-HEALTH Standardization Challenges in Emerging Economies: The case of Mexico |
| S4.3 | Reverse Standardization from Public E-health Service |
| S4.4 | Global standards, the key enablers for deploying next generation emergency communications networks |
| S5.1 | Dynamic Mobile Sensor Network Platform for ID-based Communication |
| S5.2 | An Experimental Test-Bed for the Evaluation of the Hidden Terminal Problems on the IEEE 802.15.5 Standard |
| S5.3 | On Software Standards for Smart Cities: API or DPI |
| S6.1 | Standardization: A primer |
| S6.2 | Standards as enablers for innovation in education - the breakdown of European pre-standardisation |
| S6.3 | Syllabuses Crawling and Knowledge Extraction of Courses for Global Standardization Education |
| S6.4 | Standards: Inhospitable Terrain for Innovation? |
| P1 | How to support a standard on a multi-level playing field of standardization: propositions, strategies and contributions |
| P2 | Content Distribution in Information Centric Network: Economic Incentive Analysis in Game Theoretic Approach |
| P3 | Innovative RF Localization for Wireless Video Capsule Endoscopy |
| P4 | Economical efficiency assessment model of spectrum conversion for new mobile wireless technologies |
| P5 | A Mutual Key Agreement Protocol To Mitigate Replaying Attack In eXpressive Internet Architecture (XIA) |
| P6 | A cloud platform for QoE evaluation: QoXcloud |
| P7 | Standardizing the Internet of Things in an evolutionary way |
| P8 | Performance evaluation of a dual diversity reception base on OFDM RoFSO systems over correlated log-normal fading channel |
| P9 | Assessment of New Information and Communication Technologies using activity-based costing and tensor analysis of networks |
| P10 | Sustainable Security Advantage in a Changing Environment: The Cybersecurity Capability Maturity Model (CM2) |

## Table 2: Mapping of ITU Kaleidoscope 2014 papers and ITU activities

| # | Title (link to presentation) | Author affiliation | Keywords | Standards relevance | Related ITU-T study groups / activities | Other ITU sectors | Comments |
| --- | --- | --- | --- | --- | --- | --- | --- |
| K1 | Internet of Nanothings | Georgia Institute of Technology, USA | Nano networks, nanomaterial based network design, terahertz networks, internet of things, security, micro-scale devices | High, [IEEE 802.15 Terahertz Interest Group](http://www.ieee802.org/15/pub/IGthzOLD.html), [IEEE 802.15 SG 3d (100G)](http://www.ieee802.org/15/pub/SG100G.html) | SG13, SG17, Technology Watch | ITU-R | Keynote speechAcademia member |
| K1 | Experimental Biology and Molecular Communications | Tampere University of Technology, Finland | From silicon to biological molecular communications, internet of nano things |  |  |  | Keynote speech |
| K2 | [Data vs Device-centric Cloud services for monitoring resource provisioning](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/Puliafito.pdf) | University of Messina, Italy | Cloud computing, private cloud, IoT, Sensor Web, “cloud of things” | OGC SWE standards | SG13, SG16 |  | Keynote speech |
| S1.1 | [A Software Defined Approach to Unified IPv6 Transition](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/Huawei.pdf) | University of Science and Technology of China, China; Huawei Technologies, China; Telefonica, Spain; Beijing Research Institute, China Telecom; China Academy of Electronics and Information Technology, China | IPv6, SDN, OpenFlow |  | SG11, SG13, JCA-SDN |  | Invited paper |
| S1.2 | [Global Convergence in Digital Identity and Attribute Management: Emerging Needs for Standardization](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S1.2Kaleidoscope_DM.pdf) | University of Rome Tor Vergata and Nestor Laboratory, Italy; Fondazione Inuit Tor Vergata University of Rome, Italy | IdM, attribute management, privacy | Highlights ITU-T X.1255, identifies standards gaps, including unique IDs, attribute management and links between attributes and IDs, “right to be forgotten” | Authors would like to contribute to SG17 |  | Academia member |
| S1.3 | [Distributed Demand-Side Management with Load Uncertainty](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S1.3Manasseh.pdf) | Hiroshima University, Japan; University of Dodoma, Tanzania | Smart grid, demand side management, energy consumption schedule |  |  |  |  |
| S1.4 | [Proposal of "Cyber Parallel Traffic World" Cloud Service](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S1.4YMurataPresentationV3%28No%20Video%20Connection%29.pdf) | Iwate Prefectural University, Japan | V2V, V2I, V2X communications, cloud computing, augmented reality |  | SG16 |  |  |
| S2.1 | [Towards Converged 5G Mobile Networks- Challenges and Current Trends](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S2.1AnnaZakrzewska_ITUT_Kaleidoscope2014.pdf) | Technical University of Denmark, Denmark  | 5G, spectrum, RAN, mesh networks, M2M, WiFi, self-organizing networks, core network virtualization | Related to SDN, NFV, Cloud RANs, Enhanced LANs (IEEE 802.11u/s; 3GPP) | SG11, SG13, SG15 | ITU-R (WP 5D) | Best paper award (1st price); author now with Bell Labs (Dublin) |
| S2.2 | [Comparison of WiBro and TD-LTE through the Social Network Analysis](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S2.2Comparison%20of%20Wibro%20and%20TD-LTE%20Standard%20Networks.pdf) | Yonsei University, Korea | WiBro, WiMAX, TD-LTE, comparison of deployment, competitiveness |  |  | ITU-R (WP 5D |  |
| S2.3 | [Modelling and performance analysis of pre-emption based radio admission control scheme for video conferencing over LTE](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S2_3Markova.pdf) | JSC Concern Sistemprom, Russia; Peoples' Friendship University of Russia, Russia  | Radio admission control, video conferencing over LTE |  | SG12 | ITU-R |  |
| S2.4 | [IMT Standardisation and Spectrum Identification: Regulatory and Technology Implications](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S2.4Kaleidoscope%20Mohamed%20El-Moghazi%20Presentation%205-5-14%20Final%202.pdf) | University of Strathclyde, United Kingdom | IMT, spectrum, WRC, technology neutrality |  |  | ITU-R |  |
| S2.5 | [Spectrum occupation and perspectives millimeter band utilization for 5G networks](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/Presentation%20Prof%20%20Tikhvinskiy%20S2%205.pdf) | Icominvest, Russia; Moscow Technical University of Communication and Informatisation (MTUCI), Russia | 5G, millimeter band |  |  | ITU-R |  |
| S2.6 | [A Non-cooperative TV White Space Broadband Market Model for Rural Entrepreneurs](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S2.6Nleya-Kaleidoscope%202014.pdf) | University of Western Cape, South Africa; International Centre for Theoretical Physics (ICTP), Italy | Dynamic spectrum sharing, TV white space allocation, routing  |  |  | ITU-R |  |
| S3.1 | [Conversion of Broadcasting and Broadband Internet - A benefit for people with disabilities (and for us all)](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/Dosch_Access-for-All_%28ITU_K-14_St-Petersburg_04June2014%29-final1_%28without_backup-slides%29.pdf) | ITU-R Study Group 6 Chairman; IRT GmbH, Germany | Broadcasting, TV, accessibility, Integrated Broadcast-Broadband, synchronization, access services | Related to ongoing work for Recommendations on IBB systems in SG 6 (Report BT.2267-2 already issued) | SG9, SG16, IRG AVA | ITU-R SG6 | Invited paper |
| S3.2 | [SQUALES: A QT-based Application for Full-Reference Objective Stereoscopic Video Quality Measurement](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S3.2%20Alencar.pdf) | Federal University of Campina Grande - UFCG, Brazil | Video QoS, objective video quality prediction models, Qt-based open source tool | Related to ITU-T P.910, ITU-T J.144, ITU-R BT.500-13, ITU-T H.264 | SG12, SG16 |  |  |
| S3.3 | [Design and Specifications of a Repository for Real-Time Open Data](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S3.3Sudesh%20Lutchman%20ITU%20presentation.pdf) | The University of the West Indies, Trinidad and Tobago | Open data, real-time systems, USN, data repository, linked data | JSON | SG13, SG16 |  |  |
| S3.4 | [A Cross-Country Comparison on User Acceptance of Multimedia Cloud Services - Germany and Japan](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S3.4ITU%20KaleidoscopeYasuhiro%20Tanaka%29v2.pdf) | Senshu University, Japan; Tsuda College, Japan | Cloud services, big data, personal data, personas, privacy protection across borders, privacy-enhancing technologies, anonymity, technology acceptance |  | SG13, SG17 |  |  |
| S4.1 | [Combining ICT-Standards Essential-Patents and Medical-managerial Guidelines towards sustainable Assisted-living and home-care](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S4.1%20Spyropoulos.pdf) | Technological Education Institute of Athens, Greece | IPR, SEP, disclosure, e-health |  | IPR ad-hoc group |  | Best paper award (3rd price) |
| S4.2 | [E-HEALTH Standardization Challenges in Emerging Economies: The case of Mexico](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S4.2Kaleidoscope%20Serrano-Rojas-Presentation.pdf) | CICESE Research Center, Mexico | Standards, standardization, framework, e-health, developing countries |  |  | ITU-D | Academia member |
| S4.3 | [Reverse Standardization from Public E-health Service](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S4.3Reverse%20Standardization%20from%20Public-v11.pdf) | NICT, Japan; Kyushu University, Japan; Grameen Communications, Bangladesh | BAN, MBAN, M2M, e-health, remote patient monitoring | BAN/MBAN standards in IEEE | SG11, SG13, SG16 | ITU-R |  |
| S4.4 | [Global standards, the key enablers for deploying next generation emergency communications networks](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S4.4ITU-K2014-Fidel%20Liberal-final-submitted.pdf) | University of the Basque Country, Spain; ITELAZPI S.A., Spain; COSMOTE Mobile Telecommunications S.A., Greece | Public safety communications, IMS, OTT, protocols, NGN, convergence |  | Author would like to present the work / contribute to SG11 (Q3) |  | Academia member |
| S5.1 | [Dynamic Mobile Sensor Network Platform for ID-based Communication](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S5.1_kafle-ver1.pdf) | NICT, Japan | WSN, ID-based communication, mobility, reliability, remote configurability, open APIs | Related to ITU-T Y.3001, Y.3031, Y.3032, Y.2221, IEEE 1888.Potential topics for standardization: 1. Interfaces between sensing, computation and communication units; 2. Light-weight authentication and access control methods for mobile sensors; and 3. Methods for ID-based communication in heterogeneous network protocols, e.g., extension to ITU-T Y.FN-heteronet | SG13 (WP3), SG16, SG17 |  | Best paper award (2nd price) |
| S5.2 | [An Experimental Test-Bed for the Evaluation of the Hidden Terminal Problems on the IEEE 802.15.5 Standard](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S5.2Garcia%20Sanchez.pdf) | Universidad Politécnica de Cartagena (UPCT), Spain | Mesh network, WSN, comparison of mesh network standards, hidden terminals, open source implementation | IEEE 802.15.5 | SG13 |  |  |
| S5.3 | [On Software Standards for Smart Cities: API or DPI](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S5.3dnamiot.pdf) | Moscow State University, Russia; Ventspils University College, Latvia | Time to market |  |  |  |  |
| S6.1 | Standardization: A primer | University of Colorado, USA | Standardization, standardization education |  | TSB Director’s Ad hoc Group on Education about Standardization |  | Invited paper |
| S6.2 | [Standards as enablers for innovation in education - the breakdown of European pre-standardisation](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/6.2ToreHoel.pdf) | Oslo and Akershus University College of Applied Sciences, Norway | OpenStand, openness, innovation |  |  |  |  |
| S6.3 | [Syllabuses Crawling and Knowledge Extraction of Courses for Global Standardization Education](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/Hiroshi%20Nakanishi%20Powerpoint%20template%20for%20paper%20presentationv2%20%281%29.pdf) | Osaka University, Japan; Tresbind Corporation, Japan | Standardization education |  | TSB Director’s Ad hoc Group on Education about Standardization |  |  |
| S6.4 | [Standards: Inhospitable Terrain for Innovation?](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2014/Documents/S6.4presentation.pdf) | Lund University, Sweden | Standardization, innovation, competitiveness |  |  |  | Academia member |
| P1 | How to support a standard on a multi-level playing field of standardization: propositions, strategies and contributions | TU Berlin, Germany | Standardization, innovation, PHEV |  |  |  | Poster presentationAcademia member |
| P2 | Content Distribution in Information Centric Network: Economic Incentive Analysis in Game Theoretic Approach | Waseda University, Japan | Information centric networks, content delivery networks, scalability |  | Authors would like to contribute to SG13 (Q15) |  | Poster presentationAcademia member |
| P3 | Innovative RF Localization for Wireless Video Capsule Endoscopy | University of Zagreb, Croatia; Aalborg University, Denmark | Localization, positioning, wireless endoscopy |  |  | ITU-R | Poster presentationAcademia member |
| P4 | Economical efficiency assessment model of spectrum conversion for new mobile wireless technologies | GEYSER-TELECOM, Ltd, Russia; MTUCI, Russia | Economies of conversion |  |  | ITU-R | Poster presentation |
| P5 | A Mutual Key Agreement Protocol To Mitigate Replaying Attack In eXpressive Internet Architecture (XIA) | Mercu Buana University, Indonesia; Fraunhofer SIT, Germany | Future Internet, security, comparison of FI architectures with respect to security |  | SG13, SG17 |  | Poster presentation |
| P6 | A cloud platform for QoE evaluation: QoXcloud | University of the Basque Country, Spain  | QoS, QoE, cloud platform, OTT | ITU-T G.1000, G.1030, Y.1540, Y.1541, TMF GB935 | Contributions to SG11 (C0024 and C0099), SG12 |  | Poster presentationAcademia member |
| P7 | Standardizing the Internet of Things in an evolutionary way | Nanjing University of Posts and Telecommunications, P.R. China |  |  | SG11 |  | Academia member |
| P8 | Performance evaluation of a dual diversity reception base on OFDM RoFSO systems over correlated log-normal fading channel | Waseda University, Japan | FSO, channel fading |  | SG15 |  | Poster presentation |
| P9 | Assessment of New Information and Communication Technologies using activity-based costing and tensor analysis of networks | Federal State Unitary Enterprise Radio Research And Development Institute, Russia |  |  |  |  | Poster presentation |
| P10 | Sustainable Security Advantage in a Changing Environment: The Cybersecurity Capability Maturity Model (CM2) | University of Technology Jamaica, Jamaica |  |  | SG17 | ITU-D SG2 | Poster presentation |

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