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| **Keywords:** | Kaleidoscope; academic papers; data management; data analysis; data technologies; standards; standardization. |
| **Abstract:** | This document provides an overview of the ITU Kaleidoscope academic conference 2017 (K-2017) that was held in Nanjing, China, from 27-29 November 2017. The Annex to this document presents accepted papers, invited papers and keynote speeches selected by the K-2017 steering and technical programme committees and identifies links to related activities in ITU-T and other ITU sectors. This revised version reflects ITU-T SG20’s interest in several papers. |

**Action required**

TSAG, ITU-T study groups and focus groups are invited to review the papers relevant to their scope of work, and to take into consideration this input from the research community. Tailored TDs are also being submitted to the ITU-T study groups and focus groups. In addition, this report will be transmitted to TDAG and RAG.

# Highlights of the conference

The [ITU Kaleidoscope conference 2017](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/default.aspx) was kindly hosted by Nanjing University of Posts and Telecommunications ([NJUPT](http://www.njupt.edu.cn/en/)), China, which provided excellent logistics.

Nearly 300 delegates from 26 countries participated in the conference, and some 20 participants used the remote participation facilities.

NJUPT kindly offered a welcome reception and the coffee and lunch breaks of the three days of the conference to all participants.

The event was technically co-sponsored by the Institute of Electrical and Electronics Engineers (IEEE), IEEE Communication Society (IEEE ComSoc) and the International Conference on Standardization and Innovation in Information Technology (SIIT2017), and sponsored by Jiangsu Institute of Communications, New H3C Technologies, Nanjing Fiberhome Starrysky and Nanjing Ironhorse Information Technology.

K-2017 partnering organizations supported the promotion of the conference: the Chair of Communication and Distributed Systems at RWTH Aachen University, the European Academy for Standardization, Waseda University, the Institute of Electronics, Information and Communication Engineers of Japan, the Institute of Image Electronics Engineers of Japan, Royal Holloway University of London, UNESCO Chair in ICT for Development, the University of the Basque Country, Chongqing University, Chongqing University of Posts and Telecommunications, the Competition Law Center of the University of International Business and Economics, Hubei University, the Institute of Computing Technology of the Chinese Academy of Science, and Zhejiang University.

The **opening ceremony** included welcome remarks from [Yin Chen](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Yin-Chen.aspx) (Director General of the Department of Science and Technology, Ministry of Industry and Information Technology (MIIT), China) and [Chen Liu](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Liu-Chen.aspx) (Chairman of NJUPT, China, on behalf of [Zhen Yang](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Zhen-Yang.aspx)); an opening address ([video](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/PublishingImages/Secretary-General%20video%20speech/ITU%20SG%20VIDEO%20MESSAGE%20Kaleidoscope%202017_FINAL)) by the Secretary-General of the ITU, Houlin Zhao; an opening address by the Director of the TSB, [Chaesub Lee](https://www.itu.int/en/ITU-T/tsbdir/Pages/Chaesub-Lee/biography.aspx); and an information address by [Jian Song](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Jian-Song.aspx) (Tsinghua University, China and Editor in Chief, [ITU Journal: *ICT Discoveries*](https://www.itu.int/en/journal/Pages/default.aspx)).

After the opening addresses, [Ken Krechmer](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Ken-Krechmer.aspx) (SIIT2017 Coordinator) introduced a keynote speech on how standards will support a data-driven society [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Opening%20plenary/Ken%20Krechmer.pdf)].

Two additional **keynote speeches** on the role to be played by data in future wireless communication, and how China is looking at Artificial Intelligence to achieve smarter road transport, were included in the programme:

1. *Data-driven future wireless communication* [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Keynote%20speeches/1st%20Keynote%20speech_data%20driven%20future%20wireless%20communcations_BUPT_zhangjh_V2.pdf)]
Jianhua Zhang (Professor, Beijing University of Posts and Telecommunications, China)
2. *AI and Intelligent Vehicles Future Challenge (IVFC) in China: From Cognitive Intelligence to Parallel Intelligence* [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Keynote%20speeches/2nd%20Keynote%20speech_AI%20and%20Intelligent%20Vehicles%20Future%20Challenge%20%28IVFC%29%20in%20China_Fei-Yue%20Wang.pdf)]
[Fei-Yue Wang](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Fei-Yue-Wang.aspx) (Professor, The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Science, China)

In addition to the keynote speeches, the programme included one invited paper - “Legal challenges for data-driven society*”* [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S1.1.pdf)] - which addresses the changes that big data are bringing to society and the legal challenges that the data-driven society will be confronted with. It puts forward suggestions regarding the development and security of big data industry, protection of personal privacy through the establishment of commercial rules for big data and through international coordination mediated by international organizations. This invited paper was authored by [Liu Duo](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Liu-Duo.aspx)(President, China Academy of Information and Communication Technology (CAICT)) and presented on her behalf by [Xin Yongfei](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Xin-Youngfei.aspx) (Vice Director of the Policy and Economy Research Department of CAICT).

63 papers from 22 countries were submitted for review, 23 of which were accepted for publication and presentation (17 in the lecture sessions, 6 in the poster session) from 14 countries (almost all from academic circles).

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](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Wrap%20up/K-2017_Sessions%201-5_Wrap%20up.pdf).

The authors of the award winning papers shared the prize fund of CHF 6 000 which was kindly offered by the Host.

* 1st prize (CHF 3 000.-): *A holistic approach to exploring the divided standards landscape in e-health research*. [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S2.1.pdf)]
Authors: [Doyoung Eom](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Doyoung-Eom.aspx), Heejin Lee (Yonsei University, Rep. of Korea)
* 2nd prize (CHF 2 000.-): *Socio-economics and educational case study with cost-effective IoT campus by the use of wearable, tablet, cloud and open e-learning services*. [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S4.3.pdf)]
Authors [Toshiki Ueda](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Toshiki-Ueda.aspx), [Yoshikazu Ikeda](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Yoshikazu-Ikeda.aspx) (Otani University, Japan).
* 3rd prize (CHF 1 000.-): *Fostering smart city development in developing nations: A crime series data analytics approach*. [[Presentation](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S4.1.pdf)]
Authors: [Omowunmi E. Isafiade](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Omowunmi-Isafiade.aspx), Antoine Bigomokero Bagula (University of the Western Cape, South Africa).

The research results submitted are related to various ITU activities, including: network architecture design and data-driven networking; data retrieval, processing, analysis, and analytics; small data; video quality adaptation data in mobile and pervasive computing; trusted computing, network security and privacy; cloud computing techniques for data management; data standardization, policies and regulation; legal aspects of standards and standardization; digital identity; data ownership models; open data licensing; business models for data and open data; inclusiveness, affordability and access to data; blockchain network performance analysis; data as a service (DaaS); e-Services; green, energy-efficient models and sustainability issues for data; e-Health; data for smart sustainable cities; IoT; machine learning; virtual production intelligence; drones and drone ecosystem; open data for education, research and public good; ensemble learning; Sustainable Development Goals etc. As in previous editions of the conference, a number of papers addressed radio-related issues such as wireless sensor and actuator networks; cognitive radio network; optical wireless communication; spectrum management and sharing.

The **Annex** to this document presents accepted papers, invited papers and keynote speeches selected by the steering and technical programme committees of Kaleidoscope 2017 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 activities, if applicable. Table 2 also includes links to the respective presentations.

Full papers are reproduced in the [Conference Proceedings](https://www.itu.int/dms_pub/itu-t/opb/proc/T-PROC-KALEI-2017-PDF-E.pdf). All papers are available on the [IEEE Xplore digital library](http://ieeexplore.ieee.org/xpl/tocresult.jsp?reload=true&isnumber=8246833&filter%3DAND%28p_IS_Number%3A8246833%29%26pageNumber%3D2&pageNumber=1). The best papers will also be evaluated for potential publication in IEEE Communications Standards Magazine and other international journals. Please contact kaleidoscope@itu.int for any queries.

The 10th edition of the ITU Kaleidoscope academic conferences will be hosted by the Universidad Tecnológica Nacional, Santa Fé de la Vera Cruz, Argentina, from 26-28 November 2018. The theme will be *Machine Learning for a 5G future*. Kaleidoscope 2018 will assist ITU standardization experts in capitalizing on machine learning in their preparations for the 5G era and beyond. Authors of outstanding papers will be invited to contribute to the work of ITU-T Focus Group on Machine Learning for Future Networks including 5G. Further information will be made available soon [here](https://www.itu.int/en/ITU-T/academia/kaleidoscope/Pages/default.aspx).

# AnnexEvaluation of Kaleidoscope 2017 papers with respect to relevance in ITU activities

## Table 1: Titles of ITU Kaleidoscope 2017 papers and keynotes

| # | Title |
| --- | --- |
| K0 | Standards for a data-driven society |
| K1 | Data-driven future wireless communication |
| K2 | AI and Intelligent Vehicles Future Challenge (IVFC) in China: From Cognitive Intelligence to Parallel Intelligence |
| S1.1 | Legal challenges for data-driven society |
| S1.2 | Open data & digital identity: Lessons for Aadhaar |
| S1.3 | Open data development of countries: Global status and trends |
| S2.1 | A holistic approach to exploring the divided standards landscape in e-health research |
| S2.2 | Intellectual property licensing tensions in incorporating open source into formal standard setting context - The case of Apache V.2 in ETSI as a start |
| S2.3 | Governance within standards development organizations: Who owns the game? |
| S2.4 | The standards revolution: Who will first put this new kid on the blockchain? |
| S3.1 | Capability maturity models towards improved quality of the Sustainable Development Goals indicators data |
| S3.2 | Advanced data enrichment and data analysis in manufacturing industry by an example of laser drilling process |
| S3.3 | Small data and sustainable development - individuals at the center of data-driven societies |
| S4.1 | Fostering smart city development in developing nations: A crime series data analytics approach |
| S4.2 | Toward the data-driven "smart" and "green" hospital-care |
| S4.3 | Socio-economics and educational case study with cost-effective IoT campus by the use of wearable, tablet, cloud and open e-learning services |
| S4.4 | Drone readiness index |
| S5.1 | Machine learning approach for quality adaptation of streaming video through 4G wireless network over HTTP |
| S5.2 | Modeling and analysis of spatial inter-symbol interference for MIMO image sensors based visible light communication |
| S5.3 | Secrecy energy efficiency optimization for artificial noise aided physical-layer security in cognitive radio networks |
| S5.4 | Data centric trust evaluation and prediction framework for IoT |
| P1 | Contract theory based caching and pricing strategy for content centric networks |
| P2 | The IEEE 1906.1 standard: Nanocommunications as a new source of data |
| P3 | TASIS: Trend Analysis System for International Standards |
| P4 | Exploiting multi-radio cooperation in heterogeneous wireless networks for absolute security against eavesdropping |
| P5 | The immutability concept of blockchains and benefits of early standardization |
| P6 | Standardization in emerging technologies: The case of additive manufacturing |

## Table 2: Mapping of ITU Kaleidoscope 2017 papers and ITU activities

| # | Title | Author & affiliation | Keywords | Standards relevance | Related ITU-T study groups/ activities | Other ITU sectors | Comments |
| --- | --- | --- | --- | --- | --- | --- | --- |
| K0 | [Standards for a data-driven society](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Opening%20plenary/Ken%20Krechmer.pdf) | **Ken Krechmer (University of Colorado, USA)** |  | Yes | TSAGITU-T SG20  |  | Keynote address |
| K1 | [Data-driven future wireless communication](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Keynote%20speeches/1st%20Keynote%20speech_data%20driven%20future%20wireless%20communcations_BUPT_zhangjh_V2.pdf) | **Jianhua Zhang** (Professor, Beijing University of Posts and Telecommunications, China) |  |  | ITU-T SG13 | ITU-R  | Keynote speechAcademia member |
| K2 | [AI and Intelligent Vehicles Future Challenge (IVFC) in China: From Cognitive Intelligence to Parallel Intelligence](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/Keynote%20speeches/2nd%20Keynote%20speech_AI%20and%20Intelligent%20Vehicles%20Future%20Challenge%20%28IVFC%29%20in%20China_Fei-Yue%20Wang.pdf) | [**Fei-Yue Wang**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Fei-Yue-Wang.aspx) (Professor, The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Science, China) |  |  | ITU-T SG13FG-ML5GITU-T SG16ITU-T SG20  |  | Keynote speech |
| S1.1 | [Legal challenges for data-driven society](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S1.1.pdf) | [**Liu Duo**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Liu-Duo.aspx)(President, China Academy of Information and Communication Technology (CAICT) [presented by [Xin Yongfei](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Xin-Youngfei.aspx) (Vice Director of the Policy and Economy Research Department, CAICT)] | Big data, data-driven society, international organizations, legal challenges |  | ITU-T SG13ITU-T SG17ITU-T SG20FG-DPM  |  | Invited paper |
| S1.2 | [Open data & digital identity: Lessons for Aadhaar](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S1.2.pdf) | Vinod Kotwal (Ministry of Communications and IT, India); [**Smriti Parsheera**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Smriti-Parsheera.aspx) (National Institute of Public Finance and Policy, India); [**Amba Kak**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Amba-Kak.aspx) (Mozilla Foundation, India) | Aadhaar; digital identity; open data; privacy |  | ITU-T SG17ITU-T SG20  |  |  |
| S1.3 | [Open data development of countries: Global status and trends](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S1.3.pdf) | [**Esmeralda Florez Ramos**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Esmeralda-Florez-Ramos.aspx) (Technical University Berlin & Fraunhofer Institute for Open Communication Systems (FOKUS), Germany) | Open data; status; trends; Open Data Barometer; impact. |  | ITU-T SG13ITU-T SG20  | ITU-D (ICTs Development Index 2016 - IDI) | Paper nominated for an awardAcademia member |
| S2.1 | [A holistic approach to exploring the divided standards landscape in e-health research](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S2.1.pdf) | [**Doyoung Eom**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Doyoung-Eom.aspx), Heejin Lee (Yonsei University, Rep. of Korea) | e-Health; standards; standardization; systematic review | Yes  | ITU-T SG16 (Question 28)ITU-T SG20  |  | 1st best paper award |
| S2.2 | [Intellectual property licensing tensions in incorporating open source into formal standard setting context - The case of Apache V.2 in ETSI as a start](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S2.2.pdf) | [**Jingze Li**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Jingze-Li.aspx) (TILT, Tilburg University, The Netherlands) | open source software; ICT standardization; IP licenses; ETSI; 5G | Yes | TSB Director's Ad Hoc IPR Group |  |  |
| S2.3 | [Governance within standards development organizations: Who owns the game?](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S2.3.pdf) | [**Olia Kanevskaia**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Olia-Kanevskaia.aspx) (TILEC & Tilburg Law School, The Netherlands) | Standard-Setting Organizations; Governance in Standardization; Procedural Guarantees | Yes | TSAG |  |  |
| S2.4 | [The standards revolution: Who will first put this new kid on the blockchain?](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S2.4.pdf) | Maria-Lluïsa Marsal-Llacuna, Miquel Oliver-Riera (Universitat Pompeu Fabra, Spain) | Blockchain; Distributed Ledgers; Standards Development; adoption mechanisms; accountability systems | Yes | FG-DLTFG-DPMITU-T SG17ITU-T SG20  |  | Paper nominated for an award |
| S3.1 | [Capability maturity models towards improved quality of the Sustainable Development Goals indicators data](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S3.1.pdf) | [**Ignacio Marcovecchio**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Ignacio-Marcovecchio.aspx) (United Nations University, Macao SAR, China); [Mamello Thinyane](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Mamello-Thinyane.aspx) (United Nations University, Macao SAR, China); Elsa Estevez, Pablo Fillottrani (National University of the South, Argentina) | Sustainable Development Goals; Capability Maturity Model; Data Revolution; Institutional Capacity |  | ITU-T SG20 | BDT/WSIS |  |
| S3.2 | [Advanced data enrichment and data analysis in manufacturing industry by an example of laser drilling process](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S3.2.pdf) | [**You Wang**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/You-Wang.aspx), Hasan Tercan, Thomas Thiele, Tobias Meisen, Sabina Jeschke (RWTH Aachen University, Germany); Wolfgang Schulz (RWTH Aachen University & Fraunhofer Institute for Laser Technology, Germany) | Sparse data problems; Data analytics; Machine learning; Virtual production intelligence; Model reduction |  | FG-ML5GITU-T SG20  |  | Paper nominated for an Award |
| S3.3 | [Small data and sustainable development - individuals at the center of data-driven societies](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S3.3.pdf) | [**Mamello Thinyane**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Mamello-Thinyane.aspx) (United Nations University, Macao SAR, China) | Small Data; Sustainable Development; Data Driven Development |  | ITU-T SG5ITU-T SG13ITU-T SG20 | BDT |  |
| S4.1 | [Fostering smart city development in developing nations: A crime series data analytics approach](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S4.1.pdf) | [**Omowunmi E. Isafiade**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Omowunmi-Isafiade.aspx), Antoine Bigomokero Bagula (University of the Western Cape, South Africa) | Public Safety; Low-resource settings; Crime Series |  | ITU-T SG20 |  | 3rd best paper award |
| S4.2 | [Toward the data-driven "smart" and "green" hospital-care](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S4.2.pdf) | [**Vasileios (Basile) P. Spyropoulos**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Vasileios-Spyropoulos.aspx) (Technological Education Institute of Athens & National and Kapodistrian University of Athens, Greece); Avrilios Alexandropoulos, Nada Boci, Eleni Chatziapostolou, Eleftheria Panagiota Frappa, Eleni Georgiadou, Iosif Louts, Ioannis Pantelakis, Maria Poultsaki, Marianna Kanella Xenaki (National and Kapodistrian University of Athens, Greece) | ICTs; Mobile IP-networks; Service-oriented architecture; Ubiquitous-computing; Femtocells; Wireless mesh-networks; Standardization and regulation; Green-computing; Green-smart-Hospital |  | ITU-T SG16ITU-T SG5ITU-T SG20 | ITU-R | Paper nominated for an award |
| S4.3 | [Socio-economics and educational case study with cost-effective IoT campus by the use of wearable, tablet, cloud and open e-learning services](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S4.3.pdf) | [**Toshiki Ueda**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Toshiki-Ueda.aspx), Yoshikazu Ikeda (Otani University, Japan) | Education; Innovation; Digital Campus; Tablet PC; Wearable Device; IoT; Cloud Service; Learning Management System; Best Practices; Methodology Standard | Yes | ITU-T SG16ITU-T SG20ITU-T SG13 |  | 2nd best paper award |
| S4.4 | [Drone readiness index](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S4.4.pdf) | Samuel Nzaramba, [**Rene Kabagamba**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Rene-Kabagamba.aspx) (Carnegie Mellon University Africa, Kigali, Rwanda); Aminata Garba (Carnegie Mellon University Africa, Kigali, Rwanda & Carnegie Mellon University, Pittsburgh, USA); Kate Chandler (Georgetown University, USA) | Communications and control technologies; drones; drone ecosystem; readiness index |  | ITU-T SG13ITU-T SG20  |  |  |
| S5.1 | [Machine learning approach for quality adaptation of streaming video through 4G wireless network over HTTP](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S5.1.pdf) | [**Dhananjay Kumar**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Dhananjay-Kumar.aspx),Aswini Viswanathan (Anna University, MIT Campus, India); [**Arun Raj Lakshminarayanan**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Arun-Raj-L.aspx) (B.S.A. Crescent University, Chennai, India); Hiran Kumar Singh (Vel Tech University, Chennai, India) | HTTP Adaptive Streaming; SARSA; Q-Learning; Video Quality Adaptation | YesG.1079 | FG-ML5G ITU-T SG12  | ITU-R SG6 |  |
| S5.2 | [Modeling and analysis of spatial inter-symbol interference for MIMO image sensors based visible light communication](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S5.2.pdf) | [**Rongzhao Wu**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Rongzhao-Wu.aspx), Yarong Guo, Peng Liu (North China Electric Power University, China); Jiang Liu (Waseda University, Japan) | Optical wireless communication; Image sensor communication; MIMO; spatial inter-symbol interference; optimum detection threshold method |  | ITU-T SG15 |  | Waseda University, academia member |
| S5.3 | [Secrecy energy efficiency optimization for artificial noise aided physical-layer security in cognitive radio networks](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S5.3.pdf) | [**Yuhan Jiang**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Yuhan-Jiang.aspx), Jian Ouyang, [**Yulong Zou**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Yulong-Zou.aspx) (Nanjing University of Posts and Telecommunications, China) | Power allocation; artificial noise; energy efficiency; secure communication; cognitive radio network |  |  | ITU-R | academia member |
| S5.4 | [Data centric trust evaluation and prediction framework for IoT](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/presentations/S5.4.pdf) | [**Upul Jayasinghe**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Upul-Jayasinghe.aspx), Abayomi Otebolaku, Gyu Myoung Lee (Liverpool John Moores University, United Kingdom); Tai-Won Um (Chosun University, Rep. of Korea) | Data Trust; Knowledge; Reputation; Experience; Collaborative Filtering; Ensemble learning |  | ITU-T SG20ITU-T SG13FG-DPM |  |  |
| P1 | [Contract theory based caching and pricing strategy for content centric networks](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/poster/P.1.pdf) | Chen Li, [**Jintian Li**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Jintian-Li.aspx), Zhou Su, Qichao Xu (Shanghai University, China) | Content Centric Networks; Edge Cache; Contract Theory |  | ITU-T SG3 |  | Poster paper |
| P2 | [The IEEE 1906.1 standard: Nanocommunications as a new source of data](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/poster/P.2.pdf) | [**Sebastian Canovas-Carrasco**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Sebastian-Canovas-Carrasco.aspx), Antonio-Javier Garcia-Sanchez, [**Joan Garcia-Haro**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Joan-Garcia-Haro.aspx) (Technical University of Cartagena, Spain) | Nanoscale communication networks; nanodevices; EM nanocommunications; terahertz band; IEEE standards | Yes | ITU-T SG16ITU-T SG20 |  | Poster paper |
| P3 | [TASIS: Trend Analysis System for International Standards](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/poster/P.3.pdf) | [**Myeongha Hwang**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Myeongha-Hwang.aspx) (University of Science and Technology, Rep. of Korea); Minkyo In, Suwook Ha, Kangchan Lee (Electronics and Telecommunications Research Institute, Rep. of Korea) | Text Mining; Latent Dirichlet Allocation; International Standards; Topic Modeling; Trend Analysis |  | ITU-T SG16 |  | Poster paper |
| P4 | [Exploiting multi-radio cooperation in heterogeneous wireless networks for absolute security against eavesdropping](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/poster/P.4.pdf) | [**Ming Sun**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Ming-Sun.aspx), [**Yulong Zou**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Yulong-Zou.aspx), Mujun Qian, Jia Zhu, Quanquan Wang (Nanjing University of Posts and Telecommunications, China) | Heterogeneous wireless communication; multiradio cooperation; physical layer security; absolute security | Yes | ITU-T SG11 | ITU-R | Poster paperAcademia member |
| P5 | [The immutability concept of blockchains and benefits of early standardization](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/poster/P.5.pdf) | [**Frank Hofmann**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Frank-Hofmann.aspx)**,** Simone Wurster, Moritz Böhmecke-Schwafert (Technical University Berlin, Germany), Eyal Ron (Cryptom Technologies, Germany) | Blockchain; standard; immutability; peer economy |  | FG-DLTFG-DPM ITU-T ITU-T SG20  |  | Poster paperAcademia member |
| P6 | [Standardization in emerging technologies: The case of additive manufacturing](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Documents/poster/P.6.pdf) | [**Claudia Koch**](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2017/Pages/Claudia-Koch.aspx) (BAM Federal Institute for Materials Research and Testing & Technical University Berlin, Germany) | Additive Manufacturing; emerging technologies; technological innovation; standards; standardization; 3D-Printing | Yes | ITU-T SG20 |  | Poster paperAcademia member |

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