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| Telecommunication Standardization Bureau | | | |
| Overview of the ITU Kaleidoscope academic conference 2020 (K-2020) | | | |
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| **Summary:**  This document provides an overview of the ITU Kaleidoscope academic conference 2020 (K-2020) that was held online from 7-11 December 2020. In a separate file, Annex 2 presents two keynote summaries, two keynote papers, one invited paper and accepted papers selected for presentation and publication and identifies links to related activities in ITU-T and other ITU sectors.  **Action required:**  TDAG is invited to review the papers relevant to its scope of work, and to take into consideration this input from the research community. This report was presented at TSAG, 11-18 January 2021 [TSAG [TD968](https://www.itu.int/md/T17-TSAG-210111-TD-GEN-0968/en)], and tailored TDs are also being submitted to the ITU-T study groups and focus groups. In addition, this report was transmitted to the RAG.  **References:**  N/A | | | |

Highlights of the conference

The winning papers of ITU Kaleidoscope conference 2020 (K-2020) are:

* **FIRST best paper**: "[Automation of computational resource control of cyber-physical systems with machine learning](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Documents/Presentations/S2.2_Automation%20of%20computational%20resource%20control.pdf)" by [Ved P. Kafle](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Ved-P-Kafle.aspx) and Abu Hena Al Muktadir, National Institute of Information and Communications Technology (NICT), Japan.
* **SECOND best paper**: "[AI-based W-band suspicious object detection system for moving persons using GAN: Solutions, performance evaluation and standardization activities](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Documents/Presentations/S7.1_AI-based%20W-band%20suspicious%20object%20detection.pdf)" by Yutaka Katsuyama, [Keping Yu](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Keping-Yu.aspx), San Hlaing Myint, Toshio Sato, Zheng Wen and Xin Qi, Waseda University, Japan.
* **THIRD (ex aequo) best paper**: "[Digital transformation via 5G: Deployment plans](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Documents/Presentations/S3.1_Digital%20transformation%20via%205G.pdf)" by Abolfazl Zakeri, [Narges Gholipoor](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Narges-Gholipoor.aspx), Mohsen Tajallifar and Sina Ebrahimi, Tarbiat Modares University, Iran; Mohammad Reza Javan, Shahrood University of Technology, Iran; Nader Mokari and Ahmad R. Sharafat, Tarbiat Modares University, Iran.
* **THIRD (ex aequo) best paper**: "[Flexible multiplexing mechanism for coexistence of URLLC and eMBB services in 5G networks](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Documents/Presentations/S3.2_Flexible%20multiplexing%20mechanism%20for%20coexistence.pdf)" by [Kai Xiao](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Kai-Xiao.aspx) and Xing Liu, ZTE Corporation and State Key Laboratory of Mobile Network and Mobile Multimedia, China; Xianghui Han, Peng Hao, Junfeng Zhang, Dong Zhou and **[Xingguang Wei](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Xingguang-Wei.aspx),** ZTE Corporation, China.

Alongside the winners of the best paper awards, 22 entrants received **Young Author Recognition Certificates**.

Kaleidoscope 2020 also featured:

* one [Video Demonstration Track](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/demos.aspx) on Cybersecurity automation that was authored and presented by [Duncan Sparrell](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Duncan-Sparrell.aspx) (CISSP, CSSLP, CCSK, Senior Member IEEE; sFractal Consulting, USA);
* two **special panels**, entitled
  + "[The role of ICT for future pandemics](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/special-panel-pandemics.aspx)" (in collaboration with PAHO/WHO);
  + "**Meet the ITU**";
* two **special sessions**:
  + one dedicated to the K-2020 supporter, IEEE Technology and Engineering Management Society (TEMS), featuring a presentation given by [Gustavo Giannattasio](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Gustavo-Giannattasio.aspx) (IEEE TEMS Member of the Board 2020-2021, Uruguay) on Managing industry 4.0;
  + one on the new [ITU Journal on Future and Evolving Technologies](https://www.itu.int/en/journal/j-fet/Pages/default.aspx) **(ITU J-FET)** that was presentedby its Editor-in-Chief, **Prof.** [Ian F. Akyildiz](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Ian-Akyildiz.aspx);
* and a full set of **online networking opportunities**. Making use of the in-built functions in this year’s online conferencing tool, MyEvents, as well as including other innovative external tools, [virtual coffee breaks](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Documents/Networking%202020/ITU%20K2020-Virtual%20coffee%20break%20schedule.pdf?csf=1&e=s3DJQo) and [Mystery Coffee](https://www.mysterycoffee.com/?gclid=EAIaIQobChMI-5a-0bnf7QIVGud3Ch0tYQ6UEAAYASAAEgKUmvD_BwE) provided a platform for participants to develop meaningful connections and engage in discussions before, during and after Kaleidoscope 2020.

Programme, presentations, abstracts, and biographies are available [online](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/programme.aspx).

Full papers are reproduced in the [Conference Proceedings](https://www.itu.int/pub/T-PROC-KALEI-2020) and the IEEE *Xplore* Digital Library.

The best papers will be evaluated for potential publication in the IEEE Communications Standards Magazine and other international journals. Please contact [kaleidoscope@itu.int](mailto:kaleidoscope@itu.int) for any queries.

In a separate file, **Annex 2** presents two keynote summaries, two keynote papers, one invited paper and 20 accepted papers that have been selected by the Steering and Technical Programme Committees of Kaleidoscope 2020 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/Focus Groups and authors, e.g. to arrange for a remote presentation of the findings of the paper during a Study Group/Focus Group meeting.

The annex is structured as follows: **Table 1** gives an overview of all papers and keynote speeches. **Table 2** maps the papers and keynote speeches to ongoing ITU activities, if applicable. Table 2 also includes links to the respective presentations.

Nearly 150 delegates from 41 countries participated at the conference. The inhouse tool/platform, MyMeetings, was used and general information can be found on the event´s [webpage](http://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/default.aspx).

The event was technically co-sponsored by the Institute of Electrical and Electronics Engineers ([IEEE](http://www.ieee.org/index.html)) and the IEEE Communications Society ([IEEE ComSoc](http://www.comsoc.org/)) and supported by the IEEE Technology and Engineering Management Society (TEMS).

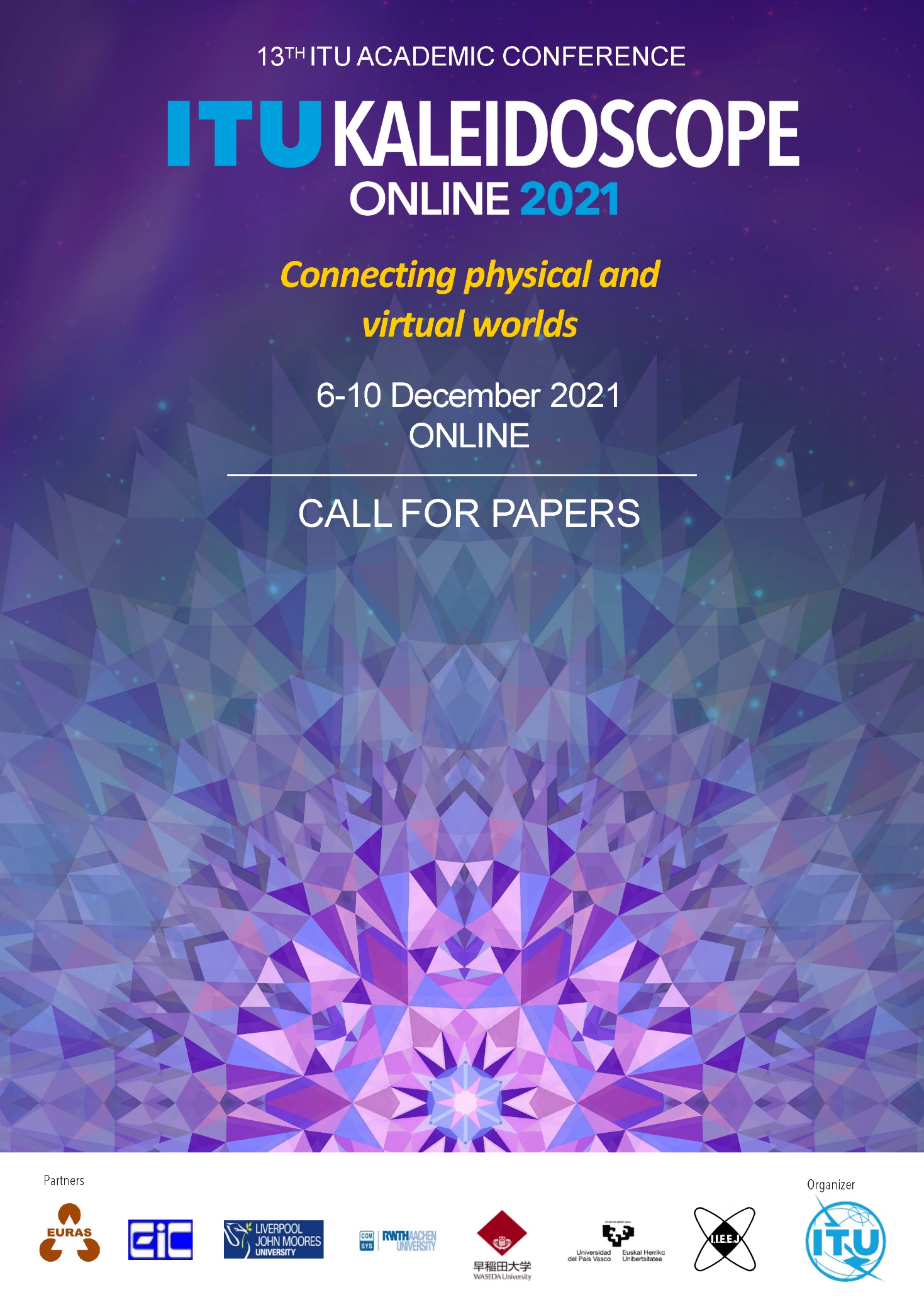
A 12-month, substantial preparatory process was required for this Kaleidoscope edition which involved the efforts and collaboration of

* dedicated Steering Committee members: [Andy Chen](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Andy-Chen.aspx) (Catronic Enterprise & REDDS Capital, Canada and IEEE TEMS), [Christoph Dosch](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Christoph-Dosch.aspx) (ITU-R Study Group 6 Vice-Chairman; IRT GmbH, Germany), [Eva Ibarrola](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Eva-Ibarrola.aspx) (University of the Basque Country, Spain), [Kai Jakobs](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Kai-Jakobs.aspx)(RWTH Aachen University, Germany), [Gyu Myoung Lee](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Gyu-Myoung-Lee.aspx) (Liverpool John Moores University, United Kingdom), Mitsuji Matsumoto (Professor Emeritus Waseda University, Japan), [Roberto Minerva](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Roberto-Minerva.aspx), (Télécom SudParis, France) and [Mostafa Hashem Sherif](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2020/Pages/Mostafa-Hashem-Sherif.aspx) (Consultant, USA);
* Technical Programme Committee (TPC) of 68 members, chaired by Mostafa Hashem Sherif. All members are internationally recognized ICT experts from academia, research institutes and the private sector, ensuring transparency through the double-blind peer-review process;
* partnering organizations which supported the promotion of the conference: [Waseda University](https://www.waseda.jp/top/en), the [Institute of Image Electronics Engineers of Japan](http://www.iieej.org/eng/) (IIEEJ), the [Institute of Electronics, Information and Communication Engineers of Japan](http://www.ieice.org/eng/index.html) (IEICE) of Japan, the [Chair of Communication and Distributed Systems at RWTH Aachen University](http://www.rwth-aachen.de/), the [European Academy for Standardization](http://www.euras.org/web1/) (EURAS), the [University of the Basque Country](https://www.ehu.eus/en/web/guest/en-home), and [Liverpool John Moores University](https://www.ljmu.ac.uk/).

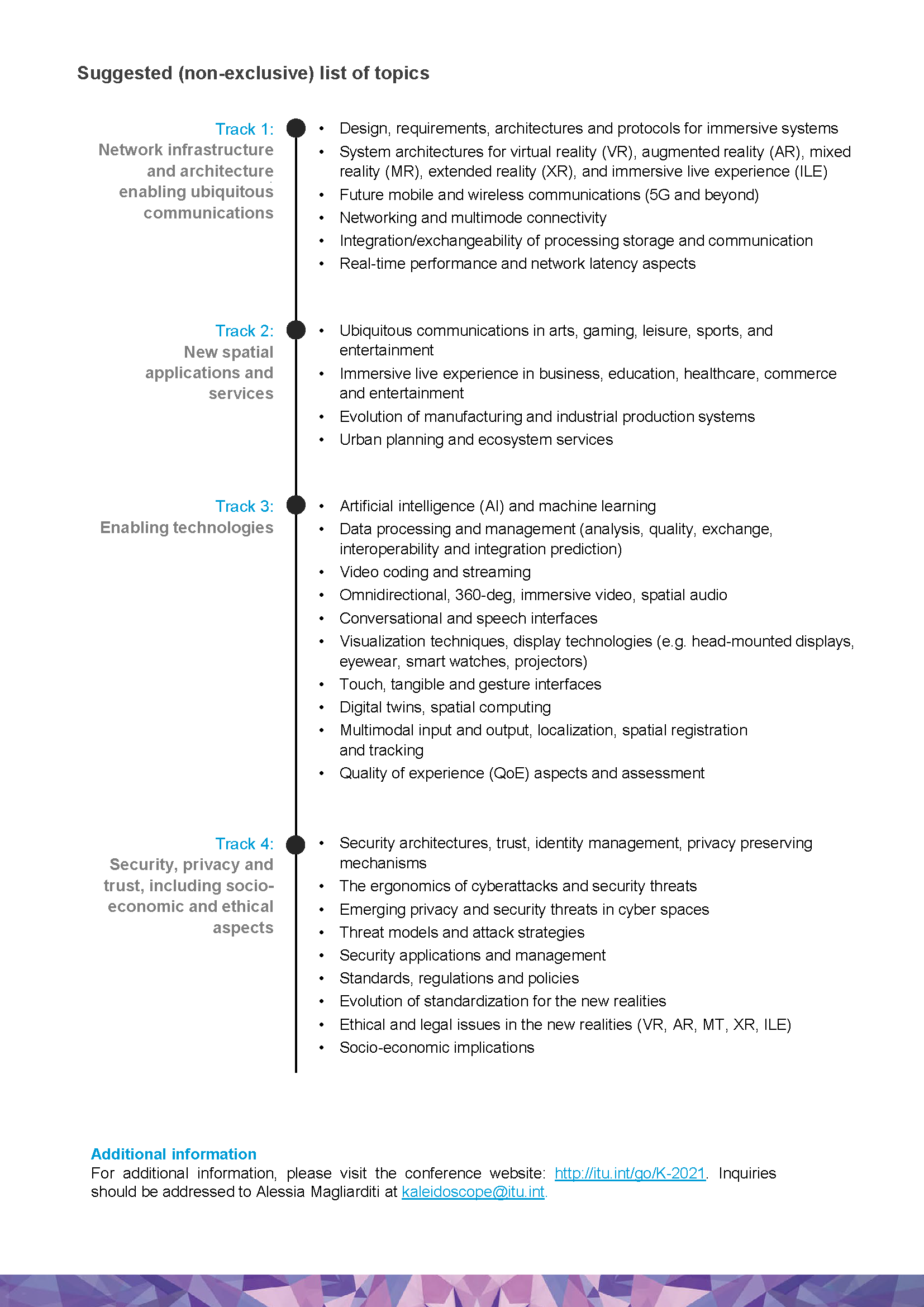
# Next edition

The **thirteenth edition** of the ITU Kaleidoscope academic conferences, “Connecting physical and virtual worlds” will be held, due to COVID-19, exceptionally online from 6-10 December 2021. Further information is available in the Annex and on our conference [website](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2021/Pages/default.aspx).

ANNEX 1









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