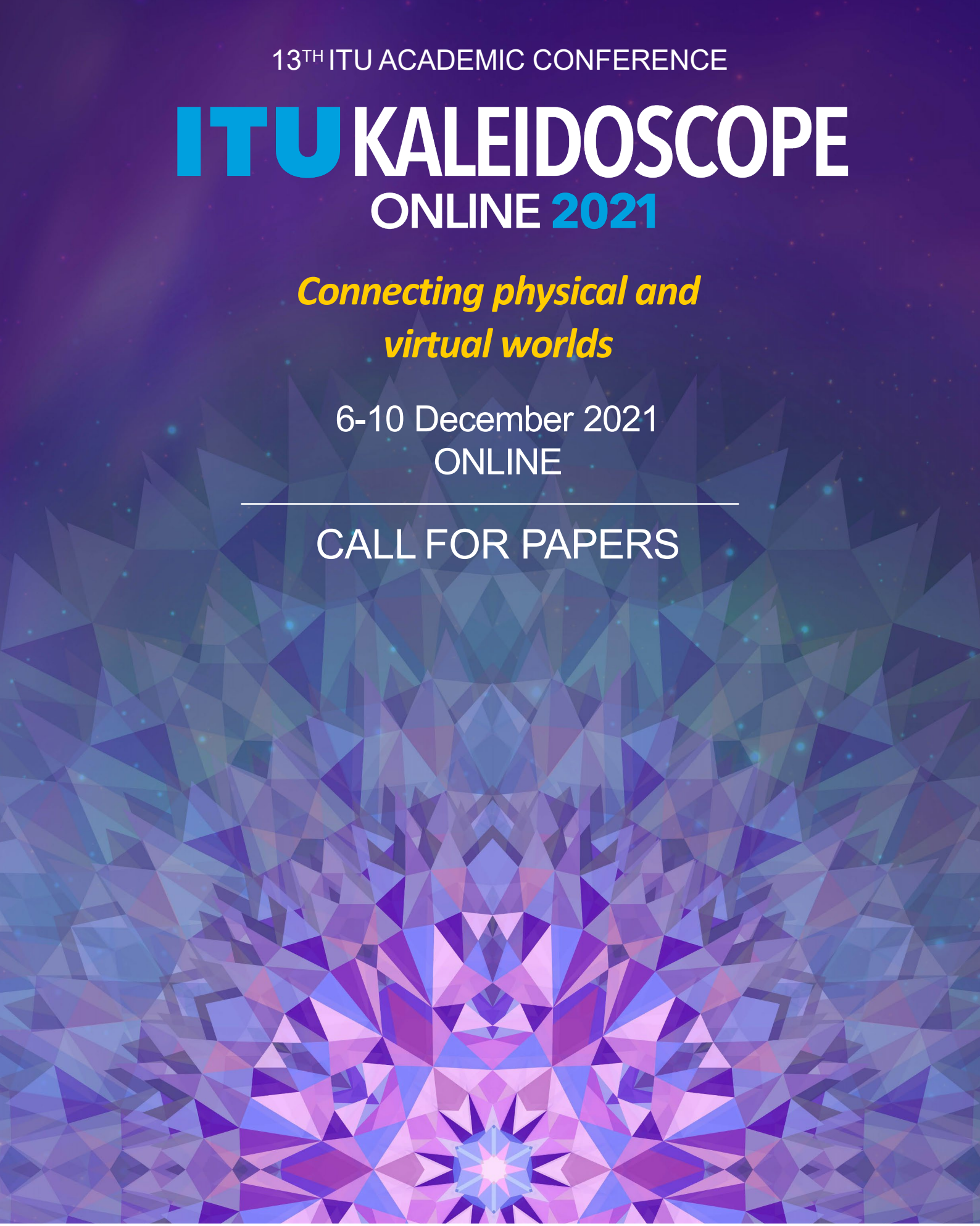
13TH ITU ACADEMIC CONFERENCE

ITU KALEIDOSCOPE ONLINE 2021

Connecting physical and virtual worlds

6-10 December 2021
ONLINE

CALL FOR PAPERS



Technically co-sponsored by

IEEE

IEEE ComSoc
IEEE Communications Society

Organized by

ITU

ITU KALEIDOSCOPE ONLINE 2021

Kaleidoscope 2021 "Connecting physical and virtual worlds" *is the thirteenth in a series of peer-reviewed academic conferences organized by ITU to bring together a wide range of views from universities, industry and research institutions. The aim of the Kaleidoscope conferences is to identify emerging developments in information and communication technologies (ICTs) and, in particular, areas in need of international standards to aid the sustainable development of our interconnected world.*

Call for papers

Theme

The pace of digital transformation continues to erode the barriers between the physical and virtual worlds. Things, places and people are being mirrored in a parallel virtual world. At the same time, our communications experiences are moving beyond communications through screens to become immersive experiences, creating a continuum of human-to-human, human-to-things and things-to-things interactions.

The COVID-19 pandemic, with its requirements of social distancing, has accelerated this shift towards immersive experiences to optimize interactions in business and education as well as fields such as healthcare, engineering, product development, automotive, logistics, retail and entertainment.

The ICT industry has two key roles to play in supporting very stringent communications requirements and creating a "networked" infrastructure for supporting ubiquitous services that can be on devices, at the edge of the network, in the core or in large datacentres. Emerging ICTs are blurring the borders between computing, storing and communications capabilities, creating gigantic distributed programmable environments. How can technical standards policies and regulations pave the way to a hyperconnected future? Would such a future be desirable in the first place? How can we ensure that this shift is human centred? Is the society ready for this change?

Objective

Kaleidoscope 2021 calls for original academic papers sharing insight into ongoing projects and research relevant to the development of persistent virtual realities and customized computer-generated environments, as well as new possibilities and associated challenges appearing on the horizon. Particularly, this conference encourages submissions on technical standards for networks and services required to enable this transformation, including considerations on social and ethical implications.

Audience

Kaleidoscope 2021 targets specialists in the fields of ICT and socio-economic development, including researchers, academics, students, engineers, policymakers, regulators and innovators.

Date and venue

Due to COVID-19, Kaleidoscope 2021 will be held exceptionally online from 6-10 December 2021.

Suggested (non-exclusive) list of topics

Track 1: Network infrastructure and architecture enabling ubiquitous communications

- Design, requirements, architectures and protocols for immersive systems
- System architectures for virtual reality (VR), augmented reality (AR), mixed reality (MR), extended reality (XR), and immersive live experience (ILE)
- Future mobile and wireless communications (5G and beyond)
- Networking and multimode connectivity
- Integration/exchangeability of processing storage and communication
- Real-time performance and network latency aspects

Track 2: New spatial applications and services

- Ubiquitous communications in arts, gaming, leisure, sports, and entertainment
- Immersive live experience in business, education, healthcare, commerce and entertainment
- Evolution of manufacturing and industrial production systems
- Urban planning and ecosystem services

Track 3: Enabling technologies

- Artificial intelligence (AI) and machine learning
- Data processing and management (analysis, quality, exchange, interoperability and integration prediction)
- Video coding and streaming
- Omnidirectional, 360-deg, immersive video, spatial audio
- Conversational and speech interfaces
- Visualization techniques, display technologies (e.g. head-mounted displays, eyewear, smart watches, projectors)
- Touch, tangible and gesture interfaces
- Digital twins, spatial computing
- Multimodal input and output, localization, spatial registration and tracking
- Quality of experience (QoE) aspects and assessment

Track 4: Security, privacy and trust, including socio-economic and ethical aspects

- Security architectures, trust, identity management, privacy preserving mechanisms
- The ergonomics of cyberattacks and security threats
- Emerging privacy and security threats in cyber spaces
- Threat models and attack strategies
- Security applications and management
- Standards, regulations and policies
- Evolution of standardization for the new realities
- Ethical and legal issues in the new realities (VR, AR, MT, XR, ILE)
- Socio-economic implications

Additional information

For additional information, please visit the conference website: http://itu.int/go/K-2021. Inquiries should be addressed to Alessia Magliarditi at kaleidoscope@itu.int.

Submission of papers

Prospective authors from ITU Member States are invited to submit full, original papers. The submission should be within eight pages, including a summary and references, using the template available on the conference's website. All papers will go through a double-blind peer-review process. Submission must be made electronically; see http://itu.int/go/K-2021 for more details on online submission (EDAS). Paper proposals will be evaluated according to content, originality, clarity, relevance to the conference's theme and, in particular, **significance to future standards**.

Deadlines extended

- Submission of full paper proposals: **25 July 2021**
- Notification of paper acceptance: **8 October 2021**
- Submission of camera-ready accepted papers: **22 October 2021**

Submit your paper at https://edas.info/N28293

Awards

A prize fund totaling CHF 6 000.- will be shared among the authors of the three best papers, as judged by the Steering and Technical Programme Committees. In addition, young authors of up to 30 years of age presenting accepted papers will receive Young Author Recognition certificates.

Keywords

Information and communication technologies (ICTs) standards, digital transformation, 5G and beyond networks, ultra-low latency, resilience, reliability, virtual reality (VR), augmented reality (AR), mixed reality (MR), extended reality (XR), immersive live experience (ILE), spatial computing, smart systems, cyber physical systems (CPS), digital twins, virtual command centers, data privacy, information security, surveillance, panopticon, cyber threats and attacks, trustworthiness

Publication and presentation

Accepted and presented papers will be published in the Conference Proceedings and will be submitted for inclusion in the IEEE *Xplore* Digital Library. The best papers will also be evaluated for potential publication in the IEEE Communications Standards Magazine. In addition, extended versions of selected papers will be considered for publication in the International Journal of Technology Marketing, the International Journal of Standardization Research, or the Journal of ICT Standardization.

Steering Committee

- Christoph Dosch, ITU-R Study Group 6 Vice-Chairman; ARD, Germany
- Eva Ibarrola, University of the Basque Country, Spain
- Kai Jakobs, RWTH Aachen University, Germany
- Gyu Myoung Lee, Liverpool John Moores University, United Kingdom
- Tiziana Margaria, University of Limerick, Ireland
- Mitsuji Matsumoto, Waseda University Emeritus Professor, Japan
- Roberto Minerva, Télécom SudParis, France
- Mostafa Hashem Sherif, Consultant, United States

Technical Programme Committee

Chairman: Mostafa Hashem Sherif, Consultant, United States

The Technical Programme Committee is composed of international ICT experts. Details are available at: http://itu.int/en/ITUT/academia/kaleidoscope/2021/Pages/progcom.aspx.

In partnership with

Organized by