

**ITU Webinars**

# Quantum information technology (QIT)

*Episode #5: Joint symposium  
on quantum photonic  
integrated circuits*

2 November 2021  
15:00 - 18:00 CET

<http://itu.int/go/QIT-06>



**Host: Richard Pitwon**

Co Organized by



# Programme

## Keynote (15:00 – 15:40 CET)

**Taofiq Paraiso** - Team Leader, Toshiba Europe, UK

## Session 1: Photonic Integrated Circuits (15:40 – 17:00 CET)

- **Mike Wale** – Professor Integrated Photonics, UCL
- **Yi Qian** – Principal Researcher, CICT, China
- **Anke Lohman** – Founder, Anchored In
- **Han-Sen Zhong** – University of Science and Technology of China

## Session 2: Packaging (17:00 – 18:00 CET)

- **Bernard Lee** – Director of Technology and Innovation, Senko, Japan
- **Jelmer Renema** – CTO, QUIX, Netherlands
- **Moritz Kleinert** – Project Manager Quantum Technologies, Fraunhofer HHI, Germany

# Moderators



**Richard Pitwon**  
Symposium Chair

Resolute Photonics



**Ning Zhang**  
Session 1 moderator

CSA Catapult



**Una Marvet**  
Session 2 moderator

Alter Technology

# International standards development organisations



## International Telecommunication Union (ITU)

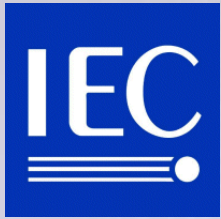
The International Telecommunication Union, originally the International Telegraph Union, is a specialized agency of the United Nations that is responsible for issues that concern information and communication technologies. It is the oldest global international organization. In **1865** the International Telegraph Union, the predecessor to the modern ITU, was founded as the first international standards organization.

## ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N)

The ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N) was established in September 2019 to provide a collaborative platform for pre-standardization aspects of QIT for networks.

**The FG-QIT4N has come to the end of its term and will be holding its last meeting on 15<sup>th</sup> November 2021**

# International standards development organisations



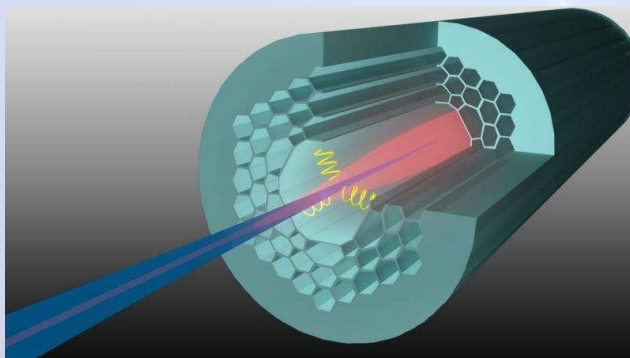
## International Electro-technical Commission (IEC)

The International Electrotechnical Commission is an international standards organization that prepares and publishes international standards for all electrical, electronic and related technologies – collectively known as "electrotechnology". The IEC was founded in **1906**.

## Technical Committee 86 – Fibre Optics

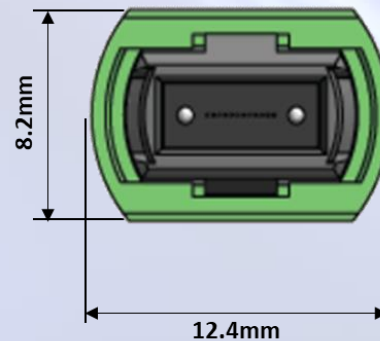
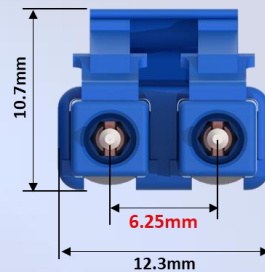
### SC86A

Fibres and cables



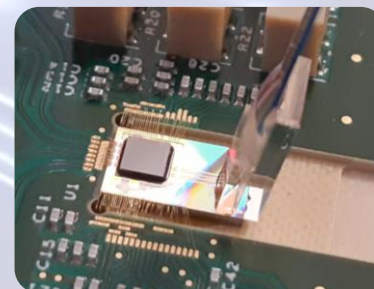
### SC86B

Fibre optic interconnecting devices and passive components



### SC86C

Fibre optic systems and active devices



# International standards development organisations



## **Institute of Electrical and Electronics Engineers (IEEE)**

The IEEE is a professional association for electronic engineering and electrical engineering formed in 1963 from the amalgamation of the American Institute of Electrical Engineers and the Institute of Radio Engineers.

IEEE has 400,000 members in more than 160 countries, and its highly cited publications, conferences, technology standards, and professional and educational activities.



UK and Ireland Chapter for the IEEE Photonics Society



**UK and Ireland Quantum Group** formed in 2021 to leverage UK's current world-leading position in quantum technologies

# Joint symposia on quantum standards

During 2021, a series of symposia were organised, which were jointly hosted by the major international standards bodies.

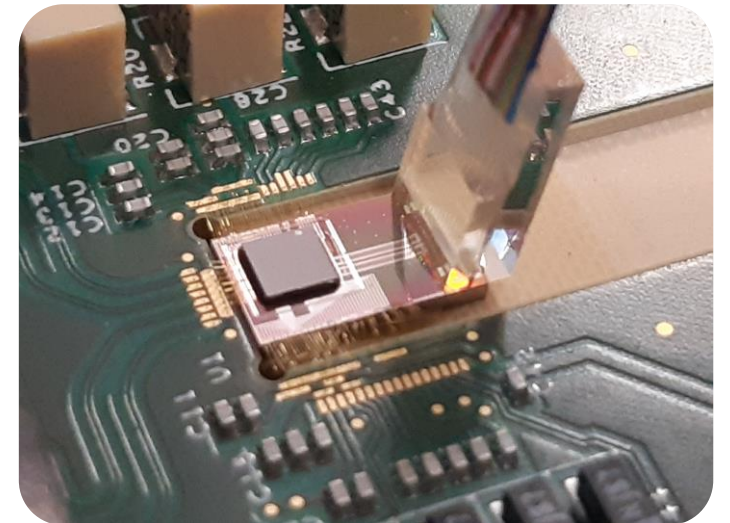
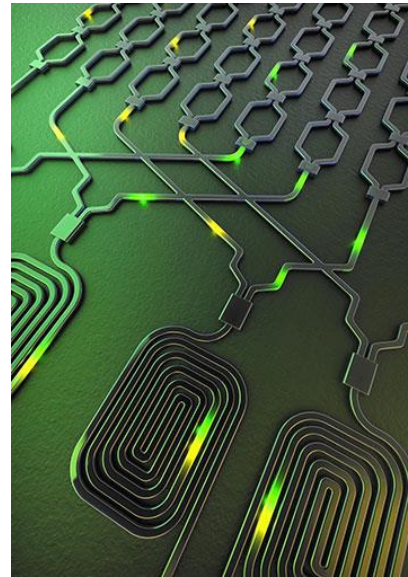
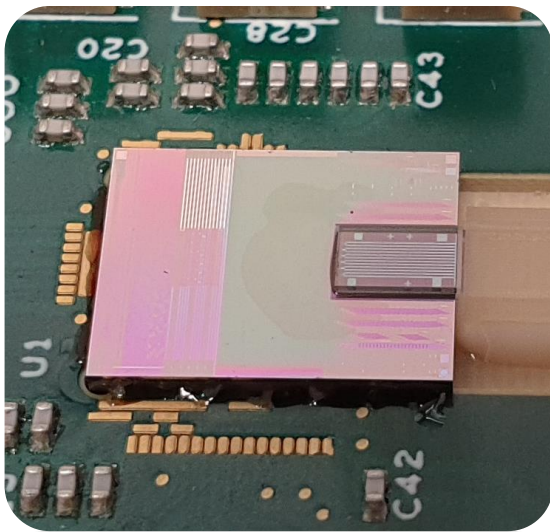


- **ITU/IEC/IEEE Joint Symposium on Standards for Quantum Technologies - 23<sup>rd</sup> March 2021**
- **ITU/IEC/IEEE Joint Symposium on Quantum Transport - 28<sup>th</sup> April 2021**
- **ITU/IEC/IEEE/ETSI Joint Symposium on Harmonisation of Terminology in Standards for Quantum Technology - 23<sup>rd</sup> June 2021**

SDO experts were brought together to discuss where standardisation would be most useful for quantum technologies.

# Quantum Photonic Integrated Circuits (QPICs)

QPICs are a key technology enabler for quantum computing, quantum secure communications and quantum sensing.





# This symposium is for everyone

## Chat window

If you want, please use this to introduce yourself:

- Name
- Affiliation
- Reason for interest in symposium

## Q&A box

All questions for speakers should be typed into this box, not the Chat window. Speakers will then try and answer them at their own leisure.



Richard Pitwon

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Enjoy!

# Moving hyperscale into the quantum realm

Superposition  $\updownarrow$



## Quantum Computers

High performance computers increasingly complemented with **Quantum Computer**



## Advanced computing

Artificial Intelligence  
Neural networks (neuromorphic)  
World-scale simulation



Future hyperscale data centres and exascale computers may increasingly incorporate quantum computer and communication nodes to complement their capabilities including for example the provision of “**Quantum As A Service**”.

These quantum nodes will be interconnected by special quantum networks

## Quantum Communication

### Quantum Key Distribution

uses the principles of quantum superposition and entanglement to determine if data has been transferred securely



## Security

**Unhackable** databases and smart contracting using **Blockchain** servers.  
Required for Medical, Financial, Cryptocurrencies

