

Side Event at the 28th Annual Session of the Commission on Science and Technology for Development

Title: Quantum Technology for the Development of Humanity

Time: 09:00- 09:55 Tuesday, 8 April 2025

Venue: Palais des Nations, Geneva, Switzerland

Organized by Diplomatic Council, Germany

Concept Note

Background

The discovery of quantum physics dates back approximately 100 years. Innovations such as the transistor, which underpins all modern computer chips and consequently the digitalization of our world, as well as laser technology, are based on quantum physical effects. These advances constituted the so-called "first quantum revolution". Today, we stand on the brink of a "second quantum revolution", poised to bring about even greater transformative impacts than the first.

In light of this, the Diplomatic Council (DC) has launched the "DC Quantum Leap" initiative to raise awareness across society, business, and politics about the sweeping changes driven by quantum technology. Contrary to the widespread belief that this technology remains a distant prospect, quantum computing is set to make its mark in the near future, with early effects already becoming evident.

Topics for discussion

- ***Opportunities and Risks of Quantum Technology for Human Development***

Quantum technology holds immense potential to transform multiple aspects of human life. While its opportunities are vast, it also presents significant risks that must be managed.

- **Utilization of Quantum Technology to Improve Quality of Life**

Below are key areas where quantum technology can drive progress:

1. Climate Research:

Quantum computing can enable earlier and more precise predictions of extreme weather events, allowing timely protective and emergency measures for affected populations.

2. Medical Technology:

Quantum sensing could revolutionize medical imaging, replacing traditional methods like computed tomography (CT) and magnetic resonance imaging (MRI). These advanced techniques offer higher accuracy and more detailed representations, improving diagnoses and patient outcomes.



3. Material Science:

Quantum simulations of molecules and materials can lead to groundbreaking discoveries of substances with superior properties. This could result in more efficient batteries, innovative medicines, and enhanced industrial materials.

4. Artificial Intelligence:

Quantum computers have the potential to accelerate AI development by providing exponentially greater computational power. The synergy between AI and quantum computing could enable new algorithms and innovations, leading to numerous applications aimed at improving human life.

○ **Preparing for a "Quantum Crisis"**

A critical risk posed by quantum technology is the eventual obsolescence of traditional encryption methods. Quantum computers could decrypt current encryption standards, exposing sensitive state and corporate data to cyber criminals. Such a scenario could lead to a catastrophic breach of information. Therefore, immediate action is required:

- States, international institutions, and businesses must prioritize transitioning to quantum-safe encryption.
- Critical infrastructure sectors – such as finance, logistics, and public utilities – should be secured as a matter of urgency.

● **Quantum Cloud Computing (Quantum-as-a-Service)**

To ensure global access to quantum technology, quantum computing resources can be offered through cloud-based solutions. This approach would allow even less developed countries to benefit from quantum advancements without requiring their own quantum computing infrastructure. Additionally, providing quantum-safe encryption methods to these countries will be essential for maintaining secure communication and data protection.

Objective

The event aims to prepare governmental, societal, and economic stakeholders for the immense opportunities and challenges posed by quantum technology. It will highlight the various fields likely to be transformed by this new technology and outline the expected nature of these changes. In doing so, it will also lay the groundwork for potential discussions within the UN and its member states on necessary and meaningful governance and monitoring programs.

Format

The event will feature three speakers who will comprehensively cover the topic from all perspectives. They have a broad overview of relevant global developments and are personally acquainted with many of the key international players in the field of quantum technology.

Speakers

- Harald A. Summa, Chairman Diplomatic Council Quantum Leap Initiative
- Matthias Reidans, Quantum Technology Expert
- Hang Nguyen, Secretary General Diplomatic Council



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To be followed by Questions and Answers

Language: English

Related Websites: www.diplomatic-council.org/quantumleapatungeneva