**SUMMARY STI FORUM SIDE EVENT: THE ERA OF QUANTUM INFORMATION TECHNOLOGY - PROMISES AND PITFALLS (5 MAY 2021)** ITU/ UN DESA

Quantum information technologies (QITs) are a class of emerging technologies that improve the information processing capabilities of ICTs by harnessing the principles of quantum mechanics. They are expected to have a profound impact to ICTs with potential applications ranging from revolutionizing healthcare to addressing climate change by increasing the accuracy of forecasting, which could significantly support efforts towards sustainable development. This session provided a brief introduction to quantum technologies for policy makers highlighting some of their potential in transforming multiple sectors and their relevance to the UN SDGs, examined some challenges faced in current deployments, and discussed some considerations and recommendations for policy makers when approaching quantum technologies.

Mr. Richard Roehrl, Senior Economic Affairs Officer, UN DESA moderated the session and led a structured discussion which began with an introduction to fundamental aspects of quantum technologies, followed by a presentation demonstrating these technologies in practice and concluding with some government approaches and perspectives from a regional and national level.

Following opening remarks from Dr. Chaesub Lee, Director of the Telecommunication Standardization Bureau, ITU, Dr. Eleni Diamanti, CNRS and Sorbonne University, France set the scene for the discussion with an introduction to the fundamental aspects of quantum technologies. She discussed the two quantum revolutions, introduced the types of quantum technologies and provided an overview of some possible applications, touching on necessary guardrails to mitigate challenges posed in its implementation. Her presentation also highlighted the scale of the potential impact quantum technologies would have and encouraged policy makers to place careful consideration when approaching quantum technologies – focusing not only on their potential for technological transformation and societal impact, but also, on its maturity level and long term timelines for its development.

Dr. Yong Zhao, CEO, QuantumCTek Co.Ltd, China then provided the private sector’s interests and perspectives on quantum technology, specifically highlighting QuantumCTek’s activities and recent achievements. In his presentation, he demonstrated the industrial chain of Quantum Key Distribution Networks (the most mature type of quantum information technology) and showcased China’s achievement in space-based quantum communications, where the nation’s Micius satellite successfully established an ultra-secure link that enabled the world’s first quantum-encrypted virtual teleconference between Beijing and Vienna. A key takeaway from Dr. Zhao’s presentation is that existing infrastructure can be used to deploy quantum technology applications and that developments in this area will provide various opportunities globally, in both the public and private sectors.

Dr. Urbasi Sinha, Professor Raman Research Institute, India, then presented India’s perspectives, plans and considerations for quantum technologies. She elaborated on India’s expectations of making significant holistic contributions in this domain in the next few years, highlighting recent efforts devoted to experimental work and research on quantum technologies in India. Dr. Urbasi Sinha emphasized that, as quantum science and technologies are still an emerging field with a lot of potential, long-term investment of resources in basic R&D as well as on applied technologies would be essential to enable concrete growth towards becoming quantum ready.

Dr. Adam M. Lewis, Head of Sector, European Commissions Joint Research (JRC) delivered he final presentation of the session and provided the policy perspective of the EU concerning quantum technology, highlighting JRC’s activities related to quantum technology and its relevance of it to the UN SDGs. Echoing the sentiments of other panelists, he also emphasized that quantum technologies are still an emerging field with a lot of potential for growth and further developments in the long-term. The timelines of quantum technologies vary and that patient money play a key role in advancing these developments.