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Quantum technology: shaping our future

More than a century ago, the Danish physicist Niels Bohr pioneered the field of quantum technology, unveiling the secrets of atoms and electrons. His ground-breaking work in revealing atomic structure and shaping quantum theory not only expanded our understanding of the universe but also paved the way for the first generation of quantum technologies, sparking various modern innovations such as the MRI scanner and GPS navigation.

Fast forward to the present day, where we stand on the verge of the second quantum revolution. Quantum technology stands on the brink of significant advancement that promises positive impacts across various fields. Consider quantum computers as an example – they represent an unprecedented leap in computational power, capable of handling enormous datasets and solving complex problems that classical computers are unable to tackle.

Another remarkable advancement is seen in quantum-based sensors, offering unmatched precision in diagnosing heart and brain diseases without invasive procedures, marking a significant leap forward in medical diagnostics. Moreover, quantum simulators have the potential to revolutionise medicines and contribute significantly to sustainability by optimising production processes. This optimisation could pave the way for more energy-efficient materials, thereby contributing to a greener future. Quantum communication also plays a vital role in relation to security, as the technology can minimize risks associated with decryption, ensuring more secure global communications.

The second quantum revolution appears able of shaping the future across various domains. Just imagine the potential breakthroughs in understanding and treating diseases that currently pose significant challenges. Quantum technology holds the potential to turn these visions into reality.

Nevertheless, amid this promise, we must also acknowledge the security challenges quantum technology poses. Quantum technology has profound strategic and security implications worldwide. Its far-reaching potential can be exploited militarily and pose threats to cyber and information security. Security considerations should therefore be an integral part of our engagement with quantum technology, especially in a world marked by geopolitical tensions. Such challenges place demanding requirements on small, open economies like Denmark and Latvia.

Acknowledging these concerns, the Danish government launched a quantum strategy in September this year. This strategy aims to prepare Denmark for the future by harnessing the potential of quantum technologies while simultaneously addressing potential threats. Additionally, Copenhagen is now home to a new NATO Centre for Quantum Technologies, underscoring Denmark’s support for NATO’s efforts in maintaining the alliances technological advancement.
Similarly, Latvia recently signed a memorandum focused on the development of quantum technologies – an important step towards positioning Latvia as a quantum technology research and development hub in the region. These achievements underscore the critical need to prioritise and

advance quantum technology on the agenda. It’s crucial to continue our efforts in this field; neglecting to do so could very well be a costly affair.

Across the globe, countries are heavily investing in quantum technology, with the United States and China leading the race. Quantum technology has indeed become a pivotal aspect of the geopolitical technology completion. Therefore, it is a crucial that EU does not fall behind in the quantum race, as this is vital for our future. While practical applications of new quantum technology may take some years to materialise, the commitment of the EU to compete internationally in harnessing quantum technology is of utmost importance.

The huge potential, and equally substantial security challenges tied to quantum technology, underscore the necessity for EU’s active involvement in the international quantum arena. To achieve this, strong support for research and innovation, close collaboration within the EU, and empowering businesses with opportunities to convert knowledge into practical solutions, are key. Thereby we can eventually transform quantum technologies into sources of security, economic growth and societal advancement for us all.