Harnessing our quantum potential – towards a Norwegian quantum strategy

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Ladies and gentlemen, dear friends and colleagues,

Thank you for the invitation, thank you to the organisers Simula, Sigma2 and OsloMet, and to Simula for hosting this workshop on an increasingly important topic. As the recent Evaluation of Mathematics, ICT and Technology in Norway pointed out, Norway has many strengths, but needs to speed up and get into new technology areas – such as AI and quantum computing. The same evaluation also showed that Simula is one of the leading research environments in information technology in Norway.

We are, in other words, at the right place. And we are certainly talking about quantum technology at the right time.

It's challenging to fully grasp the implications of the technological development that we now are witnessing in real time. OECD's January paper on quantum technologies, *A Quantum Technologies Policy Primer*, presents benefits to be unlocked, for example improved quality of medical imaging and diagnosis, which can be a significant contribution in medicine. Another example is the use of quantum simulation algorithms in chemistry and materials science to improve the development of renewable energy technologies. There are countless other possibilities.

But we can't underestimate the potential for misuse and significant damage. For example, in the domain of security and preparedness. In the future, powerful quantum computers might be able to bypass today's cryptology and give intruders access to critical data and systems. On the other hand, quantum technology can also be used to design new and more advanced encryption, and better protect critical infrastructure and data from cyber-attacks. One example, from a catalogue of 16 Danish use cases given to me by Denmark's Ambassador Louise Jespersen after a meeting in March, is a Quantum Random Number Generator. It has been developed by the Danish company Alea Quantum Technologies and can be used to improve digital security.

The same potential for good and bad goes for artificial intelligence, a powerful tool for new and smarter solutions, for example in pattern recognition in big data. And at the same time, an enabler for false information, manipulation and propaganda. Moreover, from an environmental perspective, training AI-models consumes huge amounts of electricity. With future quantum computers, this problem may be reduced.

In June of last year, the United Nations proclaimed 2025 as the International Year of Quantum Science and Technology, to commemorate that the first scientific theories of quantum physics were published in 1925.

Quantum physics has in the last century revolutionized our understanding of the fundamental principles of physics. Or at least *your* understanding, the scientists and academics, who are actually capable of understanding this extremely complex field.

Now, we have arrived at what appears to be the second quantum revolution, at the point where quantum mechanics may lead to profound changes of our societies. To face this development head on, our neighbours and friends, Denmark and Finland, have created their own national strategies for quantum technology, and we expect Sweden to very soon follow suit. So, you could very well argue that it's about time that we have a strategy of our own.

Through a joint effort by the Ministry of Education and Research and the Ministry of Defence, the government this year increased the annual funding for quantum technology research by 70 million kroner. The Research Council is planning a call for applications in the near future. In our recent White Paper to Parliament about the research system, we announced that we would now start working on a Norwegian strategy for quantum technology.

So why is it important to develop a quantum strategy?

Because quantum technologies have the power to change business models, power balances and how we live our daily life – as well as enabling giant leaps in research and other fields.

The government believes that Norway needs a broad strategy for research, innovation and business development within quantum technology, as well as security and international cooperation. The strategy must particularly emphasize research where Norway has advantages, or where the needs are greatest.

Such a strategy must see knowledge development and commercialization together. The understanding of quantum technology cannot be limited to the technology itself. It must also include knowledge about society, market mechanisms, security, frontier research and understanding of disruptive changes.

It is crucial that the strategic process involves both the academic field, and the public and private sectors. Our goal is to identify the areas with the greatest potential for innovation and societal benefit.

To achieve this, we have asked The Research Council of Norway, Innovation Norway and the Norwegian National Security Authority to prepare a knowledge base for the strategy work. The knowledge base will include a mapping of existing activity, a mapping of areas that may be affected, and a mapping of security challenges and security measures.

We have also asked the three agencies for proposals for priority areas, proposals for new and innovative approaches to the commercialisation of research results and proposals for international cooperation. Throughout this process, the agencies shall involve relevant actors from the research system and the public and private sectors.

I'm sure many of you here today will be involved in this important work, and I encourage you to participate actively.

The knowledge base shall be completed by the end of November. Once the knowledge base is ready, a consortium of ministries will develop the strategy. This work might benefit from lessons learned from the strategy processes in Denmark, Finland and Sweden, which I look forward to learning more about from the next speakers. Our strategy will be presented in 2026.

Let me close by acknowledging the importance of international cooperation:

Although we have leading researchers and institutions in Norway – many of whom are present here today – and we excel in some fields, such as sensor technology, we are a small country with limited resources. We need to and we want to cooperate, as we also do in many other fields of research. A quantum strategy which highlights Norway's strengths, will increase the opportunities for Norwegian actors to participate in international cooperation, particularly in the Nordic region.

The Nordic Quantum Network and the collaboration between the Niels Bohr Institute and the University of Oslo are two examples of Nordic cooperation. The many contributions from Nordic colleagues to this conference, is another example.

Denmark has taken the initiative to develop the Nordic region as a coordinated quantum region, including to collaborate on education and research and to attract research talent and venture capital. The Nordic countries boast strong quantum ecosystems with world-class scholars, a growing quantum industry and globally leading public-private partnerships.

We can all gain from closer Nordic collaboration, and several Norwegian ministries are currently working on a declaration of collaboration with their sister ministries in the Nordic countries.

So, while Norway may be a slow starter, we are striving to become a fast mover. The next years will be exciting, and I look forward to working together with you.

Let's harness our quantum potential together!

Thank you.