

## POSITION STATEMENT OF THE EXECUTIVE BOARDS OF TU DELFT AND TNO REGARDING THE MIDTERM REVIEW QUTECH 2019-2021

It is with great pleasure that the Executive Boards of both TU Delft and TNO have accepted the second midterm review report of QuTech covering the period 2019-2021. We wish to express our gratitude to the committee for their work and for delivering a valuable assessment report with important insights and recommendations that QuTech can use to its advantage. The full report of the review committee is available on the QuTech website. Chapter 2 of the report provides information about the Partner Covenant QuTech, the scope of the review and the committee's assignment.

We would like to highlight some of the findings, observations, and recommendations of the review committee:

The Executive Boards are pleased that the committee considers the quality of QuTech's research and engineering activities in the past three years to be excellent beyond doubt. The institute has generated several breakthrough results and continues to be world-leading in several of the fields it is active in. It has a unique set-up where research and engineering go hand in hand, not only generating innovative theoretical concepts, but also translating these into tangible demonstrators and prototypes.

Just like the committee, we applaud the shift that the Qubit Research division has undertaken, from developing only topological qubits to more generally pursuing the development of robust qubits that are intrinsically protected by the underlying physical properties. We appreciate the assessment that the Quantum Computing division shapes the world-wide state of the art in quantum computing, in particular with its ground-breaking work on spin qubits, and that the Quantum Internet division has an excellent track record of innovative and leading research in the past years, with several ground-breaking experiments.

We endorse the statement of the committee that the activities deployed by QuTech to create societal and economic impact for quantum technologies are impressive. The committee deems it too early to judge the societal relevance of the institute, given the state of the technology at the moment. The institute is heavily involved in many collaborations, partnerships and activities that will help creating impact when the technology finally emerges as an economically viable activity. As such, the investments and activities of QuTech are appropriate to pursue future impact, the committee concludes.

With regards to this, we suggest QuTech to embrace the recommendations of the committee to make setting up a viable quantum ecosystem within Europe a top priority for the coming years, as well as to keep investing in spin-off activities, in particular during the start-up phase of new companies that are expected to be valuable to the quantum ecosystem. The starting point should be that QuTech is looking for the best expertise and partners in Europe and beyond, always with a view to strengthening the local and/or EU ecosystem.

We agree with the committee that it is important that QuTech has taken steps to further strengthen the academic culture, in particular since the institute was confronted with a retracted research paper on *Quantized Majorana conductance*, published in 2017 in Nature. It is clear that QuTech took the case very seriously. We also agree with the committee that the retracted paper should function as a reminder of the potential pitfalls in an emerging field with high expectations and high pressure to deliver results. We therefore ask QuTech to adopt the recommendation of the committee to further strengthen its research integrity policy and to set an example for other institutes.

Regarding the recommendation on executing the plans for a new building to accommodate the expansion of QuTech, the Executive Boards will continue discussions and decision-making regarding its realization with QuTech.

The Executive Boards are pleased with the committee's findings that the staff members who were interviewed during the site visit were content with the atmosphere and internal culture at QuTech, while also seeing further opportunities for cross-divisional meetings and collaborations. The staff feels valued and well-supported by the management as well as by their colleagues at QuTech. This is an important sign of success for this collaborative organization where people of different organizational cultures work together.

The Executive Boards will discuss with the QuTech management the future development of the QuTech organisation, including the recommendation to work towards a governance structure where QuTech can be governed as if it were one organization, with a mandate for its management that fits its mission-driven character. The recommendations to keep working on acquiring long-term funding that allow for strategic investments and long-term financial planning, as well as a continuous strategic process to monitor the achievement of QuTech's goals, will be part of these discussions. These topics relate to the strategic process on QuTech's future that has been started in 2021.

Regarding the recommendation on participating in the sustainability and the social and ethical aspects, we emphasize the importance to raise awareness for these issues within QuTech, and we encourage QuTech to participate actively in the program that Quantum Delta NL is developing to work on and learn about the ethical, legal, and societal aspects of quantum technologies.

We are pleased that the commitment and investment in QuTech has proven very successful for our own organizations, our QuTech covenant partners and for The Netherlands. Together with QuTech, we are committed to continue that success for the coming period and will take the necessary steps within our organizations and towards our (inter)national partners to build an optimum framework for the coming years.

On behalf of the Executive Boards of Delft University of Technology and the Netherlands Organization for Applied Scientific Research,

  
Prof. dr. ir. Tim van der Hagen  
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