

Swedish Company Delivers First Quantum Chips to Clients

The Gothenburg based company ConScience AB has delivered its first quantum technology components to a US based quantum computing company.

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Quantum computers are a type of computing technology that leverage the principles of quantum mechanics to perform certain types of calculations much faster than classical computers.

They have the potential to revolutionize various fields of science and technology due to their unique properties, including quantum

parallelism and entanglement which may lead to more powerful cryptography, financial modeling, drug discovery and climate models.



ConScience AB team in the cleanroom, photo: Francis Löfvenholm, copyright Conscience AB.

“

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Joachim Fritzsche, CEO of ConScience.

Quantum devices have been developed at [Chalmers University of Technology](#) in Gothenburg Sweden through the last 20 years, but until now, the translation of the world class research into commercial devices has not been possible due to challenges with production and quality control. [ConScience AB](#) is a company specialized in cleanroom production and has spent the last year on developing methods for production of quantum computing devices of sufficiently high quality and reproducible characteristics to be used by clients.

“Quantum device manufacturing is very complex, and we have been pushing ourselves and spent a severe amount of time in the cleanroom to achieve the stringent

requirements in terms of performance variations set out by our client.” Says Joachim Fritzsche,

CEO of ConScience.

Large academic and industrial efforts are being made towards quantum computers worldwide, with major companies like Google, IBM and Microsoft leading development. In 2019, Google demonstrated a programmable quantum computer and claimed quantum supremacy followed by IBM in June 2023 demonstrating a quantum experiment in the laboratory where a quantum computer was used to solve complex problems.

In Sweden, the Quantum research efforts have been leveraged around the Wallenberg Center for Quantum Technology ([WACQT](#)) located at Chalmers University of Technology in Gothenburg. In addition to ConScience

AB, several startup companies are working in developing different aspects of quantum technology in Gothenburg, including Low-Noise Factory AB, ScalinQ AB, Sweden Quantum AB and the MIT-Chalmers startup Atlantic Quantum.

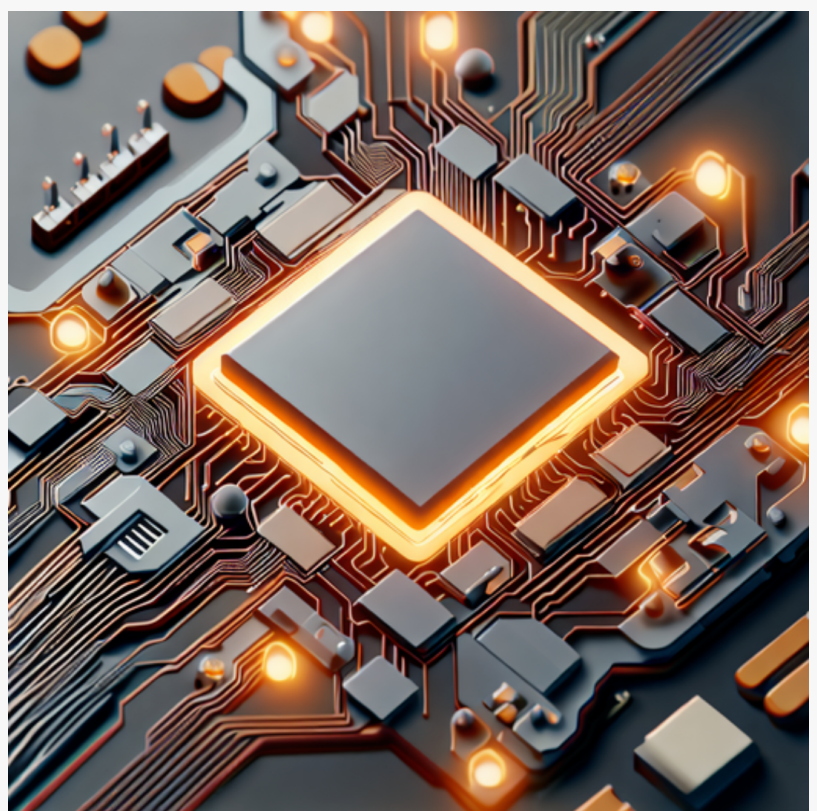
“We are excited to see the progress of ConScience in translating academic research concepts into scalable technology” says Jonas Bylander, Assoc. Prof. at Chalmers and the WACQT research center.

While ConScience have now shipped the first devices, there are still some way to go before we will see quantum computers solve daily real-world problems.. “We still need to improve the production methods, but we are happy to do our small part in the second quantum revolution by working on robust cleanroom fabrication methods.” Says Joachim Fritzsche, CEO of ConScience.

The work on quantum computer components is financed by ConScience and a Smart Electronics grant from the Swedish Research Agency Vinnova.

About ConScience AB

ConScience provides researchers in industries and academia with expertise in micro- and nanofabrication. For more than 10 years the company have supported clients in the areas of microfluidics, nanofluidics, sensing, diodes and quantum technology. Clients include research teams at the Universities of Oxford, Cambridge, and Harvard as well as



Artist's impression of a quantum computer, copyright ConScience AB

high-tech companies in areas of antibiotic susceptibility testing, air quality monitoring, diodes and quantum computing.

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Wallenberg Centre for Quantum
Technology
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Chalmers University of Technology
www.chalmers.se

Google's quantum computer article 2019:

Nature 574, 505–510 (2019)

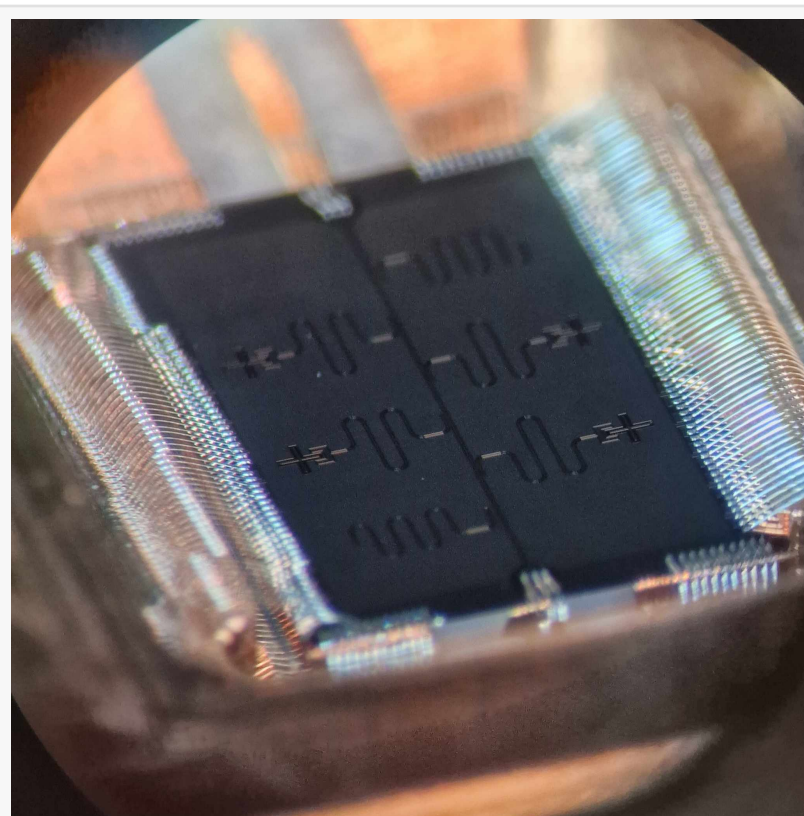
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IBM's quantum computer article 2023

Nature 618, 500–505 (2023)

<https://doi.org/10.1038/s41586-023-06096-3>

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Photograph of 1st generation Qubit-in-a-box (QIB) device, for equipment and cryostat testing. Designed and fabricated by ConScience. Copyright ConScience AB.

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