

Incubating the Open Quantum Institute



Use the future to build the present

Prepare
for what lies
ahead



A bit about the Open Quantum Institute

The Open Quantum Institute (OQI) is in its incubation phase and is on the way to becoming a global institution that seeks to unleash the powers of quantum computing for all. Thanks to the strong collaboration between private and public stakeholders, it is ideally placed to provide inclusive access to quantum computing and to support the development of concrete quantum solutions aimed at achieving the Sustainable Development Goals (SDGs).

As the most advanced initiative incubated by the Geneva Science and Diplomacy Anticipator (GESDA), the OQI

draws on GESDA's ability to unite the future of science with the powers of diplomacy to solve the biggest challenges facing the world and humanity.

The OQI is ultimately proof of GESDA's can-do attitude in science diplomacy, geared towards proactive problem-solving and cooperation among scientists, the diplomatic community, the private sector, philanthropic actors and global citizens, in order to pioneer future science for all.



"It's not just about the number of bits or qubits, it's about the number of lives we can improve"

Peter Brabeck-Letmathe (GESDA Board Chairman)

The OQI
by the numbers

6 SDGs initially targeted

140+ experts active

20+ countries with permanent representatives in Geneva involved

40+ partners committed

8 000 000 000+
people anticipated to be impacted

The keys to unlock quantum computing's potential

We have four core objectives **at the OQI, which we call the “4A’s”**. We believe they are part of the answer to pioneering quantum computing for the benefit of all.



ACCELERATING APPLICATIONS FOR HUMANITY

Realising the full potential of quantum computing by accelerating the use cases geared towards achieving the SDGs, thanks to the combined forces of researchers and developers, entrepreneurs, the United Nations, and large NGOs.



ACCESS FOR ALL

Providing global, inclusive and equitable access to a pool of public and private quantum computers and simulators available via the cloud.



ADVANCING CAPACITY BUILDING

Developing educational tools to enable everyone around the world to contribute to the development of quantum computing and make the most of the technology.



ACTIVATING MULTILATERAL GOVERNANCE FOR THE SDGS

Providing a neutral forum to help shape multilateral governance of quantum computing for the SDGs.



Reaching into the future

The OQI's Vision

“Create a market of quantum use cases for the Sustainable Development Goals by 2026.”

The bigger picture of



What is quantum computing?

Quantum computers promise a whole new era of computing. Thanks to major advancements in speed and/or accuracy, quantum computing opens up new problem-solving capabilities that can help governments, businesses and society.



Why is it important now?

There has been increasing talk and action around quantum computing in the public and private sectors. Advances in R&D, a recent Nobel Prize in quantum entanglement, and record investments that see quantum computing as an upcoming multi-trillion-dollar industry have helped to accelerate the potential of this technology.



Why is the OQI essential?

Countries are increasingly enacting national quantum strategies to safeguard their sovereignty and competitiveness. As multilateral governance of quantum computing is still underdeveloped, there is also increasingly a strong need for international cooperation in order to preserve human agency, accelerate our progress towards the SDGs, and ensure that the whole world contributes to and benefits from quantum computing.

quantum computing



Why is access a major topic?

Quantum computing has the potential to accelerate humanity's technological trajectory. It is therefore essential to ensure inclusive access to the use of quantum machines in order to avoid a widening of the digital divide in the quantum era.



What stage is the OQI at now?

In 2024, the OQI will be entering its pilot implementation phase as a fully-functioning spin-off of GESDA. Following a design phase, the proposal of an OQI was announced at the 2022 GESDA Summit. The incubation of the OQI by GESDA in 2023 served to kick-start initial activities of the OQI, while securing its funding and governance.

The Quantum Computing XPRIZE

GESDA has partnered with XPRIZE Foundation to develop a "Quantum for the SDGs" contest.



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A few people who keep

“Quantum computing is one tool to get there faster. And our destination is the Sustainable Development Goals.”

Özge Aydoğan (Director, SDG Lab)

“Robust scientific evidence is at the core of the OQI; this is essential to counter the hype and focus on where quantum computing will really offer solutions for some of our most pressing concerns.”

Cornelius Hempel (Group head, ETH Zurich - PSI Quantum Computing Hub)

“Realizing the full potential of quantum for the good of mankind will require our collective genius. We’re excited to join the OQI on its mission.”

Matthias Troyer (CVP, Technical Fellow, Microsoft)

“Quantum computing needs multilateral commitment in order to reach its full potential and benefit all of us and the OQI is a futuristic and timely step towards such a goal.”

Urbasi Sinha (Professor, Raman Research Institute)

“The OQI is proof that GESDA isn’t only talking about the future but really doing something about it.”

Barry Sanders (Scientific Director, Quantum City)

“Bringing together such diverse stakeholders is not trivial; the OQI does it through the joint commitment to progress towards the SDGs.”

Anna Fontcuberta i Morral (Associate Vice President for Centers and Platforms, EPFL)

“We must harness quantum computing’s power with those who are the most affected by today’s global challenges.”

Rosario Fazio (Head Condensed Matter Section, ICTP)

the OQI spinning

“The OQI innovates with education at the nexus of quantum and SDGs for young scientists and entrepreneurs, but also diplomats. This will create a new generation of SDG-focused leaders.”

Sana Odeh (Professor, New York University)

“The OQI is a pragmatic, action-driven initiative. This ‘learning by doing’ and technology-agnostic approach is what makes it stand out in the field.”

Stéphane Duguin (CEO, CyberPeace Institute)

“The OQI is all about levelling the playing field so that quantum computing as a powerful technology will be made available in an equitable way across the globe and used towards the betterment of humanity.”

Anousheh Ansari (CEO, XPRIZE Foundation)

“Quantum technologies will have a global economic and social impact; therefore, Fondazione Compagnia di San Paolo supports the OQI as a neutral platform to collectively explore the potential of quantum computing for the common good during its development and before it is implemented.”

Alberto Anfossi (Secretary General, Fondazione Compagnia di San Paolo)

“The work of GESDA and the OQI is necessary if you are going to use quantum computing to actually work on the real-life challenges of those who are engaged in the field, especially in our rapidly expanding urban centres.”

Graham Alabaster (Chief Geneva office, UN Habitat)

“The UN Climate Change Global Innovation Hub supports GESDA’s proposal of the OQI as it looks into how anticipated scientific breakthroughs can be translated into innovative climate and sustainability solutions.”

Massamba Thioye (Project Executive, UN Climate Change Global Innovation Hub)

More momentum for the OQI

The OQI benefits from a robust ecosystem that includes communities in academia, diplomacy, the private sector and broader citizenship.

Academic



Diplomacy



Impact



Citizen



Accelerating applications for humanity



Quantum computing has the potential to accelerate our progress towards the SDGs, tangibly impacting humanity and the planet. The example cases below highlight a few of the use cases currently being explored, proving that quantum computing is more than just the sum of its qubits.



Carbon reduction solutions (SDG 13)

Mitigating antimicrobial resistance (SDG 3)

Helping to produce more nutritious food with less land (SDG 2, SDG 12 and SDG 13)

Access for all



By partnering with industry providers and improving access to the pool of quantum machines, the OQI can ensure the whole world benefits from quantum computing.

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Reaching into the future

Scan the QR code
for more details on the use
cases the #OQI is exploring.



Advancing capacity building



The true impact of quantum computing will only be achieved through effective and inclusive education. We are focused on the following two target groups to further advance understanding and participation in the technology:

- 1) Engaging researchers and developers in underrepresented geographies
- 2) Equipping diplomats with quantum know-how

Activating a multilateral approach for the SDGs



The OQI has the potential to be the first truly multilateral effort to accelerate applications of quantum computing for the SDGs. The topics that are currently being explored include SDG potential uses, reducing the digital divide, security and dual-use, standardisation initiatives, environmental impact and human agency. Ultimately, as a neutral multi-stakeholder platform, the OQI can help accelerate an effective governance approach to ensure global, inclusive and equitable access to quantum computing, and to advance applications for the benefit of humanity and the planet.



“It’s essential that we ring-fence the quantum applications that serve the SDGs. Geneva is perfectly situated to facilitate this with its multilateral and neutral outlook.”

Alexandre Fasel (Swiss State Secretary for Foreign Affairs)

Accelerating in quantum leaps

With the help of our partners and extended network, we intend to reach the seven milestones below by 2026.

Become the “go to” place for quantum computing use cases that serve the SDGs

Create a broad pool of globally accessible state-of-the-art quantum computers and simulators

Develop educational capacity among researchers and developers as well as diplomats

Advance the multilateral governance of quantum computing for the SDGs

Establish the institutional governance of the OQI to ensure neutrality and infrastructure

Secure solid funding for the OQI in the long-term with novel sustainable finance vehicles

Expand and engage the OQI's community to further the aims of open quantum for all

Reaching into the future

“With advances in science, humanities and technology, there are enormous opportunities that could be harnessed for the good of all humanity, present and future.”

*António Guterres,
Secretary-General of
the United Nations*

The future of the OQI

An initiative hosted by CERN, born at GESDA, supported by UBS

The OQI's incubation phase in 2023 has proven it to be an invaluable initiative for the future of quantum computing and science diplomacy, paving the way for the real-world launch of the OQI.

CERN will host the OQI during a three-year pilot implementation phase from 2024-2026, while UBS will act as the lead partner, ensuring the further growth of the organisation.

During this next phase, GESDA will remain involved as co-chair of the OQI's future Advisory Committee, helping to ensure the continuity of the initiative, while contributing to the diplomatic engagement as part of its anticipatory science diplomacy roadmap.

The partners are looking forward to a future where the SDGs are in reach and believe that the OQI and its extended network will play a crucial role in realising this vision.

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about the #OQI

