

OQI Opening Remarks

18th October 2024

Quantum for Connectivity Roundtable



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

- Goal: Guide Quantum Computing wave to arrive on humanity with
 - Utility for all; Engagement and participation of all
- Focus developments on real world problems
 - Engage those impacted to co-create the solutions
 - Ensuring everyone has access to the educational material and tools to join the quantum wave
 - To avoid a quantum divide!
- Preparing ground for common understanding of needs, infrastructure and governance of QC
 - A multi-stakeholder, multi-lateral governance
 - Education and awareness raising amongst the decision makers

Strategic Pillars of the Open Quantum Institute



A1 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.



A2 Access for all

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

A3 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.

A4 Activating multilateral governance for the SDGs

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



Exploring applications for humanity



- Food Security Last-mile Delivery
- Nutritious Food Production
- Plant Genomic



- Water Leak Detection
- Eliminating "Forever Chemicals" from Water Sources
- Molecular Docking to Clean up Pollution



- Combat Illegal Mining



- Accelerating Novel Antibacterial Discovery
- Predicting Gastrointestinal Cancer



- Smart Grid Management
- Layout of Turbines in a Windfarm



- Catalytic Carbon Capture
- Flood Risk Assessment





OQI as a network of networks

As a network of networks, the OQI

- (1) Brings global domain experts, quantum experts and diplomatic stakeholders together to **align on and co-shape best practices** in advancing capacity building, **avoiding duplication** of efforts,
- (2) draws on the **diplomatic community to effectively leverage and roll-out the educational** programmes, both those directly developed by OQI and those put at disposal by OQI's education consortium,
- (3) makes capacity building initiatives, educational tools and material **globally available**,
- (4) **identifies gaps** of existing offerings on the development of quantum computing applications for SDGs and **adapts offerings** for stakeholders in quantum-underserved geographies.



Roadmap to advance capacity building

Young Researchers & Developers
from quantum-underserved
geographies

Policy-makers and
Diplomats

Use case community

OQI vetted, led and
implemented by Educational
Consortium Partners

OQI Repository of Educational Resources
oqi.cern/education

OQI vetted and supported
activities, implementation led
by end-users

- OQI Mentorship & Internship Programmes
- OQI Training Programme to prepare hackathon participants
- Regional Hackathons

- Quantum Diplomacy Game Events
- QDG Training at regional GESDA Anticipatory Leadership Weeks

OQI curated products



OQI Repository of use cases
oqi.cern/applications

Foundational Training

- Methodological tools to develop use cases for SDGs derived from A1 experience
- Quantum for SDGs modules (for computer scientists, subject matter experts, quantum experts)
- Deep dive into the applicability regime of quantum algorithms



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