IonQ Investor Updates

May 2025

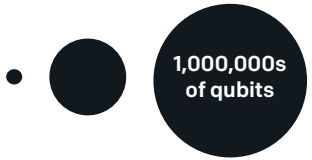
Cautionary Notes

This presentation contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Some of the forward-looking statements can be identified by the use of forward-looking terms. Statements that are not historical in nature, including the terms "accelerating," "access," "accessible," "anticipate," "available," "believe," "can," "capable," "deliver," "designed to," "deployable," "enabling," "estimate," "expect," "expected," "future," "goal," "growth," "increased scale," "intend," "impact," "latest," "leader," "leading," "may," "pending," "planned," "scale," "target," "will," "winning," "potential," and other similar expressions are intended to identify forward-looking statements. These statements include those related to the company's expansion in the quantum computing, security, and networking market segments; the company's technology driving commercial advantage or delivering scalable, fault-tolerant quantum computing in the future; the ability for third parties to implement IonQ's offerings in their data centers and to reduce their compute costs; the energy efficiency and sustainability of the IonQ's offerings; the efficacy of new applications of quantum computing; the relevance and utility of quantum algorithms and applications run on IonQ's quantum computers; the size of quantum computing, security, and networking market segments in the future; IonQ's quantum computing, security, and networking capabilities and plans; future deliveries of and access to IonQ's quantum services, computers, and networking devices; access to IonQ's quantum computers including hybrid-enabled functionality; increases in algorithmic qubit achievement; future purchases of IonQ's offerings by customers using congressionally-appropriated funds from the U.S. government; IonQ closing anticipated acquisitions; the success of partnerships and collaborations between IonQ and other parties, including development and commercialization of products and services with such parties; and the scalability, reliability, performance, modularity, commercial-readiness, and architectural advantages of IonQ's offerings. Forward-looking statements are predictions, projections and other statements about future events that are based on current expectations and assumptions and, as a result, are subject to risks and uncertainties. Many factors could cause actual future events to differ materially from the forward-looking statements in this presentation, including but not limited to: changes in the competitive industries in which IonQ operates, including development of competing technologies; any inadequacies in the overall pace of technology development in the quantum industry, including inadequate advances in the state of quantum networking and quantum systems; IonQ's relatively limited history in developing quantum networks; the capability of our quantum systems and quantum networks to provide transformative applications and commercial quantum advantage; changes in laws and regulations affecting IonQ's business; IonQ's ability to enter new markets and exploit new technologies; IonQ's ability to implement its business plans, forecasts and other expectations, identify and realize partnerships and opportunities, and to engage new and existing customers; changes in U.S. government spending or policy that may affect IonQ's customers; changes to U.S. government goals and metrics of success with regard to implementation of quantum computing; risks associated with U.S. government sales, including availability of funding and provisions that allow the government to unilaterally terminate or modify contracts for convenience; satisfaction of conditions to close acquisitions by IonQ and counterparties; IonQ's inability to effectively integrate its acquisitions; IonQ's ability to attract and retain key personnel, including Lightsynq personnel joining IonQ; IonQ's ability to utilize the technology of acquired companies to accelerate the development and scale of IonQ's systems and offerings; and IonQ's ability to work effectively with collaborators in existing or planned partnerships, including the effectiveness of integration of IonQ's technology with collaborators' technology. You should carefully consider the foregoing factors and the other risks and uncertainties disclosed in the Company's filings, including but not limited to those described in the "Risk Factors" section of IonQ's filings with the U.S. Securities and Exchange Commission, including but not limited to the Company's most recent Annual Report on Form 10-K and reports on Form 10-Q. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Forward-looking statements speak only as of the date they are made. Readers are cautioned not to put undue reliance on forward-looking statements, and IonQ assumes no obligation and does not intend to update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise. IonQ does not give any assurance that it will achieve its expectations. IonQ may or may not choose to practice or otherwise use the inventions described in the issued patents in the future.

Our Goal:

To Lead the Quantum Revolution Technologically & Commercially

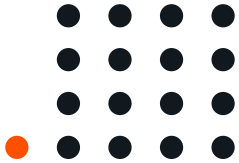
IonQ Leads the Pack in Technology & Science



Path to Millions of Qubits Unlocked by Lightsynq[1]

64 #AQ

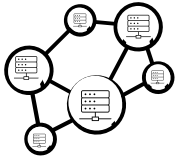
100 qubit system upcoming



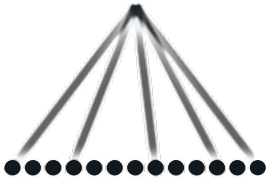
Exceedingly Low Error Correction Overhead

Qiskit
Q# QDK
PENNYLANE
TensorFlow Quantum
Cirq
NVIDIA CUDA-Q
XACC

Every Major Quantum Language & SDK Supported

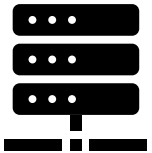


Quantum Computing & Networking Strategy



Trapped Ion Architecture with High Fidelity & Connectivity

Worldwide Deployments in Customer Environments



Data Center Compatible Product Portfolio

1. Pending closing of IonQ's intended acquisition of Lightsynq Technologies signed in May 2025

IonQ Leads the Pack in Commercialization

Premier Partners & Customers

$87B

TAMS By 2035 [1]

Large & Growing Market Opportunity

Only Quantum Hardware Available on All Major Clouds

$697M

Cash Balance [2]

Capitalized to Execute & Deliver

950+

Patent portfolio [3]

20+ Years of Technology Development

Premier Quantum Ecosystems

$75-$95M

Expected FY25 Revenue

Exceptional Track Record of Revenue Growth

Identified Quantum-Enhanced Applications

1. McKinsey Quantum Technology Monitor, Quantum computing and Quantum communication markets, April 2024
2. Cash, cash equivalents and investments were $697.1M as of March 31, 2025
3. Owned or controlled patents granted and pending as of May 2025. Includes owned or controlled patents granted and pending as of May 2025, including those from IDQ (in which IonQ owns a majority stake) and Lightsynq Technologies (which IonQ intends to acquire pending closure pursuant to terms signed in May 2025)

Led by Distinguished Industry Veterans

Niccolo de Masi
President & CEO
dMY Technology Group · glu · Genius Sports · J.P.Morgan · SIEMENS · resideo · planet.

Peter Chapman
Executive Chair
amazon

Thomas Kramer
Chief Financial Officer
ORACLE · OPOWER · cvent · BCG

Jordan Shapiro
President & GM, Networking
NEA · SAMSUNG

Margaret Arakawa
Chief Marketing Officer
Microsoft · fastly

Rima Alameddine
Chief Revenue Officer
NVIDIA · cisco · Sun microsystems

Stacey Giamalis
Chief Legal Officer
PagerDuty · apigee

Tom Jones
Chief People Officer
BLUE ORIGIN · Microsoft · Honeywell

Ariel Braunstein
SVP, Product
Google · cisco

Dean Kassmann
SVP, Engineering & Technology
BLUE ORIGIN · amazon

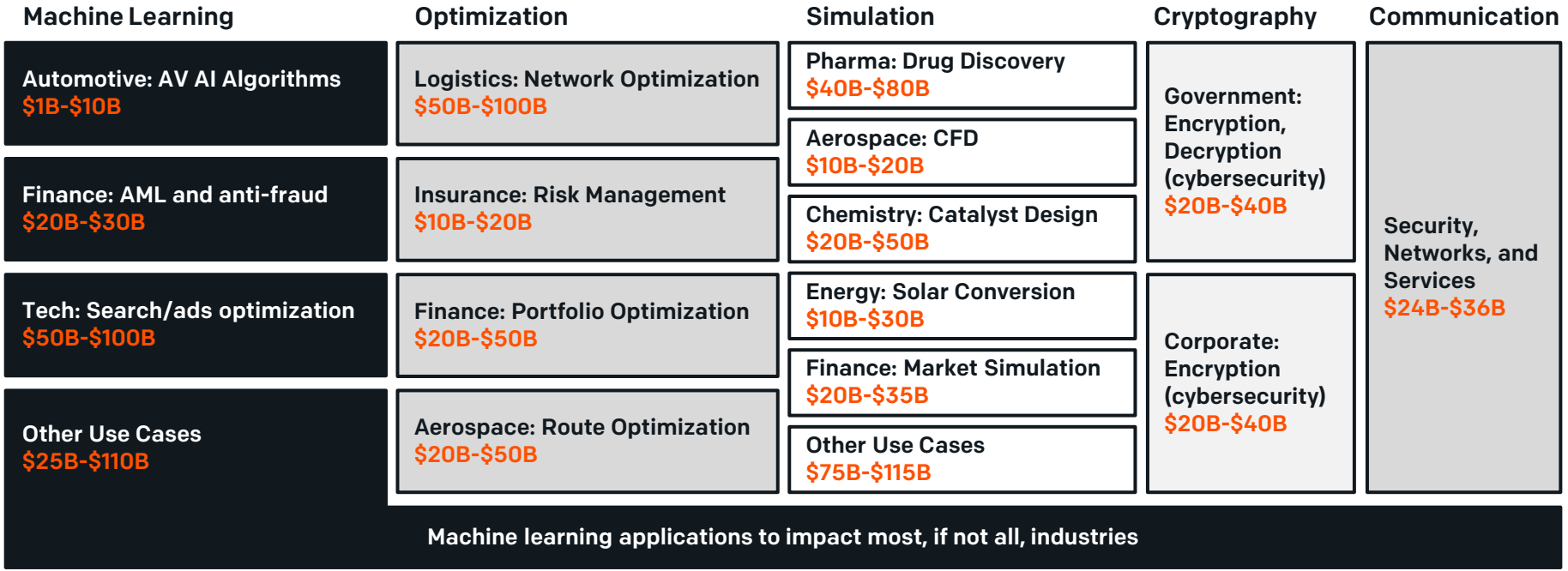
David Mehuys
VP, Production Engineering
PsiQuantum · Infinera

Martin Roetteler
Sr. Director, Quantum Solutions
Microsoft · NEC

The Quantum Revolution is Here

Quantum Computing & Networking Expected to Create Up to $880B in Economic Value by 2040

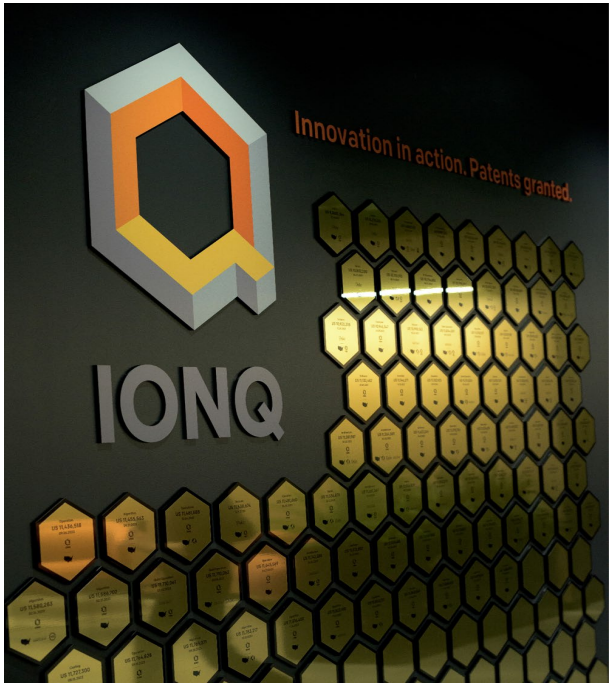
IONQ



Sources: BCG, The Long-Term Forecast for Quantum Computing Still Looks Bright, June 2024, McKinsey, Quantum Technology Monitor, April 2024
Note: Value creation market sizes estimated at technology maturity

Large & Growing Intellectual Property Portfolio

IonQ will soon control over 950 patents across quantum compute & quantum networking[1]



	IONQ	IDQ	Qubitekk	LIGHTSYNQ
Granted	176	229	116	10
Pending	341	69	2	18
Total		**961**[1]		

1. Includes owned or controlled patents granted and pending as of May 2025, including those from IDQ (in which IonQ owns a majority stake) and Lightsynq Technologies (which IonQ intends to acquire pending closure pursuant to terms signed in May 2025)

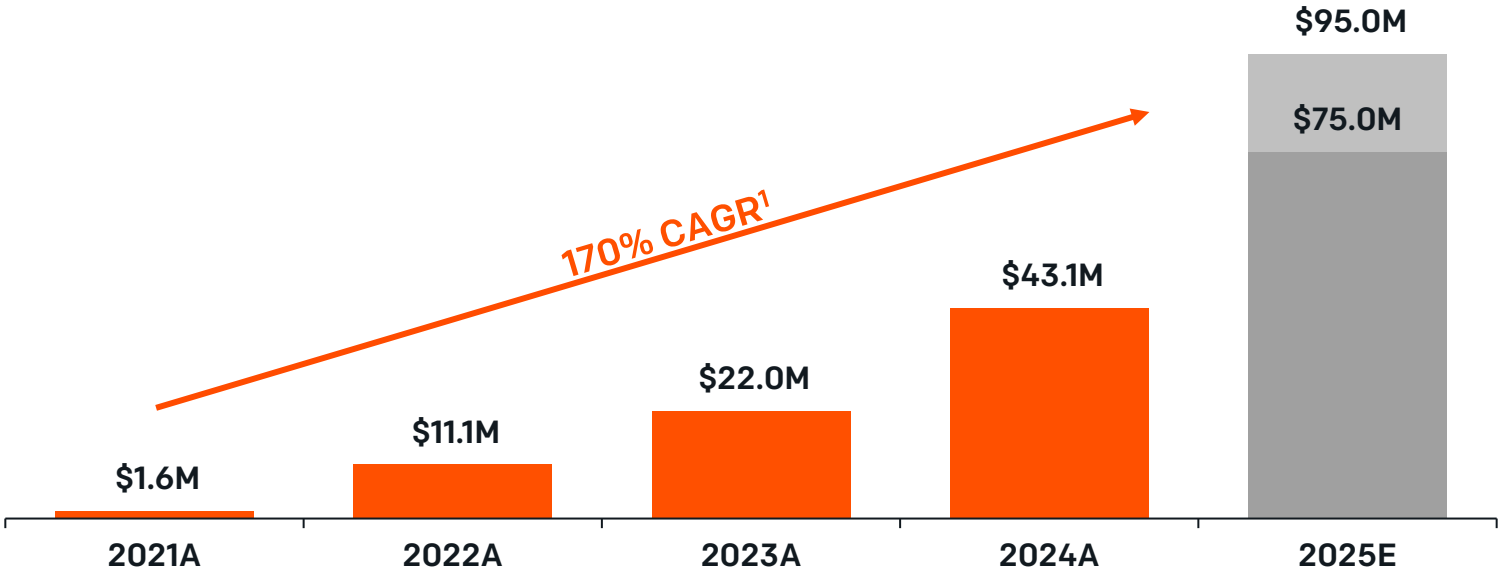

IonQ Leads the
Quantum Industry

Our Winning Architecture

- Identical and naturally quantum
- Long coherence and qubit lifetime
- 99.9% 2QG native fidelity
- Universal gates
- Reconfigurable and highly connected
- Modular and scalable system design
- Capable of running at room temperature

Accelerating GAAP Revenue

IonQ has been approximately doubling GAAP Revenue YoY since joining NYSE

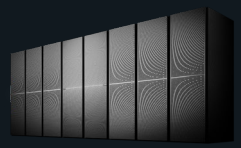
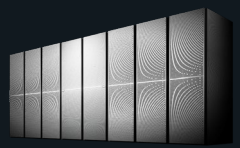


	2021A	2022A	2023A	2024A	2025E
YoY Growth %	*n/a*	*594%*	*98%*	*96%*	*97%*

1. CAGR represented based on 2025 midpoint revenue guidance range at $85.0 million

Industry Leading Commercial Product Portfolio

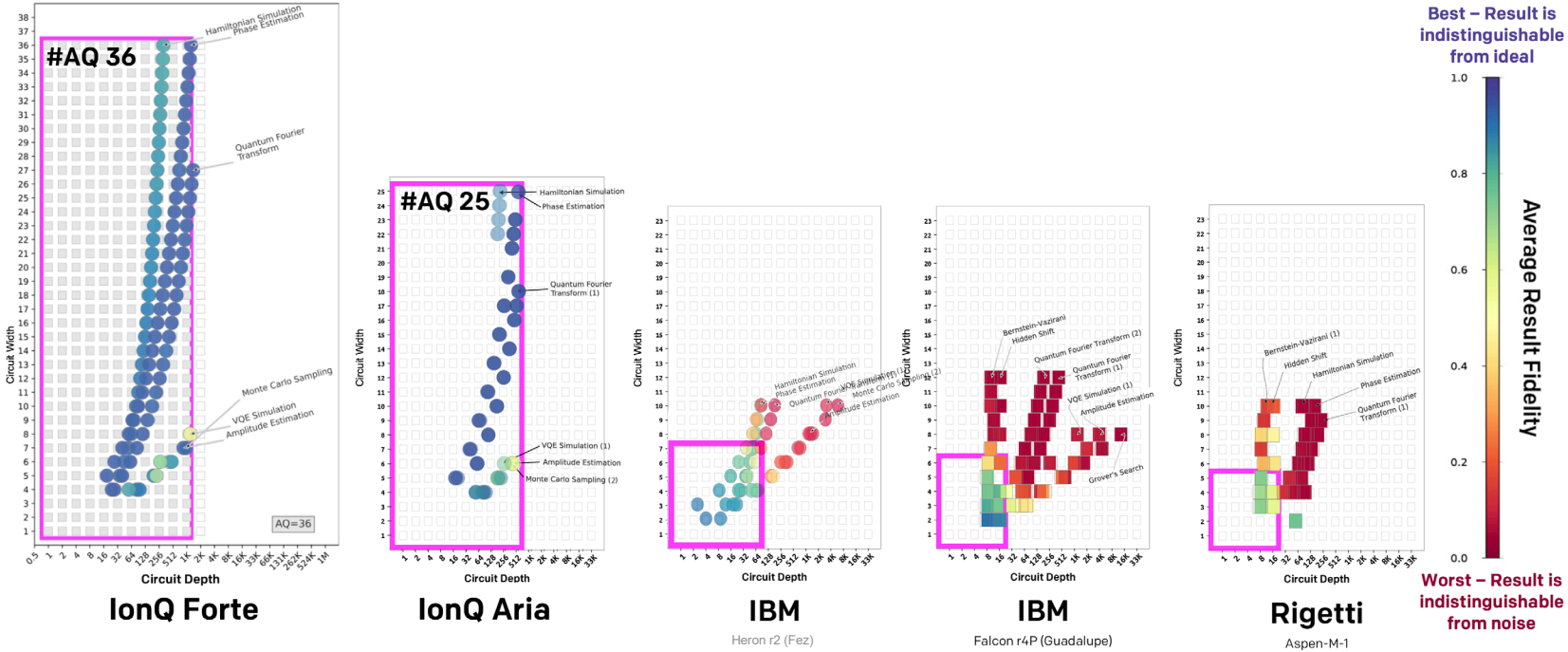
IONQ

	Harmony	Aria	Forte	Selling: Forte Enterprise	Selling: Tempo	Planned: Future Systems
						
	A Pioneering Quantum Computer	Widely Accessible, High Performance	Commercially Available, Higher Performing	Hybrid Enabled, Data Center-Ready	Commercial Advantage Capable	Broad Commercial Advantage
Launch	2019	2021	2023	2024	2025	2026+
System Production	2	2	1	5	tba*	tba*
Form Factor	Custom Form Factor ·····			Standard Data Center Form Factor ·····		
Qubit Species	Ytterbium ·····				Barium ·····	

* to be announced

IonQ Systems Optimize for Application Performance

IonQ outperforms peers



Note: QED-C latest data available. IBM data adapted from *Application-Oriented Performance Benchmarks for Quantum Computing (2022)* and 3rd party testing.
Rigetti data taken using Braket between February 18th and 20th, 2022. IonQ Forte and IonQ Aria data taken on January 22nd, 2024, and November 13th, 2022, respectively.

IonQ's Path to Commercial Advantage

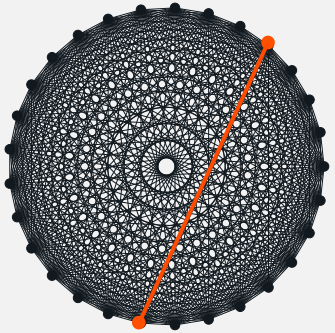
Performance: Ion Trap Architecture

	Ion Trap	Superconducting
Fidelity	▲ 99.9%+	▼ Varies
Connectivity	▲ All-to-all[1]	▼ Nearest neighbor (requires more 2Q Gate operations, reducing capacity)
Error Correction	▲ 3:1 partial error correction[3] ▲ 13:1 error correction[2]	▼ 100:1 error correction[4]
Scalability	▲ Natural & identical ▲ Data-center configurable	▼ Manufactured ▼ Large and clunky
Coherence	▲ Longest qubit lifetime	▼ Shorter qubit lifetime
Temperature	▲ Room temperature	▼ Cooled to 0 Kelvin

1. All-to-all connectivity for ions within the same QPU core
2. Error correction rates for IonQ trapped ion quantum computers; refer to arXiv:2503.22071
3. Partial error correction through Clifford Noise Reduction (CliNR)
4. Using the [[49,1,7]] surface codes instead of the [[48,4,7]] BB5 codes

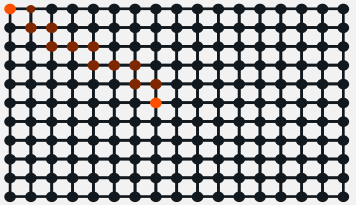
IonQ Advantage

- **All-to-all connectivity[1]**
- **Two qubit gate fidelity**



Superconducting Competitors

- **Nearest-neighbor connectivity**
- **Multiple swap gates required**



Performance: Lowest Error Correction Overhead

IONQ

Partial Error Correction 3:1[1]

Partial Error Correction Advantages:

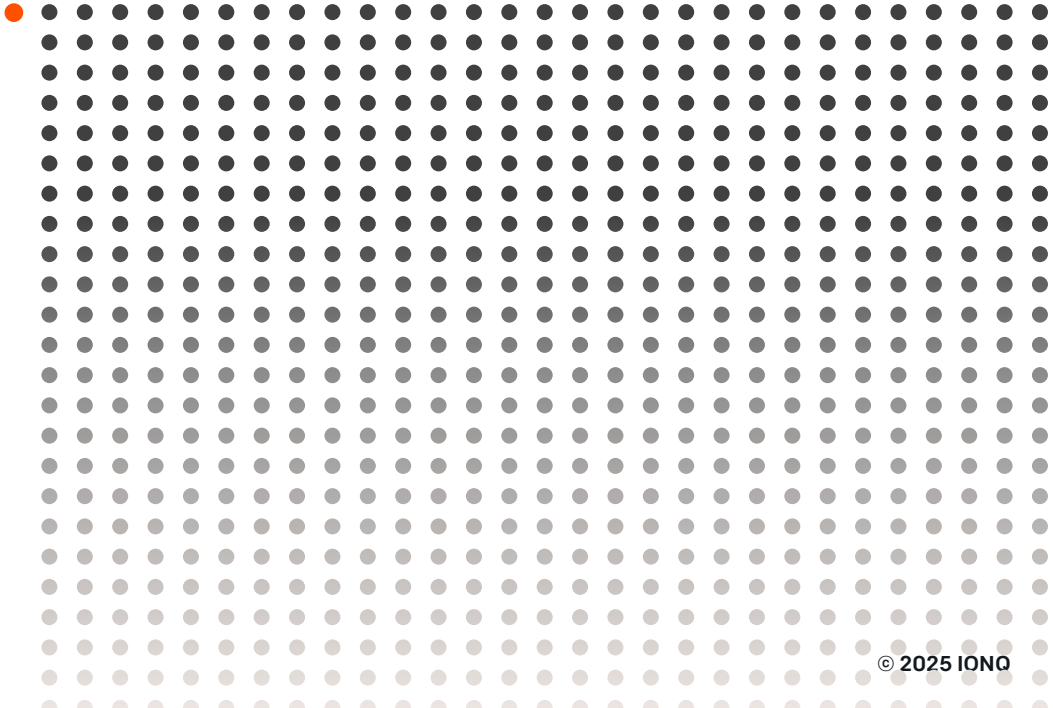
- Significantly lower qubit overhead ratio
- More scalable than error mitigation techniques
- Increasing fidelity to unlock deeper quantum circuits
- Available in near term IonQ systems as early as Tempo

IONQ

Error Correction 13:1 [2]

Other Approaches

Error Correction 1000:1 - 1,000,000:1[3]



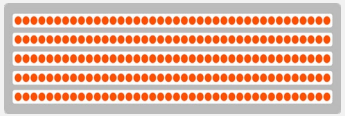
1. ArXiv, Low-cost noise reduction for Clifford circuits, July 2024
2. Error correction rates for IonQ trapped ion quantum computers. Refer to arXiv:2503.22071.
3. Based on various surface code approaches, depending on required logical error rate

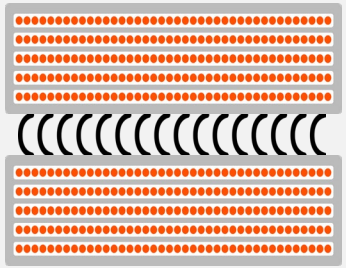
Scale: Scalable Modular Architecture

Photonically Interconnected Systems

Stage 1: 500 Qubits

- Multi-Core Technology



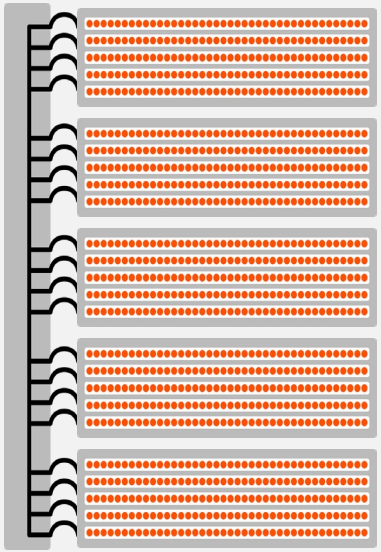


Stage 2: 1,000s Qubits

- Multi-Core Technology
- Photonic Interconnect

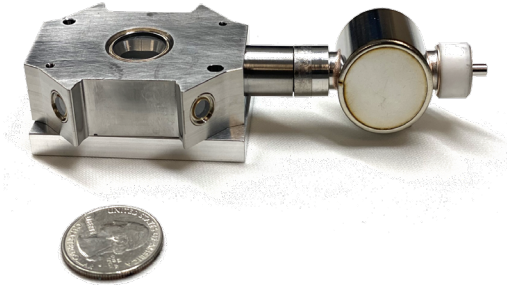
Stage 3: 1,000,000s Qubits

- Multi-Core Technology
- Photonic Interconnect
- Quantum Network



Note: The number of qubits per ELU/module and the number of modules are still in active development

Miniaturized Vacuum Packages



Developing compact, room temperature trap packages enables more modularity for scaling next generation systems

Scale: Photonic Interconnect Acceleration[1]

LIGHTSYNQ IONQ

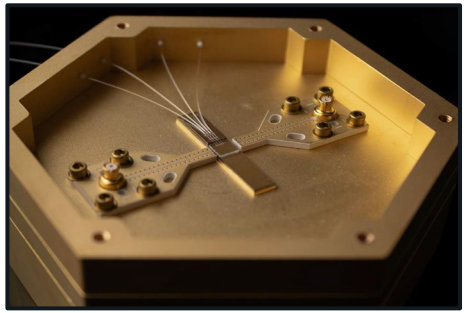
Accelerate IonQ's commercial systems to 1,000s, 10,000s, and eventually millions of qubits

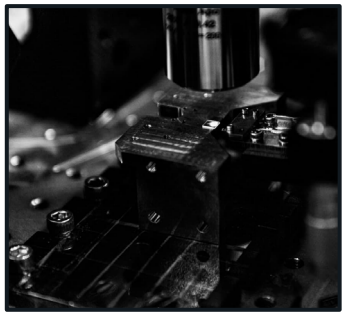
Mihir Bhaskar, PhD
Co-Founder

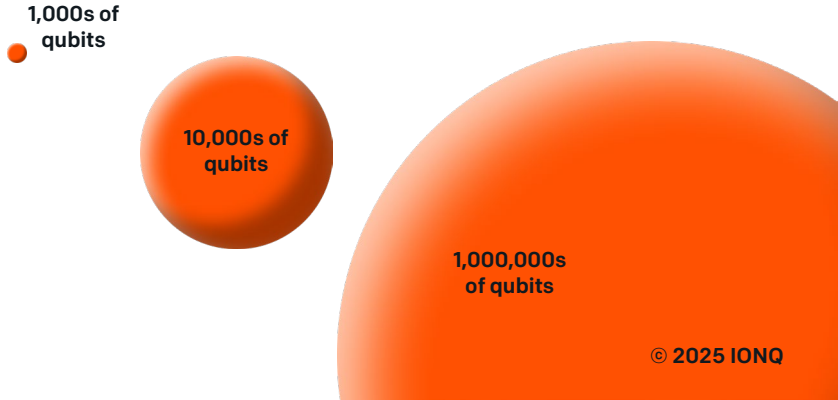
Bart Machielse, PhD
Co-Founder

David Levonian, PhD
Co-Founder

- **Immediate contribution toward our technical milestones via quantum memory IP, expertise, and architecture**
- **Founded by former Harvard quantum networking experts and Amazon Web Services (AWS) Center for Quantum Networking Leaders**





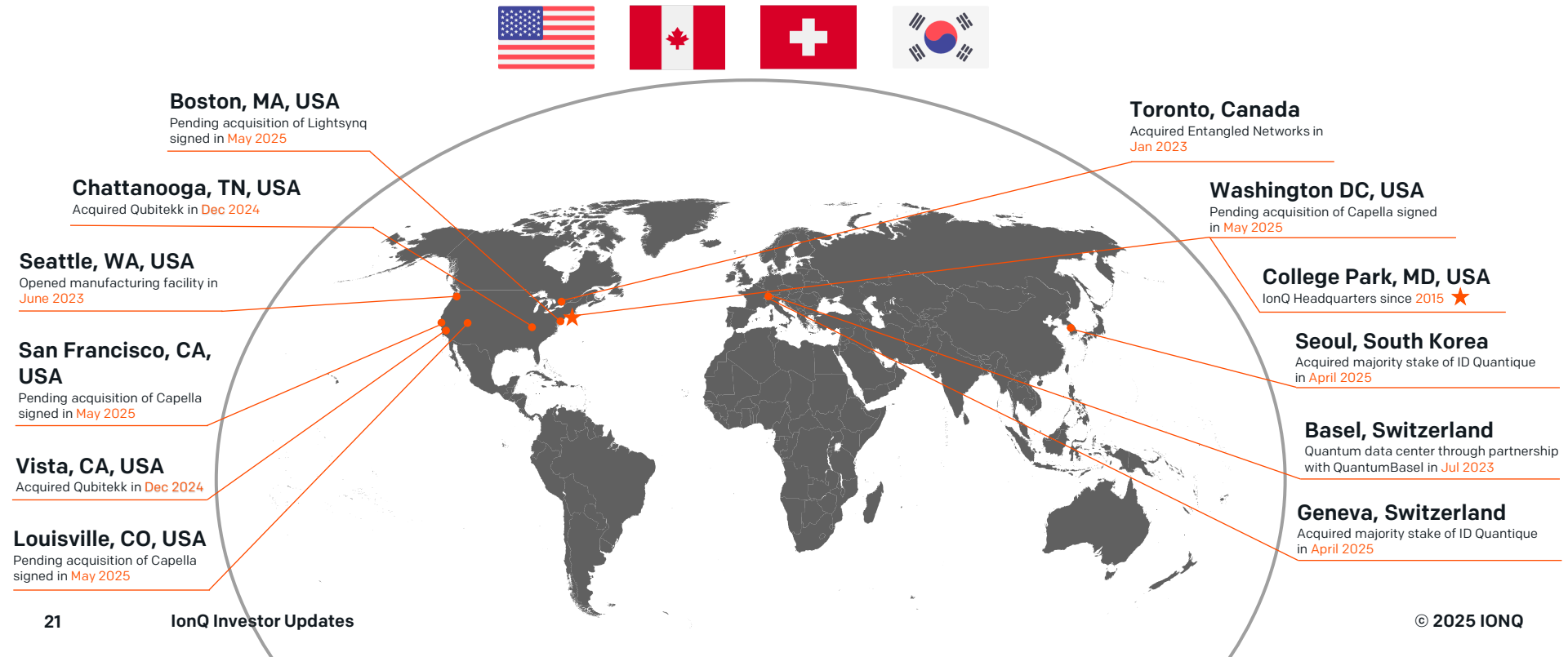


1. Pending closing of IonQ's intended acquisition of Lightsynq Technologies signed in May 2025

Leading Enterprise Grade Ecosystem

Expanding Footprint

Embracing the world's greatest quantum talent at IonQ



Boston, MA, USA
Pending acquisition of Lightsynq signed in May 2025

Chattanooga, TN, USA
Acquired Qubitekk in Dec 2024

Seattle, WA, USA
Opened manufacturing facility in June 2023

San Francisco, CA, USA
Pending acquisition of Capella signed in May 2025

Vista, CA, USA
Acquired Qubitekk in Dec 2024

Louisville, CO, USA
Pending acquisition of Capella signed in May 2025

Toronto, Canada
Acquired Entangled Networks in Jan 2023

Washington DC, USA
Pending acquisition of Capella signed in May 2025

College Park, MD, USA
IonQ Headquarters since 2015 ★

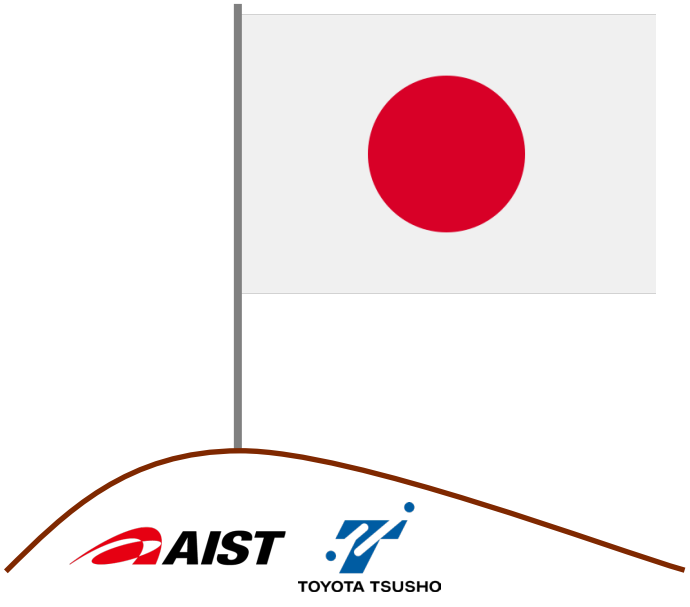
Seoul, South Korea
Acquired majority stake of ID Quantique in April 2025

Basel, Switzerland
Quantum data center through partnership with QuantumBasel in Jul 2023

Geneva, Switzerland
Acquired majority stake of ID Quantique in April 2025

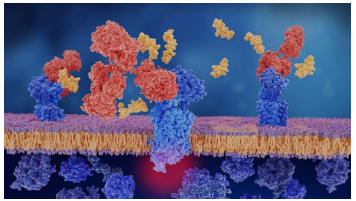
Growing Our APAC Ecosystem

Signed Memorandum of Understanding (MOUs) across Japan & South Korea



Applications for Commercial Advantage

IONQ

Optimization	Drug Discovery	Simulation	Data Analysis	Optimization
epb	AstraZeneca	Ansys	GDIT	AIRBUS
				
Example: **Energy Grid Distribution Improvements**	Example: **Pharma Drug Discovery Modelling**	Example: **Engineering Simulation Modelling**	Example: **Fraud & Anomaly Detection in Large Datasets**	Example: **Supply Chain Optimization**
• Developing practical quantum hybrid applications that leverage both classical and quantum resources • Accelerating grid modernization	• Using quantum simulation to advance chemical interactions modelling for drug discovery • Driving higher accuracy, lower power consumption, faster speed and enabling new avenues for drug design	• Integration of quantum solutions into design tools • Demonstrated 12% commercial advantage over classical alternatives on life-saving blood pump computational engineering	• Creating quantum solutions enhancing fraud and anomaly detection in large datasets • Project focused on identifying complex irregularities with greater accuracy	• Developing quantum algorithms for optimizing cargo loading • Increasing operational efficiency to drive fuel and labor cost savings
Potential Market Size: $50B-$100B	**Potential Market Size: $40B-$80B**	**Potential Market Size: $10B-$20B**	**Potential Market Size: $25B+**	**Potential Market Size: $50B-$100B**

Source: BCG, The Long-Term Forecast for Quantum Computing Still Looks Bright, June 2024
Note: Value creation market sizes estimated at technology maturity

Why Quantum Matters to AI

Potential Energy Savings

- Accelerate linear algebra using QPUs, augmenting HPC resources
- Replace classical kernels with quantum kernels on exponential dimensional data[1]

LLM Fine-Tuning

- Augment pre-trained foundational AI models
- Repurpose existing pre-trained models to be more resource and power efficient

Data / Network Security

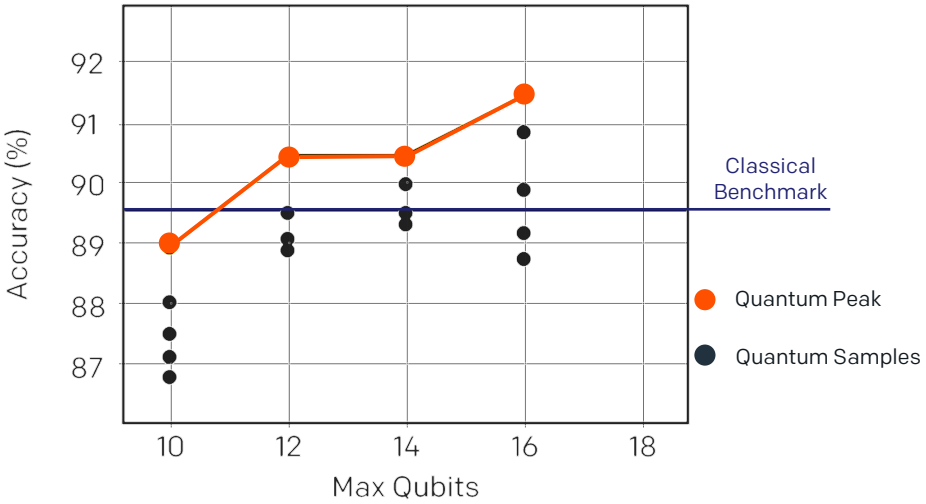
- Secure network communication with quantum safe encryption
- Network anomaly detection

1. Quantum energy consumption scales linearly with exponential Hilbert space

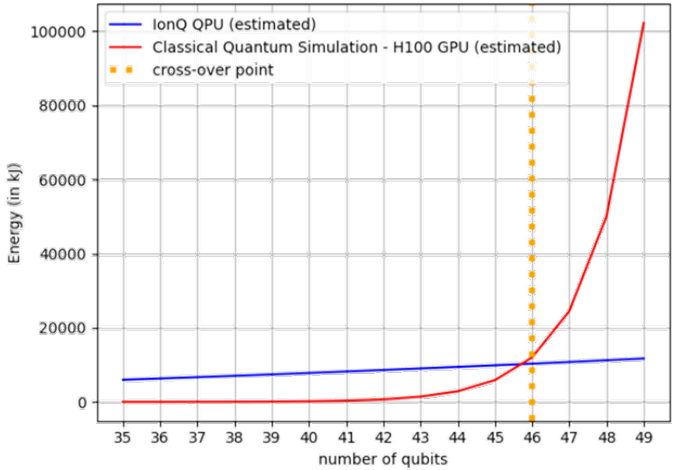
Quantum Scales Over Classical

Compared to pure classical, quantum hybrid expected to scale far more efficiently

More Data-Efficient Fine-Tuning



Estimated Energy Consumption Comparison



Quantum Economy: $22 Million Deal with EPB

- Develop a quantum-ready workforce through specialized training
- Local IonQ Forte Enterprise system to be shared by both companies

Quantum Center℠

Quantum Networking and the Quantum Internet

Value Proposition of Quantum Internet

Quantum Internet is at intersection of best-in-class security & computation capabilities

THE QUANTUM INTERNET

SECURITY

Ultra-Secure Communications: Entanglement Distribution & QKD

- Communicate securely, low risk of hacking from quantum computers
- Ultra-secure communication, even in remote, highly-sensitive settings

SECURE COMPUTE

Ultra-Secure Computation: Blind Quantum Computing

- Securely run algorithms, even on centralized hardware
- Eliminate threats of compromised privacy and integrity of compute

COMPUTE

Networked Compute: Modular, Scalable Quantum

- Achieve more powerful quantum systems by linking computers
- Compute across modalities for a diverse array of algorithms

IDQ's Data Center Ready Product Suite

QKD

Clavis XG

Ultra-secure, turn-key solutions capable of operating across numerous complex network configurations

Quantum Sensing

ID Qube ULN

High-performance multi-channel solutions including best-in-class SNSPDs, forming the building blocks of the quantum internet

QRNG

Random Number Generation

Multiple form-factor local generation of entropy provides for the most secure keys by generating true quantum randomness

Select Customers:

Singtel SK telecom felix telecom

Qubitekk's Quantum Key Distribution (QKD)

The Bohr IV quantum network includes:

- Entangled photon sources
- Superconducting nanowire detectors
- Quantum-compatible fiber optic switches
- Precision correlated timing hardware

EPB Quantum Network℠ powered by Qubitekk

A Commercially Available
Quantum Network in Tennessee

Global Quantum Internet Capability

- Establishes IonQ as **vertically integrated** orbital sensor network deployment leader
- Path to unlock **rapidly growing secure communications market** via QKD & free-space optical quantum transmission
- Direct access to top-secret contracting expertise; **IonQ gains a Facility Security Clearance** (FCL)

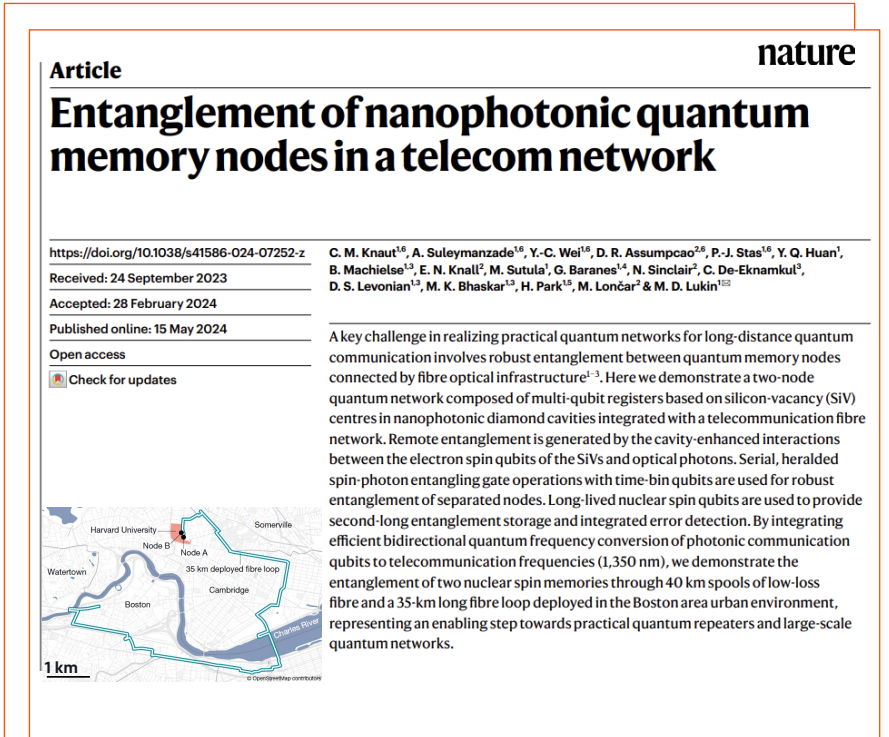
Pending closing of IonQ's intended acquisition of Capella Space signed in May 2025

Quantum Memory-Enhanced Quantum Repeaters

IONQ

Quantum repeater capable of vastly extending the range of quantum networks

- Over **35 km** of deployed fiber with a path to **hundreds of kilometers** between repeaters
- Over **1 second** storage time
- Repeaters are a key component of the **Quantum Internet** future



nature

Article

Entanglement of nanophotonic quantum memory nodes in a telecom network

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A key challenge in realizing practical quantum networks for long-distance quantum communication involves robust entanglement between quantum memory nodes connected by fibre optical infrastructure[1–3]. Here we demonstrate a two-node quantum network composed of multi-qubit registers based on silicon-vacancy (SiV) centres in nanophotonic diamond cavities integrated with a telecommunication fibre network. Remote entanglement is generated by the cavity-enhanced interactions between the electron spin qubits of the SiVs and optical photons. Serial, heralded spin-photon entangling gate operations with time-bin qubits are used for robust entanglement of separated nodes. Long-lived nuclear spin qubits are used to provide second-long entanglement storage and integrated error detection. By integrating efficient bidirectional quantum frequency conversion of photonic communication qubits to telecommunication frequencies (1,350 nm), we demonstrate the entanglement of two nuclear spin memories through 40 km spools of low-loss fibre and a 35-km long fibre loop deployed in the Boston area urban environment, representing an enabling step towards practical quantum repeaters and large-scale quantum networks.