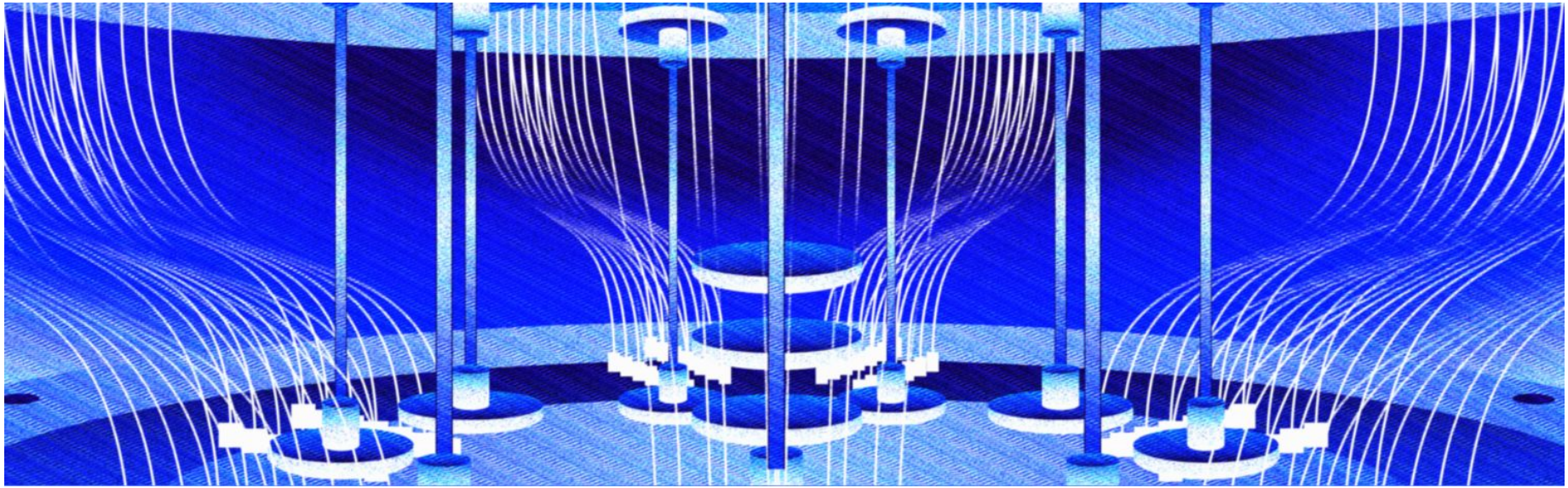
# Accelerating → → →
# Quantum Advantage

BTQ builds post-quantum infrastructure to secure mission critical networks



BTQ

# Disclaimer

This presentation of BTQ Technologies Corp. ("BTQ" or the "Company") is for information only and shall not constitute an offer to buy, sell, issue or subscribe for, or the solicitation of an offer to buy, sell or issue, or subscribe for any securities in any jurisdiction. No securities commission or similar regulatory authority has passed on the merits of any of the securities referred to herein and any representation to the contrary is an offence. The information contained herein is subject to change without notice and is based on publicly available information, internally developed data and other sources. Where any opinion or belief is expressed in this presentation, it is based on the assumptions and limitations mentioned herein and is an expression of present opinion or belief only. No warranties or representations can be made as to the origin, validity, accuracy, completeness, currency or reliability of the information.

The Company disclaims and excludes all liability (to the extent permitted by law), for losses, claims, damages, demands, costs and expenses of whatever nature arising in any way out of or in connection with the information in this presentation, its accuracy, completeness or by reason of reliance by any person on any of it. This presentation should not be construed as legal, financial or tax advice to any individual, as each individual's circumstances are different. Readers should consult with their own professional advisors regarding their particular circumstances. The information contained in this presentation is not directed to persons or entities resident in the United States and does not constitute an offer or solicitation by anyone in the United States or in any other jurisdiction.

THE SECURITIES DESCRIBED IN THE PRESENTATION HAVE NOT BEEN, AND WILL NOT BE, REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933 (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE U.S. AND THE SECURITIES MAY NOT BE OFFERED OR SOLD WITHIN THE U.S., EXCEPT PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND APPLICABLE STATE OR LOCAL SECURITIES LAWS.

FORWARD-LOOKING STATEMENTS

Certain statements in this presentation are "forward-looking statements". Any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions or future events or performance (often, but not always using words or phrases such as "expect", "seek", "endeavour", "anticipate", "plan", "estimate", "believe", "intend", or stating that certain actions, events or results may, could, would, might or will occur or be taken, or achieved) are not statements of historical fact and may be "forward-looking statements". Forward-looking statements are based on expectations, estimates and projections at the time the statements are made and involve significant known and unknown risks, uncertainties and assumptions which would cause actual results or events to differ materially from those presently anticipated. Some of the specific forward-looking statements in this presentation include, but are not limited to, statements with respect to: the United States Memorandum on Improving the cybersecurity of National Security, Department of Defense and Intelligence Community Systems and related estimated timelines for completion of updates related thereto; quantum computing reshaping the internet; the efficiency of the technical design specifications of the Company's products; target development milestones and a related timeline to achieve a product release based on such development milestones in 2023; potential revenue streams for the Company; profit margins upon the Company earning revenue; the nature of cybersecurity and cryptography markets and its related impact on acquisitions and stock price momentum; A number of factors could cause actual results, performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements.

Forward-looking statements are based on a number of key expectations and assumptions made by the Company, including, without limitation: the global economy and Company's business; the Company will achieve its objectives with respect to optimizing portfolio performance, growth and valuation creation; the Company's financial performance will be consistent with the Company's current estimates; there will be no changes to applicable laws or regulations adversely affecting the Company or its attributes; and conditions in the global blockchain industry, including competition for acquisitions, will not impede the Company's performance. Should assumptions underlying the forward- looking statements prove incorrect, actual results, performance or achievements could vary materially from those expressed or implied by the forward looking statements contained in this document. Investors should not place undue reliance on these forward-looking statements. Although the forward-looking statements contained in this document are based upon what the Company's management currently believes to be reasonable assumptions, the Company cannot assure prospective investors that actual results, performance or achievements will be consistent with these forward-looking statements. Except as required by law, the Company does not have any obligation to advise any person if it becomes aware of any inaccuracy in or omission from any forward-looking statement, nor does it intend, or assume any obligation, to update or revise these forward-looking statements to reflect new events or circumstances.

MARKET RESEARCH AND PUBLIC DATA

This presentation contains or references certain third-party market, industry and peer group data which is based upon information from independent industry publications, market research, analyst reports and surveys and other publicly available sources. Although the Company believe these sources to be generally reliable, such information is subject to interpretation and cannot be verified with complete certainty due to limits on the availability and reliability of raw data, the voluntary nature of the data gathering process and other inherent limitations and uncertainties. The Company has not independently verified any of the data from third party sources referred to in this presentation and accordingly, the accuracy and completeness of such data is not guaranteed. This presentation is confidential and is being provided to you solely for your information and may not be reproduced, in whole or in part, in any form or forwarded or further distributed to any other person. Any forwarding, distribution or reproduction of this document in whole or in part is unauthorized. By accepting and reviewing this presentation, you acknowledge and agree (i) to maintain the confidentiality of this document and the information contained herein, (ii) to protect such information in the same manner you protect your own confidential information, which shall be at least a reasonable standard of care and (iii) to not utilize any of the information contained herein except to assist with your evaluation of the Company. BTQ is not affiliated with, sponsored, or endorsed by the companies listed, described, or featured. Company logos or trademarks used do not imply endorsement and are the property of their respective owners.

# Exponential Quantum Advantage Over Classical Computing Poised to Create New Industries

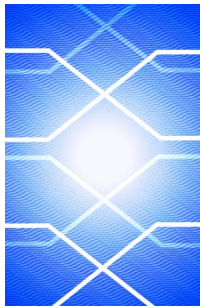
Quantum infrastructure is poised to revolutionize traditional binary computing, introducing substantial cybersecurity risks for mission-critical networks.

## Security

Quantum technologies offer unparalleled security, leveraging quantum cryptography to create virtually unbreakable encryption methods, safeguarding sensitive data against even the most sophisticated cyber threats.

## Energy efficiency

Quantum systems dramatically improve energy efficiency, performing complex computations with minimal power consumption, thus reducing the carbon footprint and operational costs for businesses.



## Speed advantage

Quantum computing delivers a significant speed advantage, solving complex problems in seconds that would take classical computers years, driving faster decision-making and innovation.

## Accuracy

Quantum technologies provide exceptional accuracy in calculations and simulations, reducing errors and improving outcomes in fields ranging from financial modeling to pharmaceutical research.

# Google Willow Vs. Classical Computing

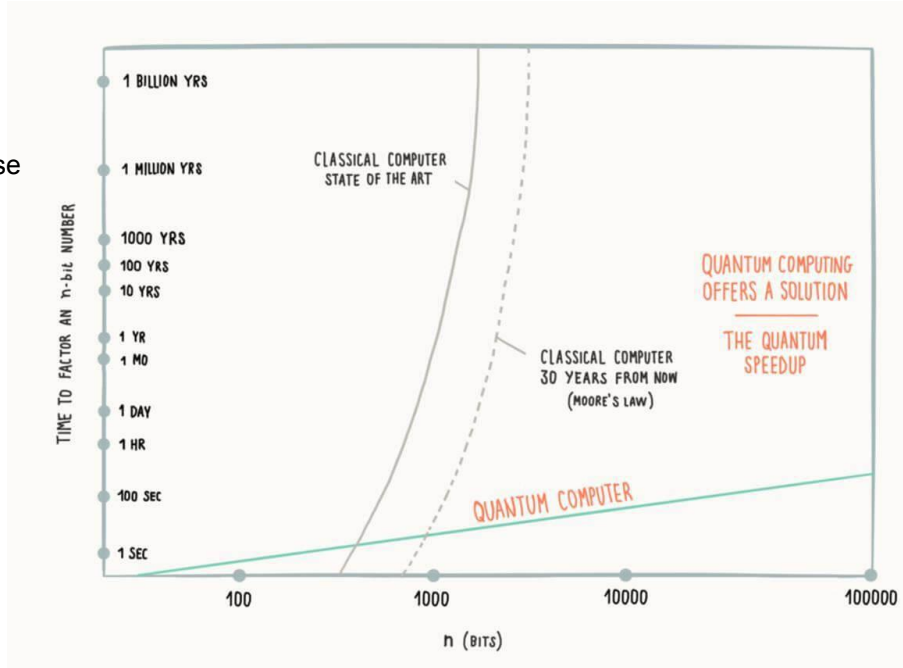
BTQ

## Unprecedented Speed

- **5 minutes vs. 10 septillion years**: Willow solves problems in minutes that classical supercomputers would take longer than the age of the universe to complete.
- **Exponential Error Reduction**: As qubits increase, errors decrease exponentially, overcoming a critical challenge in quantum computing.

## What This Means for Quantum Computing

- **Breaking the Classical Barrier**: Achieves quantum supremacy, solving problems impossible for classical computers.
- **Enabling Real-World Applications**: Unlocks breakthroughs in:
  - Drug discovery
  - Fusion energy research
  - Advanced battery design
- **Scalability & Reliability**: Moves closer to commercially viable quantum systems by addressing error correction.
- **Driving Industry Growth**: Sets a new benchmark, spurring innovation and investment across the quantum ecosystem.



# Quantum Technology Is Being Prioritized by Governments Worldwide, Underscoring Its National Strategic Importance

BTQ

| Country | Highlights | Budget |
|---|---|---|
|  | • Concentrate research efforts in aerospace, national defense, and security that can create synergy effects with quantum technologies.<br>• Provide Full support to foster universities as a center of innovation in quantum fields.<br>• Established the “National Quantum Strategy” to develop quantum technology, related enterprises, and manpower (Feb. 2023). | 360 Million (2023) |
|  | • Established the “National Quantum Initiative Committee” under the White House and signed the “ National Security Memorandum” to mitigate cybersecurity risks relating to quantum computers (May 2022).<br>• Gave the National Institute of Standards and Technology (NIST) authorization to establish up to 3 centers for quantum sensing, under the NQI Act Reauthorization proposed in November 2023 (up to $54 million grant per year between 2024 and 2028). | 1.2 Billion |
|  | • Expand investment to foster quantum-related industries.<br>• The “National Quantum Strategy” set out the goals of creating A$4.6 billion in value and large-scale job opportunities by 2045 (May 2023). | 472 Million |
|  | • Expand investment based on its R&D investment strategy while promoting quantum industries, especially by conducting pilot projects for quantum cryptography communication infrastructure.<br>• Announced its “ Quantum Technology Roadmap” and “Vision for Quantum Science & Technology” to lead the global quantum economy (Jun. 2023)<br>• Enacted the Act on Fostering Quantum Science & Technology and Quantum Industries (approved by the National Assembly, Oct. 2023). | 2.3 Billion by 2035 |

# BTQ Commercializes Near Term Quantum Technology With A Focus On Cryptographic Infrastructure


**Research & Industry Partners**

IDQ

holonym

CYBERSECURITY AND PRIVACY INSTITUTE
UNIVERSITY OF WATERLOO

鴻海研究院
Hon Hai Research Institute

MACQUARIE University
SYDNEY·AUSTRALIA

RADICAL semiconductor

# Key Partnerships Across Verticals and Geographies

BTQ

## Industry Partners

FOXCONN 鴻海科技集團

Joint effort in post-quantum cryptography research as well as standardization submission

IDQ

Develop and industrialize advanced quantum products and technologies for organizations to ensure long-term protection of data and public safety.

ITRI Industrial Technology Research Institute

Development of security chip that utilizes QCIM (Quantum Computation in Memory) technology

holonym

Aiming to create a robust, secure, and private decentralized identity protocol, useful in various sectors

## Academic, Governmental, and Professional Partners

mitacs

NRC·CNRC Canada

MACQUARIE University SYDNEY·AUSTRALIA

UNIVERSITY OF WATERLOO

UNIVERSITY OF TORONTO

CSIRO

# Product Offerings

BTQ

## QCIM

Advanced processing in memory architecture suitable for scaled-up computations in NIST selected PQC algorithms.

## PQScale

PQScale is a scaling mechanism for lattice-based post-quantum signatures, leveraging zero-knowledge proofs to compress digital signatures to achieve state-of-the-art speed and cost savings.

## Preon

Preon paves the path to a future-proof, digitally secure world with the power of a unique post-quantum signature scheme.

## Keelung

Keelung is a user-friendly toolkit for developing zero-knowledge proofs (ZKPs), featuring a domain-specific language (DSL) embedded in Haskell and a compiler.

## QPoW

Quantum Proof-of-Work (QPoW) is an energy-efficient, post-classical consensus algorithm that uses NISQ hardware to authorize blockchain transactions.

## QRiNG

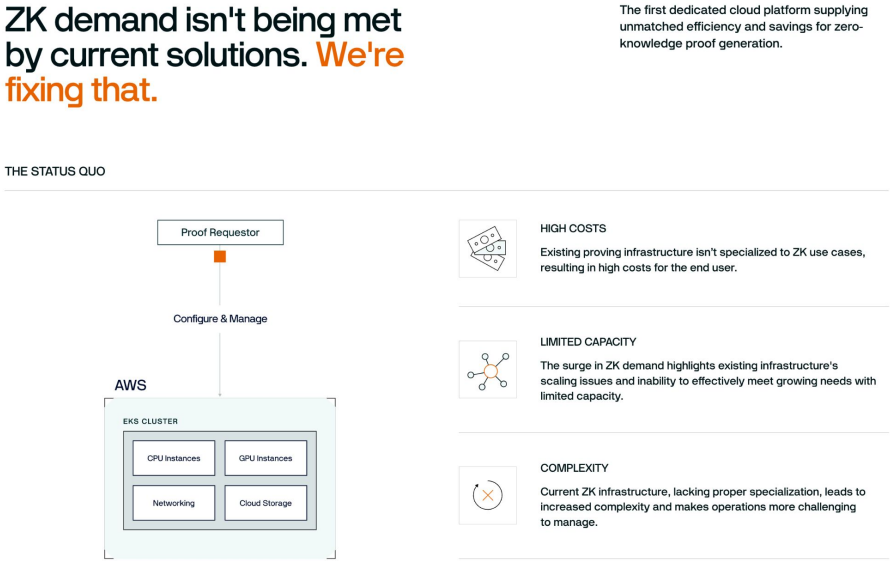
QRiNG is a toolkit for quantum random number generation that employs quantum key distribution to produce genuine randomness.

# Commercialization Case Study: BTQ & Zero Computing Advance Zero-Knowledge Proof Solutions

BTQ Technologies Corp. has partnered with Zero Computing to advance the development of post-quantum zero-knowledge proof (ZKP) solutions, crucial for enhancing privacy and security in digital transactions.

Zero Computing will leverage BTQ's proprietary software and services to improve the efficiency and cost-effectiveness of ZKP computations, utilizing a specialized cloud platform to streamline the process.

The partnership focuses on research and innovation in ZKP technology, enabling both companies to stay at the forefront of encryption technology and deliver advanced solutions to their clients.



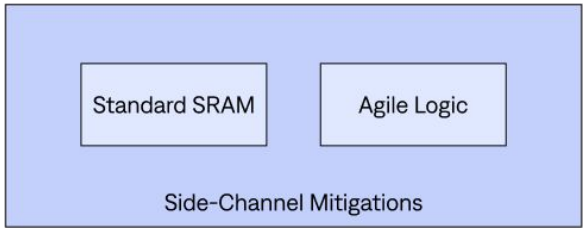
# Recent Acquisition

BTQ Technologies has successfully acquired the assets of Radical Semiconductor Inc., a hardware security innovator specializing in cryptographic accelerators, including their revolutionary CASH architecture. Radical's innovative approach, which leverages processing-in-memory technology, offers secure, agile, and reconfigurable cryptographic solutions supporting post-quantum algorithms and emerging cipher suites. This acquisition solidifies BTQ's leadership in post-quantum cryptography and bolsters its portfolio of next-generation security technologies.

## Building A Commercial Cryptographic PIM

Goals for the Radical CASH Core:

- **Agile:** can support many different algorithms.
- **Secure:** implements side-channel mitigation strategies.
- **Portable:** can be implemented with standard, off-the-shelf SRAM.
- **Performant:** able to achieve higher performance-per-area than non-PIM designs.




### Sean Hackett

Sean Hackett is the CEO and Founder of Radical Semiconductor. He previously worked at Prince Street Capital Management as a Financial Analyst & Business Development Associate. Sean Hackett attended Stanford University.

### Zachary Belateche

Zachary Belateche is the Founder and CTO at Radical Semiconductor. Co-founded a venture-backed startup designing secure hardware accelerators. Achieved state-of-the-art efficiency for post-quantum algorithms like Kyber and Dilithium.

# Stringent Post-Quantum Security Standards

BTQ

## A Catalyst for Widespread Adoption

"

Within 180 days of the date of this memorandum, agencies shall identify any instances of encryption not in compliance with NSA-approved Quantum Resistant Algorithms for CNSA, where appropriate in accordance with section 1(b)(iv)(A) and (B) of this memorandum, and shall report to the National manager, at a classification level not to exceed TOP SECRET//SI//NOFORN

Joe Biden, August 2023

| NIST National Institute of Standards and Technology U.S. Department of Commerce | Standardized | 4th Round Candidates |
|---|---|---|
| Public-Key Encryption/KEMs | CRYSTALS-KYBER | Bike FrodoKEM HQC NTRUprime SIKE |
| Digital Signatures | CRYSTALS-Dilithium Falcon SPHINCS+ | |

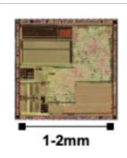
# How To Bring Post-quantum To The Smallest Devices?

BTQ

**When standards are in flux, customers' cryptographic requirements become even more complex.**

As post-quantum cryptographic (PQC) standards continue to emerge, device manufacturers face a complex cryptographic landscape.

- Standards bodies like NIST are finalizing algorithms, but uncertainty remains around optimal solutions for various use cases.
- The need for hybrid approaches (classical + quantum-safe) creates added complexity for developers.
- Rising Threats: Quantum computing advancements pose an imminent threat to traditional cryptographic systems, making future-proof solutions a priority, even for small devices.





**Resource-constrained devices often struggle to deploy agile cryptographic solutions.**

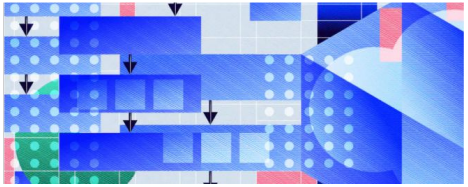
**Resource Limitations**: Many IoT and embedded devices operate with severe constraints in power, processing, and memory.

- Agile cryptographic solutions must accommodate these limitations without compromising security or performance.
- Legacy systems and low-cost hardware often cannot support computationally intensive PQC algorithms.

**Side-Channel Risks**: Small devices are especially vulnerable to side-channel attacks (e.g., power analysis, timing attacks), necessitating robust security measures without excessive overhead.

# QCIM: A New Kind of Chip For Post-quantum Cryptography

BTQ



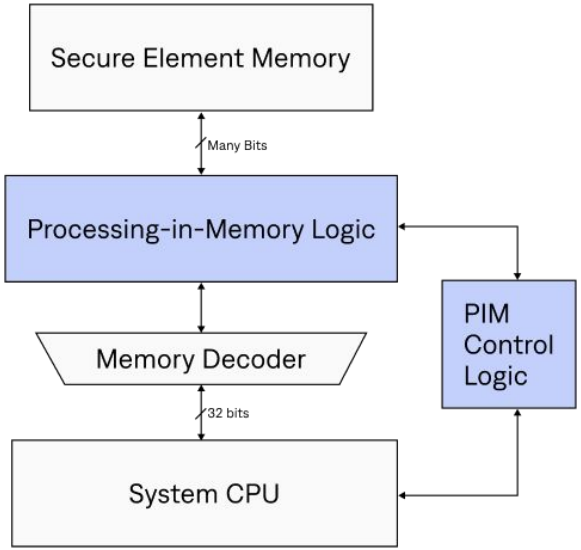
## System-Level Integration

BTQ's QCIM core performs massively parallel, bitwise operations directly next to money. Similar architectures have proven very effective for other applications, such as computing matrix operations for machine learning models.

- **Eliminate Memory Bottlenecks**

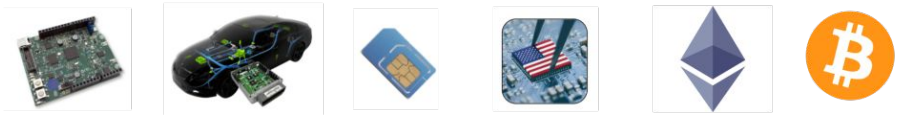
  Operating directly on shared memory increases system performance when working with large, structured pieces of data like cryptographic keys.

- **Easy to Integrate**
  - Our default implementation can work with conventional SRAM macros and standard cells. We also support a custom SRAM macro to increase performance and add additional features.
  - We support the AHB interconnect and easily can support other bus standards.




(Blocks drawn in blue are developed by BTQ.)

## Applications for QCIM



# Foxconn

## Engagement Overview

- BTQ has entered into a Research and Collaboration Agreement with Hon Hai Precision Industry Co., Ltd., globally known as Foxconn
- BTQ is assisting Foxconn with global IP & commercialization development related to post-quantum encryption, quantum computing, and quantum sensing
- Foxconn ranked 20th on the Fortune Global 500 rankings in 2022 with an annual revenue of over US$213 billion. Some of its largest customers include big-tech giants like Apple, Microsoft, Amazon, HP, and IBM
- Founded in 1974 and Headquartered in Taiwan, Foxconn is the largest electronics manufacturer in the world and therefore has a pressing need to introduce quantum-resistant technologies to its vast product portfolio which spans across consumer electronics, cloud and networking products, computing products, and components

BTQ leadership meeting with Foxconn in Taiwan

# Waterloo Cybersecurity and Privacy Institute Overview

The Cybersecurity and Privacy Institute (CPI) at the University of Waterloo fosters interdiscip and privacy research.

In November 2023, the CPI secured $3.3 million from the National Cybersecurity Consortium (NCC) under the Cyber Security Innovation Network (CSIN) program.

## CPI Sponsors, Partners, and Supporters

BTQ · BlackBerry · RBC Foundation · aws · mastercard · TAURIA

## CPI Areas of Focus

- Cryptography
- Network Security
- Operation Security
- Quantum-Safe Communication
- Data Science – Security and Privacy
- Human & Societal Aspects of Security and Privacy
- Privacy-Enhancing Technologies
- Legal and Policy Aspects of Security and Privacy

BTQ

## CPI Key Stats

- #1 in Canada
- #10 in the world
- 69 researcher
- 60 student members
- Representation from 7 faculties

# BTQ Technologies & ID Quantique

**Overview of the Partnership:**

- **MOU Signed**: On July 19, 2024, BTQ Technologies and ID Quantique (IDQ) entered a Memorandum of Understanding to develop a new authentication system that merges Quantum Random Number Generators (QRNG) with Post-Quantum Cryptography (PQC).
- **Objective**: To address the growing security challenges posed by both classical and quantum computers through a next-generation authentication solution.

**IDQ Background:**

- **ID Quantique**: A pioneer in quantum cryptography, known for its QRNG technology used globally, including in sectors like telecom, government, and financial services.

**Anticipated Impact:**

- **Innovative Solution**: The collaboration aims to set new standards in secure authentication systems, leveraging IDQ's expertise in QRNG and BTQ's advancements in PQC.
- **Market Potential**: This joint solution will cater to high-security markets such as IoT, critical infrastructure, and financial services, helping organizations prepare for the quantum era.

# BTQ Technologies Joins QuINSA as Founding Member

**Founding Membership:**

- **International Collaboration**: BTQ joins QuINSA alongside global quantum leaders like SKT, IBM, AWS, and IDQ, to drive standardization in quantum communication, computing, and sensing.
- **Mission**: QuINSA aims to develop international standards, analyze trends, and promote the industrialization of quantum technologies through collaboration with global standardization bodies.

**QuINSA's Strategic Role:**

- **Focus Areas**: Quantum communication, computing, and sensing.
- **Objectives**:
  - Develop standards for emerging quantum technologies.
  - Facilitate cooperation between international experts.

BTQ


BTQ Technologies Joins QuINSA as a Founding Member

# Meet the Team

## Olivier Roussy Newton

**Chief Executive Officer, Chairman**
Founder HIVE Blockchain Technologies (NASDAQ:HIVE), Founder Latent Capital, Co-founder Valour.

## Nicolas Roussy Newton

**Chief Operating Officer, Director**
Partner at Latent Capital, focused on quantum technologies. Previously consultant at GitHub Inc.

## Lonny Wong, BA, CPA, CA

**Chief Financial Officer**
Partner at Saturna Group, with extensive experience with public companies and transactions on both the US Securities and Exchange Commission and the BC Securities Commission.

## Mathieu Gauthier

**Head of Corporate Development**
Previously Scotiabank Investment Banking, UBC Sauder MBA, Western University Bachelor of Management

## Gavin Brennen

**Quantum Information Advisor**
Director Macquarie Centre for Quantum Engineering (MQCQE) Chief Investigator ARC Centre for Excellence in Engineered Quantum Systems (EQUS) Executive Board Member Sydney Quantum Academy (SQA)

## Eylon Yogev

**Post-Quantum Cryptography Advisor**
PhD at the Weizmann Institute under the mentorship of Prof. Moni Naor. A faculty member in the Department of Computer Science at Bar-Ilan University and a prominent member of the Bar-Ilan Center for Research in Applied Cryptography and Cyber Security.

## Kohei Suenaga

**Zero-Knowledge Cryptography Advisor**
An Associate Professor at the Graduate School of Informatics, Kyoto University, with a Ph.D. in Information Science and Technology from The University of Tokyo. With extensive background includes research roles at IBM Tokyo Research Laboratory and the University of Lisbon.

## Deepesh Singh

**Quantum Photonics Advisor**
A third-year PhD candidate in the School of Mathematics and Physics at the University of Queensland

# Public Market Overview

BTQ

## Public Market Capitalization

BTQ

Ticker Symbol

| | | |
|---|---|---|
| OTCQX: **BTQQF** | Cboe CA: **BTQ** | FRA: **NG3** |

| | |
|---|---|
| Cboe Exchange Listing Date | February 21, 2023 |
| Total Shares Outstanding | 124, 203, 879 |
| Options and Warrants Outstanding | 6,420,000 |
| Fully Diluted Shares Outstanding | 130,623,879 |
| Listing Price | C$0.40 |
| 52-Week High Low | C$0.25 - C$3.55 |
| Market Cap | **$353,981,055** |

## Share Price Performance


## Listing Timeline for Different Venues

| Cboe | OTCQX | BÖRSE FRANKFURT / Börse Stuttgart | börse münchen |
|---|---|---|---|
| Feb 2023 | May 2023 | March 2023 | June 2023 |
| BTQ | BTQQF | NG3 | NG3 |

***Note: Share and market price data as at December 11, 2024***

Thank You

# For Investor Relations Inquiries, Please Contact

desk@btq.com

Nicolas Roussy Newton, Co-founder & COO

BTQ