Nuclear Decay True Random Number Generator for Post-Quantum Security Infrastructure Semiconductor Prototype, Patent Foundation and Investment Opportunity

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This technology has been pursued over decades to establish a physically reliable entropy source for long-term secure systems.
It is presented here as a foundation for future secure semiconductor and cryptographic infrastructures.

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1. Investment Summary

Quantaglion is developing a semiconductor-based entropy technology positioned as a foundational component for next-generation secure semiconductor infrastructure.
This technology provides a physically guaranteed entropy source designed for next-generation secure semiconductor and post-quantum cryptographic infrastructure.
A prototype semiconductor random number generation device has already been fabricated and successfully tested.
The technology is currently at a pre-mass-production stage, with core functionality validated and initial device implementations operational.
As global security systems transition toward post-quantum cryptography and hardware-rooted trust architectures, demand for physically reliable entropy sources is expected to grow across semiconductor security, critical infrastructure, and national-level systems.
Quantaglion is seeking strategic investment in the range of **JPY 100–300 million** to support:

- Semiconductor device refinement and scalable manufacturing preparation
- Long-term reliability and evaluation programs
- Integration into secure hardware platforms
- Core development and operational continuity

This investment will enable the transition from advanced prototype stage to scalable semiconductor-based security infrastructure technology.
Quantaglion's nuclear-decay-based entropy technology represents a unique and defensible position in the emerging global market for quantum-resilient hardware security.

The company welcomes discussions with investors and strategic partners interested in next-generation semiconductor security and entropy infrastructure technologies.

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2. Entropy Reliability in the Post-Quantum Era

As global security systems transition toward post-quantum cryptography (PQC), the long-term reliability of entropy sources used for cryptographic key generation has become increasingly critical.

Modern hardware random number generators are widely based on thermal noise, oscillator jitter, and other electronic fluctuations.

While practical and widely deployed, these approaches rely on complex physical and electronic environments whose long-term stability and non-manipulability must be continuously validated.

For next-generation security infrastructures — including post-quantum cryptography, national communication systems, and critical infrastructure — entropy sources must remain trustworthy over extended operational lifetimes and diverse environmental conditions.

This has led to growing interest in entropy generation mechanisms that are:

- Fundamentally unpredictable by physical law
- Independent of algorithmic assumptions
- Resistant to external manipulation
- Stable over long operational periods

Physically derived entropy based on fundamental quantum processes offers a potential path toward achieving these requirements.

Quantaglion's nuclear-decay-based entropy technology has been developed to address this emerging need for long-term, physically guaranteed entropy in semiconductor-based security systems.

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3. Quantaglion Nuclear Decay Semiconductor RNG

Quantaglion has developed a true random number generation technology based on nuclear decay, a fundamentally quantum physical phenomenon that provides intrinsically unpredictable entropy.

The technology integrates this quantum-derived entropy source directly into semiconductor hardware, enabling implementation within secure chips and authentication devices.

A prototype semiconductor random number generation device has already been fabricated and tested, demonstrating stable operation and suitability for secure hardware integration.

This approach enables:

- Physically guaranteed entropy independent of algorithmic assumptions

- Long-term stable operation suitable for lifetime-scale systems
- On-chip random number generation and verification
- Reduced external attack surface through hardware-contained entropy

The technology is designed for integration into next-generation secure semiconductor platforms supporting post-quantum cryptography and high-assurance authentication systems.

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4. Semiconductor Implementation Status

Quantaglion has successfully fabricated prototype semiconductor-based true random number generation devices based on nuclear decay entropy.

The current implementation consists of a semiconductor chip-level entropy generation element integrated with detection and signal processing circuitry, enabling stable random pulse generation derived from quantum decay events.

Prototype devices have demonstrated:

- Stable entropy generation based on nuclear decay
- Continuous operation suitable for long-term use
- Integration capability with semiconductor and secure hardware platforms
- Applicability to authentication and secure identification devices

At present, the technology is in an advanced prototype stage.

Core functionality has been validated, and the entropy generation mechanism has been confirmed to operate reliably within semiconductor-based implementations.

The next development phase focuses on:

- Refinement toward scalable semiconductor manufacturing
- Packaging and module-level integration
- Long-term continuous operation evaluation
- Integration into secure semiconductor and authentication platforms

This status positions Quantaglion's technology at a pre-mass-production stage suitable for strategic investment and industry collaboration.

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5. Patent Portfolio

Quantaglion's technology is supported by an established international patent portfolio covering nuclear-decay-based entropy generation, random pulse generation, and secure authentication technologies.

Core Active Patent Coverage

Patent protection has been established across major jurisdictions including:

- United States
- Japan

- Europe
- China
- Korea
- Taiwan
- India
- ASEAN regions

These patents cover semiconductor-based true random number generation, radioisotope-based entropy sources, and secure authentication architectures.

Long-Term Intellectual Property Foundation

The inventor has continuously developed and patented nuclear-decay-based and random pulse generation technologies since 1992, establishing a long-standing intellectual property foundation in this field.

This long-term patent history provides a strong and defensible position for semiconductor-based entropy and authentication technologies.

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6. Strategic Market Position

The global transition toward post-quantum cryptography and hardware-rooted security is creating increasing demand for physically reliable entropy sources within semiconductor devices.

Secure random number generation is a foundational component for:

- Post-quantum cryptographic systems
- Secure authentication and identity devices
- Trusted semiconductor platforms
- Critical infrastructure and national security systems

As semiconductor security architectures evolve toward hardware-based trust anchors, demand is expected to grow for entropy sources that are physically unpredictable, long-term stable, and resistant to external manipulation.

Quantaglion's nuclear-decay-based semiconductor entropy technology is positioned to serve as a foundational component in next-generation high-assurance semiconductor security systems.

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7. Funding and Use of Capital

Quantaglion is seeking strategic investment in the range of **JPY 100–300 million** to transition its nuclear-decay-based semiconductor true random number generation technology from advanced prototype stage to scalable deployment.

The company has already achieved core technology validation and prototype semiconductor

implementation.

The requested funding will enable the next phase of development and positioning toward semiconductor security infrastructure applications and strategic partnerships.

Primary use of funds includes:

Semiconductor Development and Integration

- Refinement of semiconductor RNG chip design
- Packaging and integration into secure hardware modules
- Preparation for scalable manufacturing

Evaluation and Reliability Programs

- Long-term continuous operation testing
- Environmental and stability evaluation
- External evaluation and application testing

Engineering and Technical Resources

- Semiconductor and hardware engineering support
- Firmware and system integration
- Prototype iteration and optimization

Core Development Continuity

- Sustaining core R&D activities
- Maintaining operational continuity
- Supporting transition toward strategic partnerships

This funding will enable Quantaglion to move from advanced prototype stage to a position suitable for semiconductor industry collaboration, strategic adoption, and potential acquisition discussions.

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8. Contact

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Direct founder communication available for strategic and investment discussions