QRANGE

Quantum Random Numbers: Faster, Cheaper, More Secure.

Develop and innovation ecosystem to drive the development of QRNG
Expand the market, and train a quantum-aware workforce

A multidisciplinary team of
academic, research and industrial partners.

Realise a certification framework and standards
for truly quantum random number generators.

Pushing QRNG device, system and eventually product development, towards high TRL.

Providing low-cost compact solutions with high rate certified randomness.

QUANTUM
FLAGSHIP

The Quantum Flagship is a large-scale initiative funded for 1B Euro level for 10 years.
It consists of research and innovation projects selected and evolving through a peer review process.
Involving 5000 researchers from academia and industry.

THE GOALS ARE
To consolidate and expand European scientific leadership and excellence in this research area.
To kick-start a competitive European industry in Quantum Technologies.
To make Europe a dynamic and attractive region for innovative research, business and investments in this field.

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Quantum Random Numbers Generation
Faster, Cheaper, More Secure.

9 Partners
5 countries
3.2M Euros

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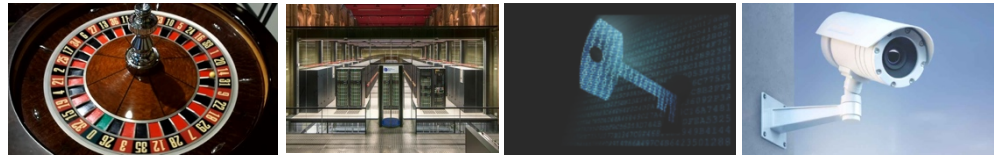
Addressing challenges for
gaming, high-performance computing, secure communication & the internet of things.

QRANGE will pursue a broad and sustainable commercialisation of QRNG in several areas of secure communication (classical and quantum) and high-performance computing. The key is to improve the randomness certification of QRNG while at the same time reduce the price and size of the devices and make them faster.

There are three main technological approaches that address different markets.
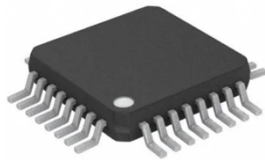

Our goal is to push QRNGs towards miniaturisation to realise a compact and low cost QRNG, exploiting CMOS technology with the aim of developing very compact and low-cost devices for mass markets, such as in the Internet of things (IoT).

Conceptual image for a fully integrated solution.

This approach is capable of Gbps generation rates suitable for quantum communication and high-performance computing.

Inspired by "device independent" (DI) QRNGs whose operation can be certified without making assumptions about the implementation or internal operation.
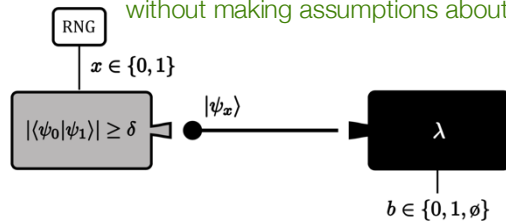
This approach provides a practical solution for semi-DI QRNG allowing some, easily verifiable, assumptions, significantly simplifying the schemes.

Allows the user to continuously monitor the quantum entropy generated by the system and hence certify (self-test) genuine randomness in real time.