

Quantum Impact Challenge

Award for the Best Practical Need Addressable Through Quantum Technologies

*The Quantum Impact Challenge is an international recognition designed to identify, highlight, and accelerate the most promising **practical need** that can benefit from the real and verifiable application of quantum technologies – whether gate-based, annealing, quantum-inspired, or hybrid HPC+Quantum.*

*The goal is not to reward an abstract idea, but a **concrete industrial or scientific problem** with the potential for transformative impact when approached with quantum algorithms or models.*

What Is Evaluated

Projects should clearly demonstrate:

- 1. A real, measurable need within a company, public organization, laboratory, or complex infrastructure*
- 2. A tangible expected benefit, such as faster computation, resource optimization, improved efficiency, new material discovery, or detection of complex patterns*
- 3. Evidence that the problem size and structure are quantum-tractable, meaning suitable for quantum or quantum-inspired approaches*
- 4. A technical rationale, even preliminary, explaining why a quantum algorithm could outperform classical methods*

What the Winner Receives

The selected project:

- *Enters a dedicated development program managed by Q-Alliance*
- *Is supported by a **multidisciplinary team** of experts in:*
 - *Quantum Annealing*
 - *Trapped-Ion Gate Systems*
 - *Hybrid HPC+Quantum Modelling*
 - *Applied Mathematics and QUBO/Ising modelling*
 - *Combinatorial optimization and physical simulations*
 - *Security and Post-Quantum Cryptography (when relevant)*
- *The team develops a full Proof-of-Concept (PoC), including:*
 - *Mathematical formalization of the problem*
 - *Mapping to QUBO/Ising or gate-based circuits*

- *Selection of the most appropriate quantum architecture*
- *Benchmarking against classical methods*
- *Assessment of industrial scalability*
- *The PoC may be implemented on:*
 - *Advanced annealing platforms*
 - *High-fidelity gate-based systems*
 - *Hybrid HPC+Quantum architectures via proprietary SDKs*