**The Blaise Pascal Quantum Challenge**

**Call for Ideas**

**Deliverable template**

*Project Name*

*User guide for this template to be filled and joined to your participation.*

* *Please respect the three parts to be completed*
* *Please note that the items suggested inside each part are indications to help you understand what we expect, they are not mandatory*
* *Please insert directly inside the end of your deliverable any relevant document supporting your ideas*

**PART 1: Sustainability Impact Assessment**

**Objective of this section:** Demonstrate the measurable and scalable benefits of your project in addressing sustainability challenges.

**What to include:**

Impact on the challenge selected:

* Describe how your solution aligns with one of the Five Challenges and contributes to the corresponding UN SDGs.
* Anticipate briefly the possibilities for scaling your solution beyond its initial application.

Quantifiable Metrics:

* Specify measurable outcomes, such as energy savings, carbon footprint reduction, improvements in resource efficiency or societal benefits.
* Propose metrics for evaluating success, such as reduction in energy consumption, time savings enabled by quantum AI, social or economic impact on target communities.

(Attach supporting evidence, such as existing studies, data, or examples, if available.)

**PART 2: Technical Feasibility of the Solution**

**Objective of this section:** Provide a detailed explanation of how your project leverages quantum computing and its feasibility.

**What to include:**

General Approach and Strategy Proposed:

* Explain the overall strategy for solving the identified problem.
* Detail how the problem will be solved using AI and quantum computing.
* (Optional) Give a draft comparison between the sustainability benefits (eg. savings in carbon emissions and energy consumption) vs. the footprint of your quantum AI stack (eg. Carbon emissions and energy consumption of the Pasqal quantum as well as the non-quantum parts of the AI system involved), you could use [this methodology as a possible guide](https://telechargement.afnor.info/standardization-afnor-spec-ai-frugal).

Quantum Computing Integration:

* Explain how quantum computing supports your solution.
* Highlight compatibility with Pasqal’s neutral atom technology or other quantum architectures.

Mathematical Problem Formulation:

* Clearly define the problem in mathematical terms, including:
* Key variables, parameters, and equations/models.
* Assumptions or simplifications made.
* Computational complexity and how quantum computing addresses it.

(Attach technical schematics, models, or preliminary simulations, if relevant.)

**PART 3: Innovation and Creativity**

**Objective of this section:** Highlight the originality and disruptive potential of your quantum AI solution.

**What to include:**

State of the Art:

* Position the solution within existing research and technologies.
* Justify the novelty of the approach, describe whether your project involves:
  + A new quantum AI algorithm.
  + An innovative application of an existing algorithm.
  + An adaptation of known methods to a novel use case.

(Attach scientific papers and any documentation available to support this subsection)

Disruption and Uniqueness:

* Explain how your solution offers an original contribution to the field.
* Highlight specific areas where it disrupts or advances beyond current practices.

Alignment with Quantum AI Trends:

* Position your project within the broader quantum AI landscape.
* Discuss its potential to contribute to advancements in both sustainability and quantum AI.

**APPENDIXES: Please feel free to add any relevant document here**