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D5.7 – PROJECT WEBSITE AND LOGO

Version 1.1 – Final
PUBLIC

European Innovation Council

HORIZON-EIC-2022-PATHFINDERCHALLENGES-01
Grant Agreement n°101114899

The project has received funding from the HORIZON-EIC-2022-PATHFINDERCHALLENGES-01 programme under Grant Agreement N° 101114899.

D5.7 PROJECT WEBSITE AND LOGO

Project Acronym:	**Veriqub**
Project Name:	efficient Verification of Quantum computing architectures using Bosons
Grant Agreement No:	**101114899**
Start Date:	**1/09/2023**
End Date:	**31/08/2027**
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WP Leader:	**INRIA**
Deliverable identifier	**D5.7**
Contractual Delivery Date: 10/2023	**Actual Delivery Date: 04/2024**
Nature: Report	**Version: 1.1 Final**
Dissemination level	**PU**

REVISION HISTORY

VERSION	CREATED/MODIFIER	COMMENTS
0.0	Emilie BLOTIERE (INRIA)	First draft
0.1	Ulysse CHABAUD (INRIA)	Review
1.0	Emilie BLOTIERE (INRIA)	First submitted version
1.1	Ulysse CHABAUD (INRIA)	Final version

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TABLE OF ACRONYMS

DPA	Data Processing Agreement
GDPR	General Data Protection Regulation
INRIA	Institut National de Recherche en sciences et technologies du numérique
WP	Work package

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PUBLISHABLE SUMMARY

The D5.7 presents the first communication materials of Veriqub project that started first September 2023. It describes the design chart including the project logo, and the creation of the project website. This deliverable is part of the WP5 [Project management, communication, dissemination and exploitation].
The project is funded by HORIZON-EIC-2022-PATHFINDERCHALLENGES-01 programme for 48 months and a maximum grant amount of 3 984 885€. The project is composed of three European beneficiaries (CHALMERS TEKNISKA HOGSKOLA AB, SORBONNE UNIVERSITE, UNIVERSITA DEGLI STUDI DI MILANO) and coordinated by INRIA. The Veriqub project has the ambition to guarantee the reliability and precision of new quantum architectures. Quantum devices offer great promise for computation, cryptography, communication, and sensing. Alternative approaches to quantum information processing in which bosonic modes are the carriers of information have attracted increasing attention, because they offer a hardware-efficient path to fault-tolerance and scalability thanks to their inherently large Hilbert space. However, this poses the problem of providing rigorous guarantees of the correct functioning of these promising bosonic architectures, a task known as quantum verification. To date, this verification is performed by general-purpose tomographic techniques, which rapidly become intractable for large quantum systems. Thus, other methods are needed as quantum devices are scaled up to achieve real-world advantages. Veriqub aims to develop a new approach to the efficient verification of quantum computing architectures with bosons, using continuous-variable measurements.

The name of this research project stands for "efficient Verification of Quantum computing architectures using Bosons". “Bosons” are physical systems that are used as carriers of information, for example, the photons that make up the light of a laser. The main objective of the project is to propose an efficient toolbox for verifying the reliability of quantum computing architectures using bosons. These architectures suffer from reliability issues, even though they could soon outperform conventional computers.

1| VERIQUB GRAPHIC DESIGN

1.1 Visual identity

The Veriqub's visual identity has been created by the French Nicolas Steff company whose director and graphic designer, is used to work with INRIA. His experience of science computing was of paramount importance to draw a simple but expressive identity, easily reusable in any communication support.

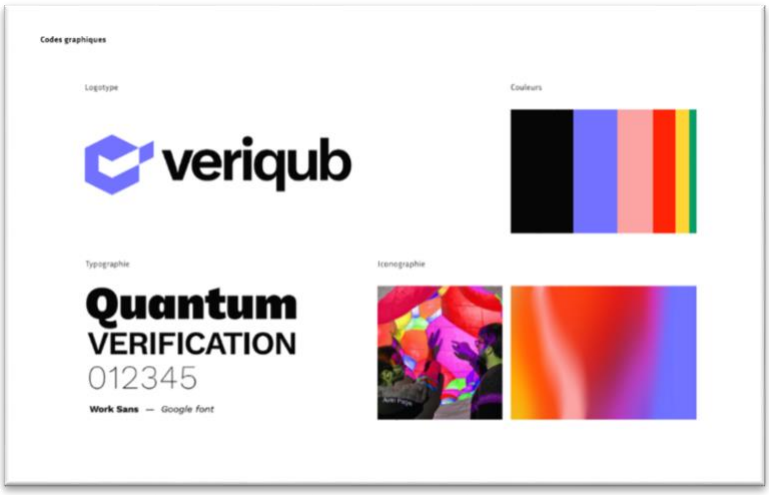


FIGURE 1 CHART DESIGN

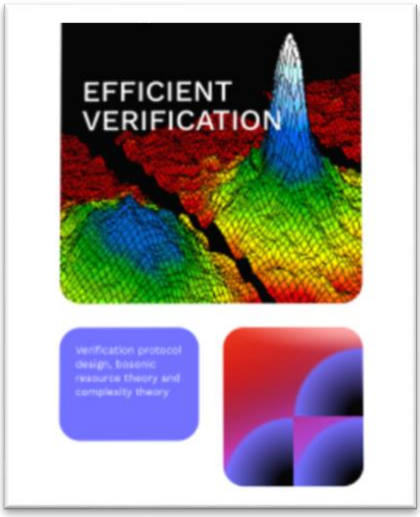


FIGURE 2 CHART ELEMENTS

FIGURE 3 TWITT SIMULATION

The chart design is composed of geometric figures that represent both the cube and the sphere to illustrate the infinitely small that is the atom and the cube to illustrate the project's objective of verifying continuous variables and creating a toolbox.

1.2 Project logo

The logo, shown below in Fig.4 consists on the acronym of the project preceded of a cube with an open window to the project. The cube illustrates both the toolbox, one of the expected outcomes of the project and of course the pun between [cube] and [qubit] (See Fig.6). Qubit is a key concept in quantum information. The quantum bit or qubit is the elementary unit that can carry quantum information. As 1 and 0 are the two states of an ordinary classical bit, a qubit is the coherent superposition of at least two basic quantum states, which can be denoted |0> and |1>. This logo is used in all working documents, internal and external, related to the project and inserted in project templates such as the rolling minutes, deliverables and public presentations. It is stored in different formats (png, jpg and ai) and coloured background (See Fig.5) in the secured project repository NOTION[1] and accessible to the whole consortium. This tool will be described in the D5.8 Plan for dissemination and communication activities due in M6 (end of February 2024).

FIGURE 4 VERIQUB LOGO

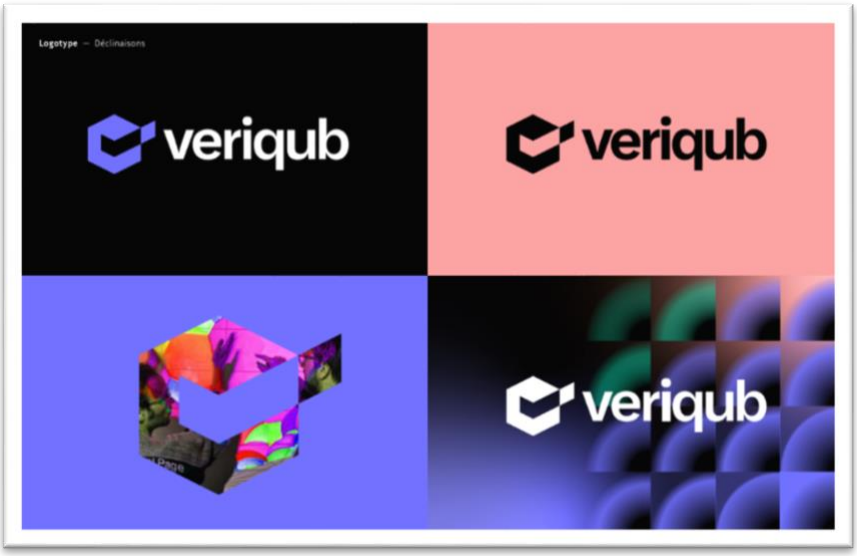


FIGURE 5 COLOURED LOGOS

[1]NOTION: daily project management tool: https://www.notion.so/fr-fr.

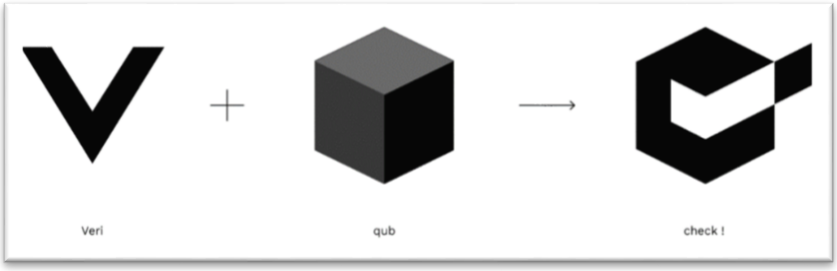


FIGURE 6 LOGO FIGURES

1.3 PowerPoint template

A PowerPoint template is at the disposal of the consortium to use the design chart in their communication activities. The template contains a panel of three different with or without quantum pictures.

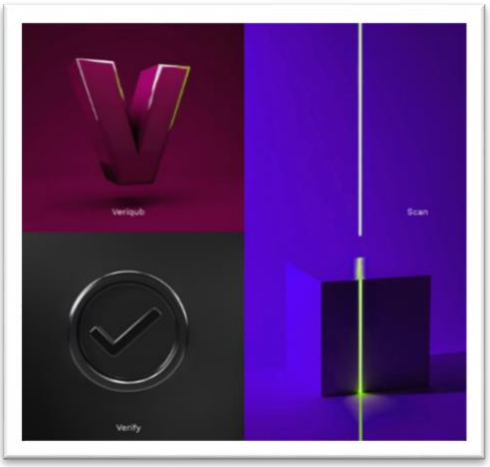


FIGURE 7 INSPIRED FIGURES

FIGURE 8 POWERPOINT TEMPLATE EXAMPLE

1.4 Veriqub Kakemono

FIGURE 9 VERIQUB KAKEMONO

The chart designer also created a chart including a Kakemono to be used for the public presentations. The same colours and figures are used with the synergy of the cube that is the research and the lightened sphere that is the boson, source of energy and light of the atom.

The Kakemono was used for the first time during the kick-off meeting of the project in early October in Paris, in Sorbonne Université premises. The EU legal mentions are at the bottom right of the support and the four partners are mentioned as well.

FIGURE 10 KAKEMONO KEY ELEMENT

2| PROJECT WEBSITE

The project website is built via Wordpress, made accessible by INRIA, and hosted at https://www.veriqub.eu/

2.1 Main pages

So far, the website is made of four main pages, containing subpages:

- Home
  - News
  - Project
  - Partners

The website is updated regularly to reflect key events in the project and keep the community and other interested parties informed. It is a public site, accessible via any search engine, knowing that it takes some time for Google to reference the website.

The website is developed by the scientific coordinator and will be updated only by the coordination team. The software allows for a fast and easy handling and offers flexibility to structure the website in various blocks and depending on the pages.

The *Home* page gives a quick presentation of the project and easy access to the other pages as highlighted in Figure 11.

FIGURE 11 PROJECT WEBSITE HOME PAGE

The *News* page gives easy access to the recent news, such as the official kick-off meeting and the article launching publicly the project as highlighted in Figure 12.

Veriqub Kick-Off Meeting

Ulysse CHABAUD 2023/10/05 Events

3-4 October in Paris

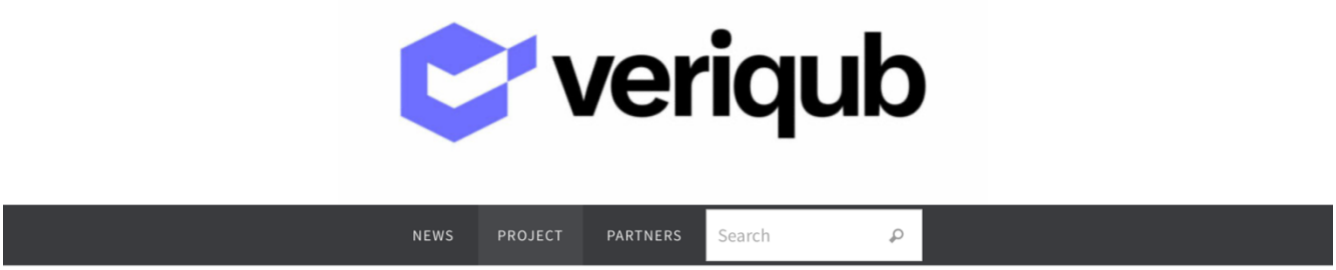
The project's kick-off meeting took place in Paris on 3-4 October 2023. The event was organised by Inria, French National Institute for Reserach & Innovation in Digital Science and Technology, coordinator of the European Project, and hosted by Sorbonne Université, partners of the project.

After a welcome round-table and greetings by Ulysse Chabaud (project coordinator), Bruno Le Dantec (head of European contracts at Inria), the scientific coordinator presented Veriqub's vision, objectives and expected impact.

Dalibor Grgec (EC Project Officer) and Samira Nik (EIC Programme Manager) from the European commission presented the EU expectations and innovation

FIGURE 12 KICK OFF SUBPAGE

The *Project* page informs more about the scientific outcomes of the project describing the main objectives (see Fig.13) and giving access to a subpage for the public deliverables. The non-sensible deliverables will be shared in the page after being validated by the European Commission.



Project

Veriqub: Efficient verification of quantum computing architectures with bosons

Quantum devices offer great promise for computation, cryptography, communication, and sensing. Alternative approaches to quantum information processing in which bosonic modes are the carriers of information have attracted increasing attention, because they offer a hardware-efficient path to fault-tolerance and scalability thanks to their inherently large Hilbert space. However, this poses the problem of providing rigorous guarantees of the correct functioning of these promising bosonic architectures, a task known as quantum verification. To date, this verification is performed by general-purpose tomographic techniques, which rapidly become intractable for large quantum systems. Thus, other methods are needed as quantum devices are scaled up to achieve real-world advantages.

> *Veriqub will introduce a new approach to the verification of quantum computing architectures with bosons based on continuous-variable measurements. Veriqub's technological toolbox will comprise two main elements:*
> *1. We will experimentally demonstrate the verification of multi-mode bosonic systems for optical and superconducting architectures well beyond the state-of-the-art, and provide the first demonstration of verified quantum computational speedup.*
> *2. We will develop a theory framework that defines the fundamental advantages of our contribution, putting special emphasis on identifying and verifying resourceful bosonic quantum devices.*

FIGURE 13 PROJECT PAGE

The *Partners* page allows to learn more about each partner involved in the project as highlighted in Fig.14.

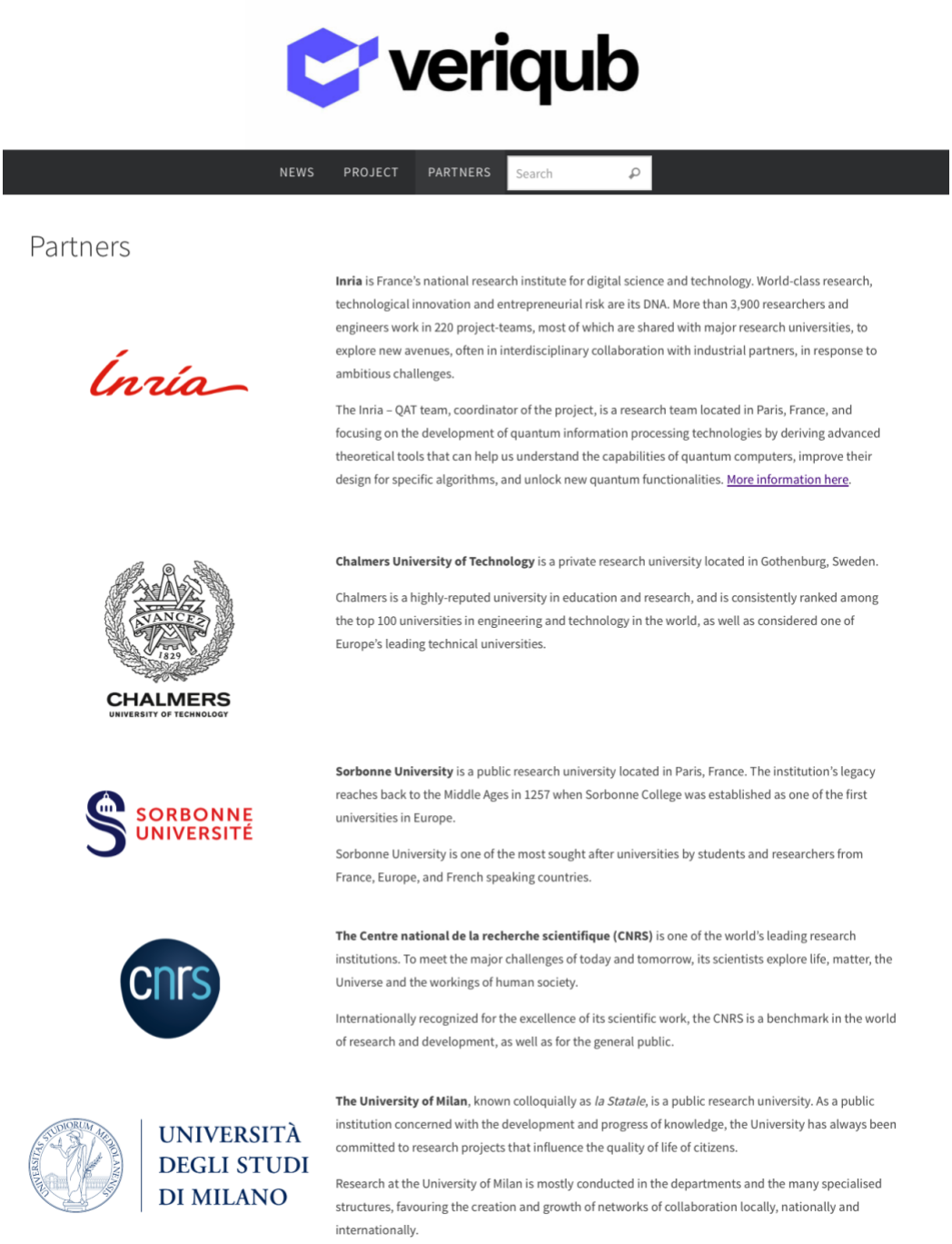


FIGURE 14 PARTNERS PAGE

2.2 Data privacy

The website is developed via WordPress in a GDPR-compliant way, using the WordPress plugin "GDPR Cookie Compliance".

2.3 Visibility of EU Funding and disclaimer

In accordance with the obligations regarding the dissemination of results, as stated in the Grant Agreement, all project materials produced in the context of the project (publications, website, flyer etc.) must acknowledge EU funding and should be accompanied by the EU emblem and the following text: *"This project has received funding from the* European Union's HORIZON-EIC-2022-PATHFINDERCHALLENGES-01 programme under Grant Agreement N° 101114899".

The Grant Agreement also states that "*any dissemination of results must indicate that it reflects only the author's view and that the Agency is not responsible for any use that may be made of the information it contains*". The following disclaimer will be used in all Veriqub dissemination materials:

"The content of this publication is the sole responsibility of the Veriqub consortium and can in no way be taken to reflect the views of the European Commission. The European Commission is not responsible for any use that may be made of the information it contains."

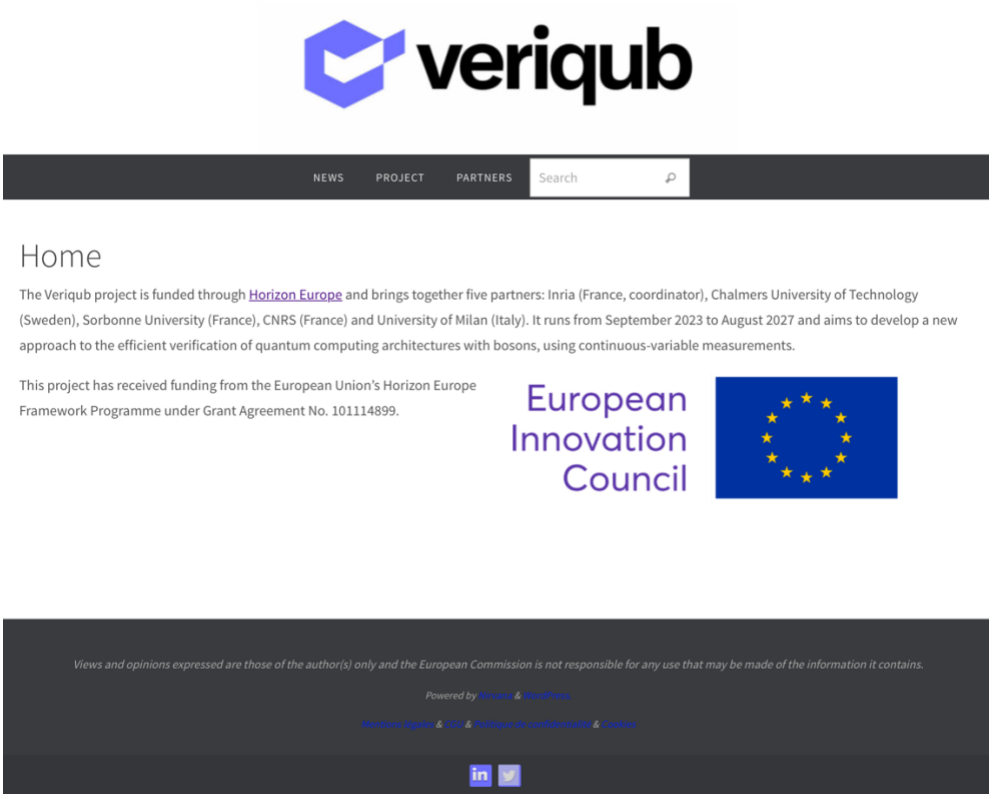


FIGURE 15 WEBSITE EU DISCLAIMER