

## Press release

Paris, 03/06/2024

**Pack Quantique Île-de-France: a new project supported by the Ile-de-France region and its partners to federate the French quantum ecosystem and support the scaling-up of quantum computing around algorithm parallelization.**

*As part of the Pack Quantique (PAQ), initiated at the end of 2020, the Île-de-France Region (Paris Region) has decided to provide €2 million in support for the AQADOC project, led by Welinq, EDF, Pasqal and Quandela. This is the world's first consortium to bring together quantum computer manufacturers, end-users and a quantum machine interconnect manufacturer to explore the benefits of **parallelizing algorithms** to enable the scaling-up of quantum computing.*

**In partnership with GENCI, Teratec and Lab Quantique, the Paris Region is strengthening its leadership in quantum technologies. This support brings to 13 the number of initiatives supported by the PAQ to promote the appropriation and development of quantum computing by industrial players and start-ups in the Paris Region.** Within this framework, young innovative companies are receiving funding from the Île-de-France region to explore the potential of quantum technologies for use cases proposed by industry, which today exploit digital simulation codes that are particularly demanding in terms of computing power.

Like classical computing, which relies on computing centers, scaling up quantum computing will certainly require the parallel operation of several quantum computers. **In this project, EDF is teaming up with start-up Welinq to** anticipate the development of multi-core quantum computing, by applying it to energy production and management.

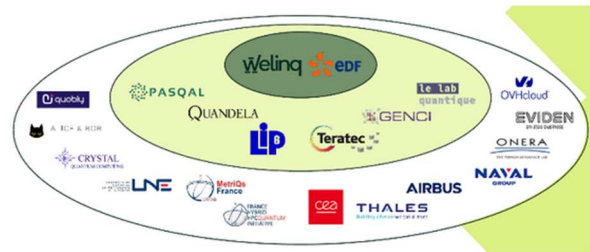
**The AQADOC project** will address new challenges linked to the energy transition that conventional supercomputers are unable to solve, by developing new algorithms adapted to critical applications in the energy sector: from battery ageing simulation to structural simulation problems, not forgetting the logistical issues linked to power plant maintenance.

"I'm delighted to see Welinq, EDF and so many players in the Ile-de-France region join forces around a common vision: **scaling up quantum computers will come about by interconnecting quantum computers** and pooling strengths and expertise. We are extremely grateful to the Ile-de-France region for its support of this unique initiative and its sustained efforts to create a strong, integrated regional ecosystem", says **Tom Darras, co-founder and CEO of Welinq.**

"The development of quantum technologies and their integration into the HPC ecosystem has been on EDF's radar for several years. **The maturity of these technologies opens up new opportunities for our computing resources and the ability to solve problems while controlling energy consumption.** The interconnection of quantum processors seems to us to be on the critical path towards the scaling-up of quantum computers. In this respect, the AQADOC project is of prime importance, given our objective of dealing with an industrial-scale problem as soon as possible", **says Cyril Baudry, Scientific Information System Architect/HPC group expert at EDF.**

The project also involves the **LIP6 laboratory (CNRS/Sorbonne University), with its expertise in quantum protocols and algorithms,** and the **Quandela** and **Pasqal** companies, and will therefore include from the outset the specific features linked to the types of quantum processors developed by these two manufacturers (based respectively on photons and neutral atoms).

**For the first time, the Region has also decided to fund a component concerning the necessary acculturation of the ecosystem:** to enable the specific features of other technologies to be included as quickly as possible, and to accelerate the uptake of the algorithms developed, GENCI, Teratec and Lab Quantique are tasked with ensuring that the needs and specific features of as many industrial suppliers and users as possible are disseminated and taken into account.



Un consortium d'acteurs investis sur la parallélisation du calcul quantique

The project was announced by the President of the Île-de-France Region at the Viva Technology show, in the presence of the main partners, on May 24.

*"We're aiming for sustainable European leadership in strategic and sovereign sectors, of which quantum computing is obviously one. Thanks to our academic excellence, our high concentration of researchers, and our start-ups that are future industrial champions, Paris Region is one of the world's most competitive regions in this field. But we need to go further, capitalizing on our strengths that are the envy of the world, to structure a quantum industry: that's why we've chosen to support AQADOC, which is tackling a major bottleneck in the scaling-up of quantum computing. The industrialization phases are critical for deeptech companies, and we will continue to support their development in the Paris Region", declares Valérie Pécresse, President of the Paris Region.*

## They take part in the project



**Welinq** is a pioneering Quantum Networking company that develops and commercializes quantum links based on laser-cooled neutral atom quantum memories to interconnect quantum computers in order to drastically increase their computational power and to ensure their deployment in clusters on customer premises. Welinq is a spin-out from Sorbonne Université, CNRS and PSL-University, founded in 2022 by Tom Darras, Prof. Julien Laurat, Dr. Eleni Diamanti and Jean Lautier-Gaud. To learn more about Welinq, visit [www.welinq.eu](http://www.welinq.eu).

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A major player in the energy transition, the EDF Group is an integrated energy company, present in all business lines: generation, distribution, trading, energy sales and energy services. The world leader in low-carbon energies, with decarbonized production of 434 TWh, the Group has developed a diversified production mix based mainly on nuclear and renewable energy (including hydro), and is investing in new technologies to support the energy transition. EDF's raison d'être is to build a CO<sub>2</sub>-neutral energy future that reconciles preservation of the planet, well-being and development, thanks to electricity and innovative solutions and services. The Group supplies energy and services to around 40.9 million customers (1) and achieved sales of 139.7 billion euros in 2023.

(1) Customers are counted by delivery site; a customer may have two delivery points.



**QUANDELA** European leader in photonic quantum computing, [Quandela](https://www.quandela.com) develops and produces quantum computers available both in-house and via the [cloud](https://www.quandela.com), with the ambition of supporting its industrial and public sector customers in their quantum transformation. In this project, Quandela is contributing its expertise in quantum algorithms, as well as its in-depth knowledge of their deployment on its Perceval programming and simulation software and its MosaiQ quantum platforms.

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**Pasqal** PASQAL is a leading quantum computing company that builds quantum processors from ordered neutral atoms in 2D and 3D arrays to bring practical quantum advantage to its customers and solve real-world problems. PASQAL was founded in 2019 from the Institut d'Optique by Georges-Olivier Reymond, Christophe Jurczak, Professor Alain Aspect, winner of the 2022 Nobel Prize in Physics, Dr. Antoine Browaeys and Dr. Thierry Lahaye. PASQAL has secured over 140 million euros in funding to date. To find out more about PASQAL, visit [www.pasqal.com](http://www.pasqal.com).



Located on Sorbonne Université's Pierre et Marie Curie campus in Paris, LIP6 is one of France's leading computer science research laboratories. A joint unit of Sorbonne University and the CNRS (UMR 7606), it brings together over 400 researchers, PhD students, trainees and administrative staff. Its research activities focus on 4 main areas: (1) Artificial intelligence and data science, (2) Architecture, systems and networks, (3) Security, safety and reliability, and (4) Theory and mathematics for computer science. Research by LIP6's QI (Quantum Information) team covers a wide range of topics in quantum computing and communication, from foundations to applications.

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## About us

### About the Île-de-France Region Pack Quantique



In partnership with Teratec, GENCI and Lab Quantique, the Île-de-France region is reinforcing its leadership in the acquisition of the quantum advantage by promoting the appropriation and development of quantum computing by economic and industrial players, while accelerating the scaling-up of start-ups. This program will help reinforce the region's leadership in quantum technologies, and enhance the competitiveness of companies for whom quantum technologies will be a key factor in their future competitiveness.

### About GENCI

Created by the public authorities in 2007, GENCI (Grand Équipement National de Calcul Intensif) is a major research infrastructure and public operator designed to democratize the use of digital simulation through high-performance computing, combined with artificial intelligence and quantum computing, to support French scientific and industrial competitiveness.

GENCI has three missions:

- Implement the national strategy for equipping French scientific research with HPC resources for Artificial Intelligence, storage, massive data processing and quantum computing, in conjunction with the 3 national computing centers (CEA/TGCC, CNRS/IDRIS, France Universités/CINES).
- Support the creation of an integrated HPC ecosystem on a national and European scale, and contribute to the strengthening of European computing capacities as part of the PRACE infrastructure and the EuroHPC initiative.
- Promote digital simulation and supercomputing to academic research and industry

GENCI is a non-trading company owned 49% by the French government represented by the Ministry of Higher Education and Research, 20% by CEA, 20% by CNRS, 10% by the universities represented by France Université and 1% by Inria.

### About Teratec

A European center of excellence in high-performance digital technologies, bringing together more than ninety companies, research laboratories and business schools, Teratec was created in 2005 on the initiative of leading industrialists, with the aim of :

- Unite all industrial and academic players, suppliers and users,
- Access to the most powerful systems,
- Promote and increase the attractiveness of the estate by encouraging economic development.

The Teratec Quantum Computing Initiative (TQCI) launched in 2018 federates industrial users, technology providers and research centers to develop skills in the field of quantum computing and accompany its members towards a better understanding of what the use of quantum technologies could bring them. <https://teratec.eu>

### **About Lab Quantique**

Le Lab Quantique is an association under the French law of 1901, whose mission is to promote quantum technologies in France and internationally. Le Lab Quantique organizes events (workshops, hackathons, scientific and artistic exhibitions) bringing together all the players in the ecosystem, to create synergies between public players, academics, major groups and start-ups. It produces content to promote quantum technologies and help identify use cases, coordinates funding initiatives at regional and national level, and supports workforce development by connecting innovation and talent. The association's board is made up of members from QCWare, Pasqal, Quantinuum, Quantonation, BMW Group and QuantX. The association has also received the support of leading French manufacturers and public institutions such as BPI.