## **QUEST-IS 2025**

1st December > 4th December

QUANTUM ENGINEERING SCIENCES & TECHNOLOGIES

FOR INDUSTRY & SERVICES

From Quantum Engineering to Applications for Citizens

EDF Lab, PARIS Saclay, France

# Exhibitors catalog

https://conference-questis.org/

EDF Lab, PARIS Saciay, France
Contact : Laurie CADRIEU-CARRASCAL

laurie.cadrieu@carte-blanche.fr 05 63 72 31 25 - 06 28 15 07 77

### **Exhibition MAP**

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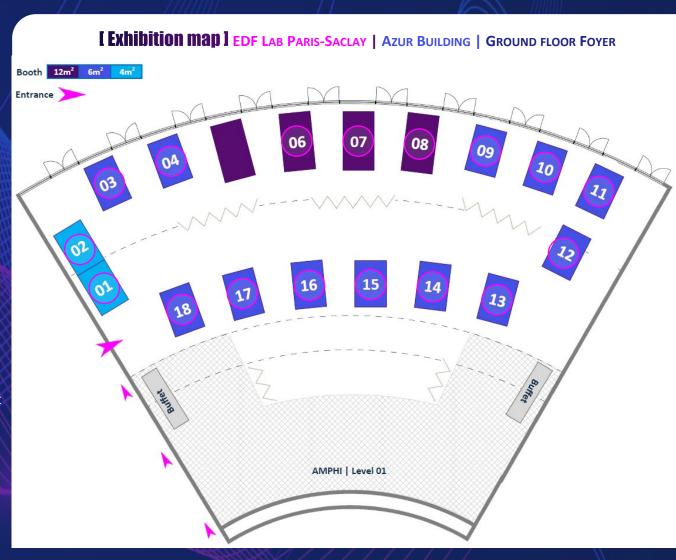
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#### Section company description:

The SEE is a non profit scientific association in the fields of Electricity, Electronics, Communication and Information processing since 1883. The SEE activity includes 19 Technical Groups and 14 Regional Comittees. Their purpose is the promotion and science and technology in their domains, and also the developpement of links between the research and academic world and industry. The SEE rewards the significant contributions to science and technology by distinctions, medals, and awards.

The SEE organises events (lectures, workshops, symposia and international conferences) and publishes proceedings.

The SEE is the editor of a variety of publications including two periodicals:

The REE "la Revue de l'Électricité et de l'Électronique" and the 3EI "Enseigner l'Électrotechnique et l'Électronique Industrielle".



The National Academy of Technologies of France (NATF) is a national public administrative institution placed under the supervision of the Minister of Research and under the protection of the President of the Republic. It has more than 350 elected members, from various backgrounds that reflect the diversity of technologies. Its organisation ensures the collegiality and relevance of its action in the exercise of its missions: opinions and reports, general orientations and action programmes are voted in plenary assembly. Four strong ideas govern the action of the Academy for an increasingly reasoned and collective appropriation of technologies: progress, sense of general interest, listening, anticipation.

#### **Product description**

State of the art in fault-tolerant quantum computing – Questions and issues Academy report – May 2025

This report reviews the construction and potential use of FTQC (Fault Tolerant Quantum Computing) computers to reliably perform complex calculations by overcoming the problems posed by the errors and noise inherent in quantum systems.

After recalling the reality of the quantum advantage and its needs, the report describes the use of error-correcting codes in the design of FTQC computers. It then reports on the progress of the five most advanced physical technologies in the world for building such computers and the obstacles they will have to face in order to achieve the transition to scale necessary for the execution of useful applications. Finally, it discusses the technical and economic environment for quantum computers, how their performance can be compared and evaluated, and their future coexistence with other computing technologies (3D silicon, AI) or with supercomputers.



Qnity is an European Center of expertise and market place for Quantum Enabling Technologies.

With the advent of Quantum technologies, highly disruptive and intellectually mind-bending, new needs are emerging in terms of equipment and services.

Qnity is here to support your experimental projects by putting you in touch with the right expert, selecting the equipment best suited to these new constraints, and ensuring its commissioning and maintenance.

We accelerate and secure the experimental part of your project, freeing researchers to focus on science instead of just equipment.

#### **Product description**

We present our offering with a focus on research into superconducting qubits. You'll be able to speak with our experimentalist, an expert in nanofabrication and characterization of superconducting qubits, and discover two manufacturers of innovative solutions:

- AQSolotl will present a control and measurement setup for superconducting qubits, bridging classical and quantum computing for complex problems with unprecedented speed and efficiency.
- Zero Point Cryogenics (ZPC) is a North American manufacturer specializing in hand-crafted dilution refrigerators and cryogenic equipment. ZPC's easy-to-use and compact solutions satisfy space, size, and operation requirements for industry, government and academia.



Alice & Bob is a quantum computing company based in Paris and Boston whose goal is to create the first universal, fault-tolerant quantum computer. Founded in 2020, Alice & Bob has raised €130 million in funding, hired over 150 employees and demonstrated experimental results surpassing those of technology giants such as Google or IBM. Advised by Nobel Prize winning researchers, Alice & Bob specializes in cat qubits, a technology developed by the company's founders and later adopted by Amazon. Demonstrating the power of its cat architecture, Alice & Bob recently showed that it could reduce the hardware requirements for building a useful large-scale quantum computer by up to 200 times compared with competing approaches.

Follow Alice & Bob on LinkedIn, X or YouTube, visit their website www.alice-bob.com, or join The Cat Tree on Slack to learn more.

#### **Product description**

Cat qubits bring a shift in how we build quantum computers: instead of fighting errors after they happen, we design qubits with built-in error correction. At Alice & Bob, we call this the cat qubits - the first qubit with built-in error protection.

While traditional qubits must fight against both bit-flips and phase-flips, our cat qubits fundamentally suppress bit-flips, leaving only phase-flips to be actively corrected. This means a dramatic reduction in hardware, energy, cryogenics and classical decoding overhead - making fault-tolerant quantum computing practically achievable.

Our latest milestone: the bit-flip lifetime has jumped from about 7 minutes to over one hour - an extraordinary demonstration of stability and resilience. Such performance brings us ever closer to the era where quantum computers deliver useful, error-corrected results rather than just proof-of-concepts.



Quandela, a leader in quantum computing, specializes in industry-grade solutions. It designs, builds, and supplies datacenter-ready quantum systems, cloud-accessible processors, and industrial-use algorithms. Quandela is committed to making quantum computing accessible and impactful, empowering innovators to solve complex industrial and societal challenges.

#### **Product description**

Quandela provides a complete suite of photonic quantum solutions that make quantum computing practical and accessible. Our industry-ready hardware delivers reliable, high-performance quantum processors, while our software frameworks allow users to easily design and test photonic algorithms. With on-demand cloud access, anyone can run real quantum experiments from anywhere, supported by expert consulting and training to guide every step. Together, our hardware, software, cloud, and services empower you to turn quantum innovation into real-world impact.



The Agence de l'innovation de défense (Defence Innovation Agency), in liaison with the Direction générale de l'armement (French Armament General Directorate), brings together all the key players of the French Ministry of the Armed Forces and all the actions that contribute to defence innovation. As the spearhead and catalyst of innovation within the Ministry, the Agency conducts actions to support innovation. This spirit of innovation infuses the major programs planned over the long term as well as the open innovation that requires short endorsement and deployment cycles.

#### Its main missions are to

- Guide and steer defence innovation and the programmes under its responsibility;
- · Foster and capture innovation originating from the civilian, non-defence sector;
- · Leverage, transfer, and accelerate innovation to benefit the Ministry's end-users and operational forces;
- · Identify and implement an innovation approach to prevent strategic surprise.

The maturation and adoption of quantum technologies are strategic priorities for the French Ministry of Defence, as key components are becoming available and defence use cases are emerging. To address these challenges, as announced by the Minister, the Defence Innovation Agency is establishing the Defence Quantum Laboratory. The Laboratory will cover all areas of quantum technology — computing, sensing, and communications — and support the identification of relevant military and operational use cases. It will contribute to assessing and comparing promising technologies, addressing defence–specific issues such as security and system integration, and supporting experimentation and testing. The Laboratory will rely on research organisations and industrial partners, foster international cooperation through bilateral, European, and NATO frameworks, and promote the dissemination of quantum culture and skills across the Ministry.



Thales (Euronext Paris: HO) is a global leader in advanced technologies for the Defence, Aerospace, and Cyber & Digital sectors. Its portfolio of innovative products and services addresses several major challenges: sovereignty, security, sustainability and inclusion. The Group invests more than €4 billion per year in Research & Development in key areas, particularly for critical environments, such as Artificial Intelligence, cybersecurity, quantum and cloud technologies.

Thales has more than 83,000 employees in 68 countries. In 2024, the Group generated sales of €20.6 billion.

#### **Product description**

For more than forty years, Thales has been advancing quantum technologies to maintain a leading position on the global stage. With over 100 quantum specialists and 20 patents filed each year, the Group has already developed products founded upon the principles of quantum physics, such as III–V semiconductors and atomic clocks.

Thales is presently engaged in four technological domains at the forefront of the second quantum revolution: quantum sensing, quantum communications, quantum computing, and post-quantum cryptography. At its exhibition stand, Thales also showcases the enabling technologies it is developing to harness the immense potential of quantum science.

The Group actively participates in consortia and European projects, and collaborates with academic laboratories, industrial partners, and start-ups alike, in order to accelerate the transition of quantum technologies from research to practical application across both civil and defence sectors.



IBM (International Business Machines Corporation) is a global technology and consulting company known for shaping multiple generations of computing. Founded in 1911, and present in France since 1914, it has evolved from producing tabulating machines to leading major shifts in hardware, software, and services. IBM is recognized for innovations such as mainframes, relational databases, and enterprise IT solutions. Today, the company focuses on hybrid cloud, artificial intelligence, quantum computing, and consulting services. Its cloud platform and AI technologies—including automation, data analytics, and machine learning tools—support enterprises in modernizing their operations. IBM Research, one of the world's largest corporate research labs, drives breakthroughs in areas like materials science, quantum hardware, and advanced computing. The company also emphasizes open-source contributions and industry partnerships to accelerate technological progress. With a long legacy of innovation and a strong focus on enterprise transformation, IBM remains a central player in shaping the future of global technology.

#### **Product description**

IBM Quantum is IBM's initiative to make quantum computing practical, accessible, and scalable. It provides on-premises and cloud-based access to real quantum computers built on superconducting qubits, allowing researchers, developers, and businesses to run quantum circuits without specialized hardware. Qiskit stack (open-sourced by IBM) enables users to design, simulate, and optimize quantum algorithms, while extensive documentation and learning resources support newcomers. The platform includes a global ecosystem of partners and academic institutions working to advance quantum research. IBM regularly improves coherence times, qubit counts, and error-mitigation techniques, moving toward fault-tolerant systems. Their roadmap outlines ambitious milestones, including modular architectures and quantum-centric supercomputing that integrates classical and quantum resources. Designed for real-world impact, IBM Quantum targets use cases in chemistry, optimization, machine learning, and cryptography. Through its combination of accessible tools, hardware innovation, and long-term vision, IBM Quantum plays a leading role in shaping the future of quantum computing.



For centuries, humans have protected information through cryptography.

Recently, with the rapid development of ICT technologies such as IoT, AI, and OTT, the leakage of personal sensitive data has become a growing social issue. To address this, various cryptographic technologies have been introduced.

Today, data security relies on symmetric-key and asymmetric-key cryptography to protect both public and private sector information. However, once quantum computers become a reality, existing cryptographic systems could be vulnerable to hacking threats. To prepare for this, the fusion of quantum technology and cryptographic communication is essential.

SK Broadband, in collaboration with the Ministry of Science and ICT and the National Information Society Agency (NIA), has launched the national project "Demand-Based Quantum Technology Demonstration and Consulting." Together with Gyeonggi-do, the Advanced Institute of Convergence Technology, and several private companies, SK Broadband is advancing the integration of quantum and cryptographic communication technologies. Through the demand-based quantum technology demonstration and consulting project, SK Broadband is paving the way for a safer future in autonomous driving, smart cities, AI, and data centers.

As a leader in quantum cryptographic communication, SK Broadband ensures the security of all connections and lays a strong foundation for fostering new industrial ecosystems.

#### **Product description**

Clavis XG

Safety of current encryption methods, and especially of the key exchange mechanisms based on asymmetric cryptography, is a major concern today. Possible back-doors in current systems combined with massive computing power already put high value sensitive data at risk of being decrypted by malevolent actors. Moreover, the arrival of quantum computers is imminent and will render arithmetic asymmetric key exchanges unsafe: encrypted data can be stored now and easily decrypted later.

As a leading security solution provider, IDQ has developed Quantum Key Distribution (QKD) systems that generate and distribute cryptographic keys across a provably secure communication network, to safely encrypt or authenticate data. Clavis XG is the 4th generation of QKD product line and expands the XG Series with higher key throughput and extended distance range. QKD exploits a fundamental principle of quantum physics – observation causes perturbation – to exchange cryptographic keys over fiber optic networks with provable security: an eavesdropper intercepting keys transmitted on the OKD quantum change will processerily translate into a perturbation that can be detected by the sender and

intercepting keys transmitted on the QKD quantum channel will necessarily translate into a perturbation that can be detected by the sender and recipient.

In contrast to conventional key distribution algorithms, QKD is the only known cryptographic technique which offers 100% forward security, resilience to new attack algorithms from current and upcoming quantum computers



At Nokia, we create technology that helps the world act together. We put the world's people, machines and devices in sync to create a more sustainable, productive and accessible future.

#### **Product description**

Addressing quantum network threats demands a comprehensive strategy. We deliver the key ingredients of quantum-safe networks to deliver quantum-safe cryptographic network solutions today.

Nokia Quantum-Safe Networks (QSN) has a defense-in-depth approach that delivers quantum-safe security at multiple layers through multi-layered cryptography. Nokia QSN can adapt to your business and use case needs; deliver you the confidence to securely scale your Quantum deployments in response to the Quantum threat; and can evolve with the quantum landscape.

We can deploy quantum-safe cryptographic keys, by strategically applying both classical and quantum physics, as well mathematical Post-Quantum Cryptography (PQC) cryptographic keys once they are available.

We support a range of key distribution options, including automated key generation, distribution, and orchestration through the 1830 SMS platform. This delivers scalability, accelerates service fulfillment, increased resiliency, while also reducing operational workloads, and errors.



In the framework of the France Hybrid HPC Quantum linitiative (HQI), "Les Maisons du Quantique" - the French "Houses of Quantum" - are a network of five French regional projects under the national coordination of GENCI.

The regional hubs are localised in Auvergne-Rhône-Alpes (MQALPS), Nouvelle-Aquitaine (HYBQUANT), Paris Region (QUORUM), Grand-Est (MAQUEST) and Occitanie (MQO).

The goal of this network is is to federate local ecosystems, to disseminate around quantum computing (hybrid by nature) and to promote the excellence of the French research communities.

#### **Product description**

"Les Maisons du Quantique" provides a network of physical places for local, national and international interactions, with training in quantum computing and fast-track access to the HQI platform and resources (HPC, emulators, QPUs). Access to quantum computing capabilities is connected to European initiatives (HPCQS, EuroQCS-France, EuroQHPC-Integration).

Based on the initial model of the Paris Region 'Quantum Pack' initiative, the regional partners build and foster tailored collaborations between academia, start-ups and industry to explore and co-design hybrid HPC-QC applications. Since 2020, 18 projects, involving 14 end-user industrial companies have been co-funded.

This initiative is also setting up partnerships with other similar initiatives at the European- and international levels.



CEA is a major research organisation in four key fields:

- Low-carbon energy
- · Digital technology
- · Technology for medicine of the future
- · Defence and national security

CEA contributes to European sovereignty in HPC and AI infrastructure and applications, and to EU technological independence through R&D ranging from quantum and microelectronics to the co-design of supercomputers.



The Laboratoire national de métrologie et d'essais - LNE, is the French National Metrology Institute and an internationally recognized testing laboratory. As a public institution under the French Ministry of the Economy and Finance in charge of Industry, LNE has the mission to provide reference measurements to serve both economy and society, based on competence, rigor, and independence. Relying on excellent scientific & technical skills, LNE group, with around 1.000 people, has multiple activities: research in metrology; high-level measurement services, including testing, calibration, and traceability to the International System of units (SI); certification; training; participation in the development of standards and regulations at national, European and international levels, as well as in market surveillance. This multidisciplinary approach enables LNE to support industrial competitiveness in a wide range of sectors, including healthcare, energy, defence, construction or packaging. As a key player for innovation, LNE supports in particular the development of emerging technologies, especially nanotechnologies, Al and quantum technologies.

#### **Product description**

Regarding quantum technologies, LNE and their partners of the French metrology network at Observatoire de Paris (OP) and Cnam, have a long-standing expertise in developing quantum measurement standards and measurement capabilities at the world-class level, which enable traceability to the International System of units (SI) at the best accuracy level. This includes quantum electrical standards, atomic clocks, quantum inertial sensors; quantum optomechanical thermometers.... LNE is also developing a recognized expertise in metrology for quantum technologies, providing reliable and comparable measurements for the characterization and performance evaluation of quantum technologies, within the objective to build trust and support development, industrialization and market adoption of emerging quantum solutions. In this context, as part of the French National Quantum Strategy, LNE is coordinating MetriQs-France, the national program for measurement, evaluation and standardization of quantum technologies. The program includes collaborative R&D projects to develop measurement capabilities of reference, like the BACQ project on application-oriented benchmarks for quantum computers or the MOCQUA project on metrology of components for solid-state quantum computers. The program also comprises the deployment of a metrology platform. Hosted by LNE, OP and Cnam, it relies on state-on-the-art equipment, controlled experimental environments and unique expertise of the French metrology laboratories. Exploited for metrology R&D projects, the platforms also aims at providing measurement and testing services to academia and industry, startups and larger enterprises. In addition, LNE is also actively involved in measurement, testing and standardization initiatives for quantum technologies, in Europe and at international.



The Geoscience and Remote Sensing Society (GRSS) is one of the 39 technical societies of the Institute of Electrical and Electronics Engineers (IEEE), the largest academic and professional society with about 430,000 members across 160 countries. GRSS fosters member engagement for the benefit of society through science, engineering, applications, and education related to the advancement of geoscience and remote sensing.

To support innovation and collaboration, GRSS has established several Technical Committees (TCs) that promote discussion and progress in areas of shared technical interest. Their activities include scientific networking, organization of thematic workshops, and education of young professionals.

Among these, the Quantum Earth Science and Technology Technical Committee (QUEST TC) advances the knowledge and application of quantum-based methods in geoscience and remote sensing. The committee addresses both current developments and emerging frontiers, fostering cross-disciplinary collaboration within the broader scientific and technological communities.

#### **Product description**

The IEEE GRSS offers a wide range of products and services to support professional growth, scientific advancement, and community engagement. Members can share ideas, methods, and datasets, stay informed about recent developments, and access career opportunities. GRSS provides discounts on journal publications and conferences, opportunities to propose and lead special issues, and funds to support students and young professionals through summer schools, grants, and sponsorship programs. Members are encouraged to engage in local chapters, organize workshops, and contribute to community initiatives, while also accessing exclusive resources through the GRSS Resource Center, IEEE Xplore, and IEEE DataPort.

Within this framework, the Quantum Earth Science and Technology Technical Committee (QUEST TC) brings together the quantum technology, geoscience, and remote sensing communities. Through events, tutorials, and reports, QUEST fosters collaboration between academia and industry, shares best practices and real-world applications, and helps shape this rapidly evolving field.

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Country: UNITED STATES



Demcon is a full-service design house for the development, realization and testing of customized complex solutions. We believe that every technical challenge has a solution and we are committed to enabling our customers to be successful. We serve OEMs, start-ups and scale-ups in a diverse range of industries and continue to build our track record within the fields of Semicon, Aerospace, Quantum and Photonics.

We work in close partnership with our customers to gain a deep understanding of their business challenges. Our multidisciplinary teams develop a model-based architecture, which is subsequently engineered into a functional prototype. The final step involves rigorous testing to ensure the solution meets all functional specifications and customer requirements.

Combining a structured and results-oriented project approach with a pragmatic way of working enables us to strike the optimal balance between performance optimization, product costs and time-to-market - all without posing any IP claims.

#### **Product description**

We provide contract R&D, typically starting from Technology Readiness Level (TRL) 3 or 4. As part of the Demcon group, we offer a comprehensive range of services tailored to our customers' needs. Systems engineering is the foundation of all our developments. Since we primarily design one-of-a-kind or two-of-a-kind systems, there is no blueprint for building the best solutions.

We rely heavily on our multidisciplinary teams, including experienced systems engineers who break down a system into subsystems and assign them to the appropriate departments, separating the critical end-user requirements from side issues. Our strength lies in the tailor-made integration of all disciplines to deliver the optimal solution for each individual project and advance toward market-ready solutions.



Since 1952, we have been enabling the future and collaborating with our customers to succeed. We have developed an award winning reputation and established strong relationships with our customers by providing innovative solutions. Part of being the best is supplying products that customers can trust for unrivaled repeatability and reliable performance. That's why we've invested in facilities around the world that specialize in manufacturing capabilities critical to manufacturing the finest interconnect components to support your most demanding applications. Our commitment is to continue to be the market leader you rely on – in every region around the world – so that you can be the leader in your field.

#### **Product description**

As a pioneer in high-performance connectivity solutions, Radiall is committed to driving innovation in the quantum computing sector. Entering this new market, we bring our expertise in RF and microwave technologies to address the unique challenges of quantum environments.

Our quantum dedicated range is the result of years of research and cross-BU collaboration, offering cutting-edge solutions designed to perform at cryogenic temperatures and scale with the rapid growth of quantum computing.



The NATO Science and Technology Organization (STO) conducts leading-edge science and technology programmes to help maintain the Alliance's military advantage. It generates, shares and exploits advanced scientific knowledge, technological developments and innovation to support the Alliance's core tasks: deterrence and collective defence, crisis prevention and management, and cooperative security.

At the core of the STO is the Collaborative Programme of Work (CPoW), which comprises more than 400 research activities across areas of critical importance to NATO Nations. Carried out by a network of more than 5,000 scientists and engineers from government, industry and academia, the CPoW enables NATO Nations to develop cutting-edge capabilities, ensure Alliance-wide interoperability, strengthen their national industrial and technological base, and make more efficient defence investments. Scientists, researchers, and engineers benefit from access to international collaboration and knowledge sharing through the world's largest network for security- and defence-focused science and technology research.

#### **Product description**

The Technology and Science Incubation (TSI) Scientific and Technical Committee (STC) is one of eight committees that deliver the NATO STO CPoW. Within this framework, TSI leads research on emerging and disruptive technologies, with a multi-year focus on quantum technology. TSI coordinates projects, brings together experts, and translates technological advances into capabilities that support NATO's defence and security objectives. Our challenge, is making quantum technologies feasible, coherent and useful to Defence across the span of sensing, compute, communications, encryption, supply chains and materials. If you would like to be involved in our programme, or have a technical proposal, please contact tsi@cso.nato.int.



Quobly is a pioneer in the development of a fault-tolerant quantum computer based on semiconductor qubits. With a breakthrough method, Quobly addresses both techno-scientific challenges as well as industrial production, paving the way for mass production of the millions of qubits essential for practical, large-scale quantum computers.

Based in Grenoble, the startup is the result of 15 years of collaborative research between internationally recognized RTOs, CEA Leti and CNRS. Founded in 2022, Quobly has brought together a team of experts from the semiconductor industry and distinguished researchers in quantum technologies.

In 2023, Quobly made headlines with a seed round of 19 million euros, establishing a new record for seed funding of a European startup in the quantum sector. Today, Quobly employs +70 people.

#### **Product description**

Quobly was founded to commercialize the world's first million-qubit quantum computer.

The company's strategy is clear: leverage proven semiconductor technologies to bring an operational, large-scale quantum computer to market.

Quobly's approach uses the physical properties of silicon to create quantum dots, the foundation of high-quality spin qubits.

What truly sets us apart is a deep and proven industrial expertise, built on decades of semiconductor process mastery, and our exclusive partnership with STMicroelectronics. Together, we are applying mature, high-volume chip manufacturing methods to quantum devices, paving a credible path to manufacturability and scalability at an achievable cost.

Quobly's disruptive innovation has the potential to create hundreds of billions of dollars in value across key industries such as pharmaceuticals, energy, materials, and transportation, where high-performance computing demand is growing exponentially.

# QUEST-IS 2025

1st December > 4th December

QUANTUM ENGINEERING SCIENCES & TECHNOLOGIES

FOR INDUSTRY & SERVICES

## CONTACT

CARTE BLANCHE ORGANISATION
Laurie CADRIEU-CARRASCAL
271, Chemin d'En Barbaro - 81710 SAÏX - France
Tel.: +33 5 63 72 31 25
laurie.cadrieu@carte-blanche.fr

https://conference-questis.org/