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Understanding the quantum opportunity. A business guide to the quantum market

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Preface: why quantum tech?

Quantum technologies have been attracting growing interest in recent years, and advances in computation and the construction of stable systems mean that they are slowly beginning to move beyond experimental projects aimed at building quantum computers. Coupled with geopolitical tensions and the ongoing digitization of social and economic life, these technologies are receiving increasing funding, becoming the focus of new research, and ultimately serving as the foundation for new products and commercialization opportunities. Today, it is difficult to imagine a discussion about security, both military and civilian, without discussing quantum solutions.

Importantly, we are not talking about just one market or one area of application. Countries are investing in quantum technologies for three main reasons, the first of which is the aforementioned national security. Although no functioning and cryptographically secure quantum computer exists yet, this possibility is becoming increasingly real. And when it finally happens, some of the public-key cryptography currently in use will become obsolete. In addition, quantum sensors and clocks can enhance resistance to interference with satellite navigation.

A second area of development involves intelligence and military superiority, particularly in the fields of positioning, navigation, electromagnetic reconnaissance, as well as precise time measurement and the detection of changes in gravitational or magnetic fields. Space and cyberspace are now overlapping domains of warfare, which, for obvious reasons, must also be addressed in defense strategies. Meanwhile, at the intersection of civil and military security, quantum technologies support the enhancement of critical infrastructure resilience—namely, secure cryptographic migration, independent time sources, alternative navigation, and domestic component manufacturing capabilities.

A third area is the development of a sustainable economic advantage. Ultimately, quantum technologies are intended to support control over intellectual property, cloud platforms, standards, and critical elements of the supply chain. Scientific prestige, including the ability to attract talent, and a strong position in international research networks remain significant factors. The commercialization of research remains a challenge specific to Europe; however, this issue is already being addressed at various levels of national administration in individual countries and at the European Union level.

Contrary to appearances, the most urgent task right now is not to purchase a quantum computer, but to migrate to post-quantum cryptography (PQC). In 2024, NIST published the first three final PQC standards and recommended that organizations identify vulnerable systems and begin the migration. The "harvest now, decrypt later" risk means that encrypted data intercepted today could be decrypted in the future if criminal or intelligence organizations acquire quantum computers. Quantum key distribution (QKD) can provide an additional layer of security for select

connections, but it requires specialized hardware, appropriate network topology, and secure implementation; it does not replace widespread cryptographic modernization.

We are pleased to present this report, which synthesizes research and documents shaping the development of quantum technologies in the near future. Our goal is to support startups in discovering new market niches and sources of funding, which is why we have strived to keep this report simple, accessible, and practical.

We hope you enjoy reading it!

Nikodem Sarna

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New Space Marketing

Executive Summary

The quantum technology (QT) market is entering a phase of commercialization, but forecasts at this stage are mixed and methodologically uncertain. For example, the authors of the McKinsey Quantum Technology Monitor 2026 report estimate that the global quantum market will reach $60–100 billion by 2035, of which $43–71 billion will be attributed to quantum computing. The same source also notes that VC investments in QT startups rose to $12.6 billion in 2025, approximately $10.6 billion more than in 2024. At the same time, BCG predicts $80 billion to $ 170 billion, and JRC EUR 155 billion by 2040. These figures are not hard facts; therefore, while it is clear that the QT market is growing rapidly, our ability to estimate the scale of this growth is limited, and the near future depends largely on decisions made at the administrative level and within the VC fund ecosystem.

The structure of this ecosystem is, however, less "startup-oriented" than headlines about record-breaking funding rounds might suggest. According to the OECD and the EPO, over 80% of organizations active in the quantum field are existing companies, universities, and public research institutions for which quantum technologies are not their core business. Capital is highly concentrated: about 60% of funding in 2025 came from the ten largest transactions, and increasingly private: the share of public funding fell from about one-third in 2024 to about 3% in 2025. On the part of potential customers, however, the barrier remains not a lack of capital, but the immaturity of the technology, the lack of clearly defined applications, the high cost of accessing the technology, and a shortage of individuals who combine quantum expertise with industry-specific knowledge. Hence the growing popularity of the concept of "quantum readiness"; that is, preparing organizations for future adoption through training, application mapping, and pilot projects, rather than immediate implementation. For a startup, this means that its first client will most often be a large company or institution in the experimentation phase, rather than in the phase of purchasing a ready-made solution, and that the go-to-market model must be built around this specific scenario.

In Europe, a significant paradox can be observed: a strong research and development ecosystem and a large number of startups (32% of all quantum companies globally, according to the Joint Research Center), but a weak patent position (6% of global applications) and a very serious gap in the scale-up sector. Data from the European Commission shows that only 5% of global private funding goes to Europe, while U.S. companies attract about 50%. This significantly increases the risk of European champions being acquired by U.S. capital.

Europe is divided into three distinct groups. The first consists of 12 local jurisdictions and the EU itself, all of which have a comprehensive, dedicated quantum strategy (Germany, France, the Netherlands, the United Kingdom, Spain, Italy, Denmark, Finland, Ireland, Romania, Hungary, and Sweden). The second group consists of

countries where the quantum sector is addressed in broader documents, which are not necessarily sector-specific strategies per se (Austria, the Czech Republic) and countries with initiatives but no strategic document (Poland, Switzerland, Norway, Slovakia, the Baltic states); the third group consists of countries operating almost exclusively within the framework of the EU (Malta, Cyprus, Croatia, Bulgaria, Portugal, Greece, Slovenia, Luxembourg, and Belgium).

Contrary to appearances, the most mature and, in the short term, most reliable segments of the quantum market are PQC (post-quantum cryptography) and quantum sensing, not quantum computing. This presents an interesting growth opportunity, since quantum computing has so far absorbed the lion's share of funding. Furthermore, given the existing companies and projects in these fields, as well as their lower capital intensity compared to quantum computers, these areas represent a real opportunity for European startups.

Global quantum ecosystem overview

The global quantum ecosystem is still in the early stages of commercialization, but activity among companies and investors has been growing significantly in recent years. According to the OECD and the EPO, more than 80% of the organizations active in the quantum ecosystem are existing companies, universities, and public research organizations whose core activities are not exclusively related to quantum technologies. This means that market development does not depend solely on specialized quantum startups, but also, to a large extent, on large technology and industrial companies.

When it comes to the market size, already existing forecasts remain divergent and methodologically uncertain. McKinsey report estimates $100 billion for 2035, rising to $ 198 billion by 2040; BCG predicts $80 billion to $ 170 billion by 2040, and JRC research has come to a projection of EUR 155 billion. These estimates should by no means be taken as hard facts - they show momentum, not confirmed scale.

Quantum computing remains the area of greatest interest to the business community. According to McKinsey, investments in quantum startups reached $12.6 billion in 2025, which is 6.3 times more than the previous year. Approximately 90% of this amount went to startups focused on quantum computing, while the remaining 10% went to companies operating in quantum sensing and quantum communication. At the same time, about 60% of total funding in 2025 was accounted for by the ten largest deals, indicating a high concentration of capital in the most advanced companies.

A significant change is the growing importance of private capital. According to McKinsey, in 2024, about one-third of investments in quantum startups came from public sources, while in 2025, that share was about 3%. At the same time, QED-C reported a 192% year-over-year increase in private venture capital. This shows that funding for the sector is increasingly coming from private investors, although the government remains a significant source of funding for research, infrastructure, and technological development.

However, the growth in investment does not mean that the market has already reached commercial maturity. Quantum computing remains in the early stages of development, and current systems have not yet demonstrated an economic advantage over classical solutions across a wide range of business applications. Companies are increasingly experimenting with quantum technologies, but a significant portion of potential applications remains at the research, proof-of-concept, or pilot stage. The key challenge is translating the technology's potential into concrete and commercially viable applications.

For startups and companies developing quantum technologies, this means a long development cycle and a high degree of technological uncertainty. Several

competing hardware platforms are being developed in parallel, and it is not yet clear which solutions will gain the upper hand in the long term. The development of the software layer, standards, and interoperability between the various components of the technology stack also remains a challenge. The high costs of infrastructure and specialized expertise further raise the barrier to entry for new companies.

There are similar limitations on the part of potential users. The OECD identifies four main barriers to business readiness: the immaturity of the technology; the lack of clear use cases and understanding of their potential business implications; the high costs of accessing the technology and training employees; and a shortage of individuals who combine quantum computing skills with industry-specific knowledge.

In response, the concept of "quantum readiness" is gaining traction. For businesses, this primarily means preparing for the future adoption of the technology, rather than its immediate implementation. The OECD highlights activities such as training, workshops, identifying potential applications, developing internal expertise, and conducting proof-of-concept studies and pilot projects. This allows companies to gain experience and assess the potential value of the technology even before quantum technology reaches full maturity.

Collaboration between startups, large companies, and research organizations is also crucial. Startups can provide specialized technologies and expertise, while companies have specific business challenges, infrastructure, data, and potential commercialization channels. The OECD identifies collaboration between these groups as one of the key elements in building business readiness and developing the ecosystem.

Financing remains one of the key conditions for the development of this market. Public capital is particularly important in the early stages, when technologies are characterized by high technological risk, while private capital can play an increasingly significant role in product development and scaling. The growth in private investment in 2025 indicates increasing investor interest in the sector's commercial potential, but the concentration of funding in the largest transactions also shows that access to capital remains uneven.

In Europe, scaling startups poses an additional challenge. The European ecosystem has strong research capabilities and a large number of quantum companies, but these companies need access to larger funding rounds, infrastructure, and industrial customers to move from proof of concept to larger-scale operations. To this end, the European Commission is utilizing, among other things, EIC instruments, which combine public funding with private capital.

As a result, the current stage of the market can be described as a transition from research to early commercialization. Investments, the number of companies, and interest from large firms are growing, but there are still no widely validated applications that offer a clear economic advantage. Therefore, the key factors for further

development will be the ability to identify specific use cases, the development of expertise, access to infrastructure and capital, and the transition from demonstrators and pilot projects to scalable products.

Quantum Tech in Europe: strategies and programs

The development of quantum technologies in Europe is shaped by both the strategies and initiatives of individual countries and projects carried out at the supranational level. We will first discuss the latter, given their scope and significant potential for the continent; however, due to the purpose of this report, the overview is limited to issues relevant to the business ecosystem.

European Union Level

The first strategic document adopted by the European Commission is the Quantum Europe Strategy. The plans for the development of quantum technologies outlined in the strategy focus on five strategic areas: (1) research and innovation, (2) quantum infrastructure, (3) strengthening the ecosystem, (4) space and dual-use technologies (security and defense), (5) quantum expertise. The goal is ambitious—to make Europe a global leader by 2030 and the first continent to operate platforms with thousands of error-corrected qubits between 2030 and 2035. Specific initiatives have been planned within these strategic areas:

- launching the Quantum Europe Research and Innovation Initiative, which will aim to align local research efforts carried out at the national level with agreed-upon development priorities and scale them up to the level of specific applications;
- the development of publicly funded Quantum Europe Infrastructures, including quantum computers under the EuroHPC Joint Undertaking (JU), quantum communication through the EuroQCI within the IRIS² Secure Connectivity Program—which also encompasses the quantum Internet, quantum sensing (EU Quantum Flagship), and quantum processors;
- pilot programs, technology clusters, startup funding, and support programs for scale-ups to strengthen the local business ecosystem centered around quantum technologies;
- deepening cooperation with the European Space Agency under the Quantum Technology Roadmap in space, integrating quantum technologies into the ReArm Europe Plan/Readiness 2030 program, and developing the Quantum Sensing Space and Defense Technology Roadmap;
- launching programs to support workforce development in the field of quantum technologies: the European Quantum Skills Academy, the Quantum Talent Portal, the Quantum Apprenticeship Program, the European Advanced Digital Skills Competitions, the Pilot Program for Researchers-in-Residence in Quantum Technology Startups, and the European Quantum Talent Mobility Program.

For startups and companies considering expansion into the quantum technology market, this means a range of opportunities to secure infrastructure, administrative, and human resources support. The first of these areas, in particular, is potentially very significant due to the capital-intensive nature of the field. For companies without the budget for their own expensive laboratories, infrastructure support may prove more valuable than a grant. The existing Quantum Flagship pilot facilities are being transformed into a pan-European, centralized network of open-access testing environments, offering developers, startups, and SMEs services for testing, validating, and benchmarking quantum devices. Quantum infrastructure initiatives within the EU primarily include:

- six pilot lines under the Chips JU, supporting early prototyping, project validation, and process development with close industry involvement;

- EuroHPC JU: EU-co-funded quantum computers; six computers have been launched under the program: PIAST-Q (Poznań), VLQ (Ostrava), Euro-Q-Exa (Munich), Lucy (near Paris), EuroQCS-Spain (Barcelona), and SOL (Bologna). In addition to these computers, the first simulators are also operational: Jade in France (GENCI) and Ruby in Jülich, Germany; further systems are currently the subject of tendering procedures in the Netherlands and Luxembourg;

- quantum design facility being launched under Chips JU: a cloud environment and access to tools for transforming scientific prototypes into MVPs;

- EuroQCI, a program driving the development of quantum key distribution (QKD) technology, encompassing ground-based and space-based segments, related research projects, and Nostradamus, a test and evaluation facility that also supports the distribution of components within the program;

- a pilot infrastructure for the European quantum internet in 2026.

From Poland's perspective, it is very important that the talent clusters, i.e., Quantum Competence Clusters, are to be expanded and networked to cover the entire EU, including those member states that do not yet have such clusters.

At the same time, it should be noted that the strategy itself does not specify concrete mechanisms or funding amounts; it does, however, identify possible sources and directions. The good news is that there are several such sources, and they have large budgets. The first program is the European Innovation Council (EIC) Fund, which finances early-stage research projects, develops a quantum startup accelerator, and allocates funds: up to 10 million EUR per company, for the recapitalization of scale-ups. The second program, implemented by the European Investment Bank (EIB) Group's European Tech Champions Initiative, includes financing for projects with a first-loss guarantee and tailored co-investment schemes through InvestEU. The third major initiative is the Scaleup Europe Fund, a fund launched in June 2026 with a target capitalization of 5 billion EUR, managed by EQT. It invests directly in technology

companies from Series B rounds onward, with investment amounts in the range of 100 million EUR, and the first investments are scheduled for fall 2026.

The Quantum Europe Strategy is a comprehensive initiative with ambitious goals and a large scale. For Polish and European startups, it serves as proof that the EU takes quantum technologies seriously and recognizes their key role in the development of secure digital infrastructure and military superiority. At the same time, it offers the local space sector an opportunity to take a leading position in emerging niches and to carry out complex development projects that would not be possible without such substantial institutional support.

NATO level

Alongside the Quantum Europe Strategy, one of the key strategic frameworks addressing quantum technologies across the European and transatlantic defence and security landscape. NATO Allies approved the strategy in 2023, and a public summary was released on January 17, 2024. The strategy's goal is to make NATO "quantum-ready," and its scope includes quantum sensing, imaging, precise PNT, submarine detection, and securing communications with quantum-resistant cryptography. The January 2024 summary explicitly identifies bottlenecks in the development of quantum technologies and states that success requires not only algorithms and prototypes but also personnel and supply chains, with an emphasis on "enabling technologies," i.e., metrology, specialized manufacturing, and cryogenics. On 30 July 2026, NATO Allies approved the Quantum Technology Roadmap, publicly released on 29 September 2026, which translates the 2023 Strategy into concrete implementation activities and timelines. It focuses on quantum computing, quantum communication, and quantum sensing, while also addressing their interaction with other emerging and disruptive technologies, including artificial intelligence and space technologies.

The strategy includes four implementation tools and funding mechanisms. First, the Transatlantic Quantum Community was established to serve as a forum for transatlantic cooperation among governments, industry, and academia in the field of quantum technologies. Alongside it, the Quantum Industry Network was launched, a collaborative network aimed at directly engaging leading quantum companies and private investors from NATO countries. Both initiatives were established in 2024 and are expected to play an important role in implementing the 2026 Roadmap, particularly through industry engagement, knowledge-sharing, and the identification of defence applications. When it comes to financial support for companies, two instruments play an important role in this area: the NATO DIANA (Defence Innovation Accelerator for the North Atlantic) accelerator and the NATO Innovation Fund (NIF). In the case of the former, 6 of the 44 companies in the program (this number varies by cohort) specialize in quantum technologies. In the case of the former, 6 of the 44 companies in the program (this number varies by cohort) specialize in quantum technologies. The NATO DIANA Quantum Center has also been launched, serving as

a platform that brings together entrepreneurs, investors, and researchers to accelerate the development and commercialization of solutions in this specific field. Under the NIF, which has a budget of approximately 1 billion EUR to support the development of dual-use technologies; quantum startups can also apply for funding. The 2026 Roadmap further identifies DIANA and NIF as part of NATO's broader innovation ecosystem for supporting quantum research, testing, development, and the scaling of promising solutions.

This is complemented by research and scientific infrastructure, architecture, and standardization processes that support the migration of NATO communications systems to protocols resistant to cyberattacks generated by future computers (PQC), as well as regularly published technology guidelines that support demand aggregation. The 2026 Roadmap makes these priorities more concrete by identifying five lines of effort: identifying quantum technology use cases; testing, developing and adopting quantum-enabled solutions; standardization and interoperability; safeguarding NATO against quantum risks and threats; and quantum training and education. It also sets out timelines for selected activities, including the adoption of post-quantum cryptography standards and the development of a NATO-oriented quantum standardization roadmap. Among the most important entities in this area are the STO (Science and Technology Organization) and the SPS (Science for Peace and Security) program. The STO is NATO's scientific body responsible for joint research projects among member states and for analyzing the military applications of quantum physics. Under the 2026 Roadmap, the STO also contributes to quantum experimentation, testing and standardization. Its Centre for Maritime Research and Experimentation (CMRE) is involved in QUESTOR sea trials in 2026 and 2027, which focus on testing quantum sensing for positioning, navigation and timing in environments where satellite navigation signals may be unavailable or unreliable. The SPS, on the other hand, is a grant program that funds multinational research and implementation projects in a broader range of science and security fields. A further concrete initiative identified in the Roadmap is the Quantum Zero Beacon Project (QZBP), which aims to pilot and validate a pathway towards quantum-resilient communications between NATO Headquarters in Brussels and SHAPE in Mons, with a target timeline of Q4 2027.

Other initiatives involving European countries

The European Space Agency (ESA) is also a key organization supporting the development of quantum technologies in Europe. In the European Space Agency's overall strategy (as outlined, among other places, in Director General Josef Aschbacher's Agenda 2025 and the long-term vision Explore 2040), quantum technologies have been officially designated as a strategic priority for Europe. ESA views quantum physics as the foundation for achieving technological independence and commercial success on the international stage. While these plans have not been formalized in a separate strategic document, they are to be implemented through several upcoming initiatives. The Quantum Technology Cross-Cutting Initiative (QT-

CCI) aims to coordinate future quantum activities carried out by ESA, support the strategic interests of member states and industry, raise the Technology Readiness Level (TRL), and enable in-orbit validation and demonstration (IOD/IOV), with a specific technology development roadmap. ESA collaborates with the EU under the EuroQCI initiative (where it is responsible for the space segment) and also manages key demonstration projects such as SAGA (developed with Thales Alenia Space for secure government communications) and Eagle-1 (a prototype satellite being developed in collaboration with the operator SES). The agency is already implementing quantum computing, as exemplified by its first quantum computer, Bell-1, at the Earth Observation Center in Italy, and is also developing partnerships with industry and startups to foster commercialization efforts.

The Nordic Council/NordForsk has also joined the effort. In May 2025, the prime ministers and heads of government of the Nordic countries issued a joint statement on quantum technologies, declaring, among other things, an improvement in coordination in the area of quantum security and the exploration of defense applications. A NordForsk report published a few months later recommends, among other things, the creation of a Nordic forum for strategy coordination, a joint fund for research and development, and a federated infrastructure network with shared access to cleanrooms, testbeds, and laboratories; the NordForsk Board has decided to prepare a proposal for a 10 -year strategy for Nordic research and innovation cooperation in quantum technologies. The infrastructure layer is already operational, as exemplified by NordIQuEst: a joint project involving Denmark, Estonia, Finland, Norway, and Sweden, which is developing a hybrid infrastructure encompassing a quantum computer and quantum communication.

The last regional initiative mentioned in the report is CERN's quantum program: the CERN Quantum Technology Initiative. Its goal is to stimulate complex research and development activities and collaboration aimed at identifying the role that quantum technologies can play in CERN's future research program and their significance for the broader High-Energy Physics (HEP) community. To achieve this goal, four centers of excellence were established, along with five-year work plans, which, although they are not commercial in nature nor intended to support commercialization, can serve as valuable sources of knowledge and scientific communities open to collaboration with business partners and the transfer of innovations to the market.

National Strategies and Initiatives

As mentioned earlier, the level of advancement and coordination of national efforts to develop quantum technologies varies across Europe. Twelve countries stand out as having developed, published, and are currently implementing national quantum strategies. This group includes Germany, France, the Netherlands, the United Kingdom, Spain, Italy, Denmark, Finland, Ireland, Romania, Hungary, and Sweden. As is the case at the EU level, the dominant areas of focus are quantum communication and security, quantum sensing, and quantum computing. Some of the strategies also

emphasize the importance of workforce development and support for technology transfer from the prototype stage to concrete implementations that deliver tangible value to stakeholders.

Another group consists of countries with a quantum sector described in documents other than strategies. This group includes:

- Austria and the Czech Republic, which are implementing specific initiatives funded by the Recovery and Resilience Facility (RRF); though the RRF expires in 2026, both countries will have to decide whether to adopt a comprehensive strategy or secure new sources of funding.

- Poland, Switzerland, Norway, Slovakia, and the Baltic states, which are carrying out local initiatives that are not designated as strategies.

The final category consists of countries that are implementing or participating in quantum projects exclusively at the EU level. These are Malta, Cyprus, Croatia, Bulgaria, Portugal, Greece, Slovenia, Luxembourg, and Belgium. The table below summarizes the status of quantum strategies, the names and dates of issuance of the documents, budgets and time frames, as well as priorities for each country. For countries without a strategy, priorities and budgets have not been provided due to their absence or the level of variability.

Country	Strategy Status	Name and year of publication of the document (strategy); name of the document or institution (other initiatives)	Budget and Time Horizon	Priorities	Link
Germany	Full	Handlungskonzept Quantentechnologien (2023); Roadmap Quantentechnologien (2026)	~3 billion EUR by 2026 (HQ); not yet confirmed (RQ)	Quantum sensing, quantum computing, quantum communication	https://www.bmftr.bund.de/SharedDocs/Publikationen/DE/5/31822_Handlungskonzept_Quantentechnolgien.html; https://www.bmftr.bund.de/SharedDocs/Kurzmeldungen/DE/2026/05/htad-tage.html
France	Full	Stratégie nationale / Plan Quantique (2021)	1.8 billion EUR (+1.55 billion EUR in 2026)	Quantum sensing, quantum computing, PQC	https://www.pepr-quantique.fr/en/the-national-strategy-for-quantum-technologies/
Netherlands	Full	National Agenda for Quantum Technology (2019)	615 mln EUR (Growth Fund)	Quantum computing, quantum communication, quantum sensing, manufacturing	https://qutech.nl/wp-content/uploads/2019/09/NAQT-2019-EN.pdf
United Kingdom	Full	National Quantum Strategy (2023)	2.5 billion GBP over 10 years (2024–2034)	Quantum sensing, quantum computing, quantum communication, PNT	https://www.gov.uk/government/publications/national-quantum-strategy
Spain	Full	Estrategia de Tecnologías Cuánticas 2025–2030 (2025)	808 mln EUR	Quantum sensing, quantum computing, quantum communication, manufacturing	https://digital.gob.es/content/dam/portal-mtdfp/comunicacion/comunicacion_ministro/2025/04/2025-04-24/EstrategiaTecnologiasCuanticas_compressed_24_04.pdf
Italy	Full	Strategia Italiana per le Tecnologie Quantistiche (2025)	~200 million EUR annually for 5 years	Quantum sensing, quantum computing, quantum metrology	https://www.mur.gov.it/sites/default/files/2025-09/Strategia_italiana_tecnologie_quantistiche_ENG.pdf

Denmark	Full	National Strategy for Quantum Technology (2023)	1 mld DKK + 200 mln DKK	Quantum sensing, quantum security, quantum computing, quantum communication, quantum simulators	https://dqc.dk/explainer-denmarks-national-quantum-strategy-part-1/ https://dqc.dk/explainer-denmarks-national-quantum-strategy-part-2/
Finland	Full	Quantum Technology Strategy 2025–2035 (2025)	50–100 million EUR per year from 2025 to 2035	Quantum sensing, quantum computing, quantum communication	https://julkaisut.valtioneuvosto.fi/server/api/core/bitstreams/d58ab039-a9c7-47dd-a816-58718208a18e/content
Ireland	Full	Quantum 2030 (2023), Quantum Technologies in Northern Ireland (2026)	Through national programs	FDI, skills development, photonics, quantum software	https://www.gov.ie/en/department-of-further-and-higher-education-research-innovation-and-science/publications/quantum-2030-a-national-quantum-technologies-strategy-for-ireland/ https://matrixni.org/wp-content/uploads/2026/09/NI-Quantum-Technologies-Matrix-Sept-2026_digital.pdf
Romania	Full	National Strategy for Quantum Technologies 2024–2029 (2024)	National + EU programs	quantum computing, quantum sensing, quantum networks, local centre of excellence and real-life use case acceleration	https://www.research.gov.ro/programe-nationale/strategia-nationala-in-domeniul-tehnologiilor-cuantice-2024-2029-2/
Hungary	Full	HunQuTech National Quantum Technology Programme	NKFIH	Quantum computing, quantum communication, quantum networks, QKD, quantum simulators	https://wigner.hu/s/quantumtechnology/

Sweden	Full	**Sveriges strategi för kvantteknikområdet (2026)**	b.d.	PQC, ecosystem coordination, workforce development, research & development	Sveriges strategi för kvantteknikområdet
Austria	Initiative (RRF)	Quantum Austria (RRF)			https://www.fwf.ac.at/en/funding/portfolio/subject-specific-funding/quantum-austria
Czech Republic	Initiative (RRF)	National Quantum Infrastructure			https://www.vut.cz/en/rad/projects/detail/33997
Poland	Guiding Principles (consultations)	Guiding Principles for the Quantum Technology Development Policy (2025/2026)			https://www.gov.pl/web/cyfryzacja/polska-w-erze-kwantowej-czyli-zalozenia-polityki-rozwoju-technologii-kwantowych
Switzerland	Initiative	Swiss Quantum Initiative (SQI)			https://quantum.scnat.ch/en
Slovakia	Initiative (EuroQCI)	netQUTE / skQCI			https://www.qute.sk/netqute/ https://skqci.qute.sk/
Estonia/Latvia/Lithuania	No formal strategy	Roadmaps, initiatives			
GR/CY/BG/LU/PT/SI/HR/MT/BE	No national strategy	Quantum Europe Strategy			

Opportunities for startups and mature businesses

For European companies, the greatest opportunities currently stem from the combination of increasing public funding, the development of European infrastructure, and demand from the industrial, defense, and space sectors. For startups, it is particularly important to leverage existing European mechanisms to move from research and prototyping to a demonstrator, a first customer, and scaling up.

1. The European Environment and Opportunities for Growth

European programs provide companies with access to funding, infrastructure, and partners needed to move from R&D to demonstration and implementation.

Using European Programs as a Path to Growth

European programs can provide startups with funding, access to infrastructure, technology partners, and the opportunity to conduct demonstration projects. Of particular importance are the EIC Accelerator, Quantum Flagship, EuroHPC, and EuroQCI; depending on the technology, ESA programs and defense and dual-use instruments may also be relevant. Participation in these initiatives can facilitate the transition from research and prototyping to a demonstrator and initial deployments.

Leveraging European Infrastructure as a Cost Advantage

Access to European quantum computers, testbeds, and communications infrastructure allows companies to test technologies without building their own infrastructure. For startups, this can significantly reduce CAPEX and shorten the time needed to validate a solution.

2. Technologies and the Value Chain

Not all companies need to compete to build a complete quantum computer to participate in the QT market. A significant portion of the value will be generated in components, software, infrastructure, and solutions that integrate quantum technologies with existing systems.

Enabling technologies and quantum supply chain

Companies with expertise in photonics, optoelectronics, electronics, materials, semiconductors, control systems, precision manufacturing, or cryogenics can develop products for the quantum sector. Europe's industrial base in these areas creates opportunities to establish a foothold in the quantum supply chain. For mature companies, this also presents an opportunity to expand their existing products and expertise into the quantum technology market.

The Development of Quantum Sensing

Quantum sensing opens up new possibilities in fields that require highly precise measurements. Potential applications include navigation, geophysics, energy, industry, healthcare, defense, and the space sector. Startups can develop both sensing components and complete solutions for specific industrial applications.

Technologies related to gravimetry, magnetometry, inertial measurements, precision timing, and navigation are of particular interest.

Quantum Communication and Cybersecurity

The development of QKD, quantum networking, and post-quantum cryptography (PQC) is creating opportunities for new products and services related to information security. PQC is of particular importance, as companies are already preparing their cryptographic infrastructure to address future threats posed by quantum computers. Additional factors driving demand for cybersecurity include the geopolitical situation, growing threats to critical infrastructure, and the importance of Europe's strategic autonomy and digital resilience. The development of European quantum communication infrastructure further fosters an environment for projects related to QKD and secure communication.

Quantum Software and Application Solutions

The development of quantum computers is creating opportunities for companies that develop software, middleware, development tools, algorithms, and industry-specific applications. Application areas primarily include optimization, simulation, and modeling. A software layer is also being developed to connect quantum computers with existing computing infrastructure, encompassing tools for workflow management, the integration of quantum and classical systems, and the creation and testing of algorithms.

3. High-Potential Industries and Markets

Startups can develop solutions for sectors where quantum technologies are already the subject of experiments and research projects. Of particular importance are defense and security, the space sector, cybersecurity, energy, pharmaceuticals and healthcare, chemicals and materials, finance, and transportation and logistics. Knowledge of a specific industrial problem and the ability to measure the impact increase the potential for commercializing a solution. In the case of quantum computing, problems related to optimization, simulation, and modeling are particularly important, while sensing and communication open up additional applications in energy, industry, infrastructure, and transportation.

Defence, security, and dual-use

Defense and security are key areas for the development of quantum technologies in Europe. Applications include secure communication, quantum sensing, navigation, positioning, timing, and the detection and measurement of the electromagnetic environment. These technologies can be developed as dual-use solutions, finding applications in the defense sector, critical infrastructure, public safety, and select civilian applications. Growing European defense spending and the importance of strategic autonomy further enhance the potential significance of this market.

Space as a Market for Quantum Technologies

The space sector creates opportunities primarily for companies developing technologies used in satellite communications, navigation, precision timekeeping, and Earth observation. Satellite quantum communications, quantum sensors, atomic clocks, and technologies that enhance the precision of positioning and navigation are particularly promising. For startups, this means opportunities in both the development of specialized components and entire subsystems designed for integration with space-based solutions. The dual-use nature of these technologies further expands their potential applications in defense, telecommunications, navigation, and critical infrastructure.

Critical Infrastructure

Quantum technologies can be applied to the protection and monitoring of infrastructure of high economic importance, including power grids, telecommunications networks, transportation networks, and water systems. Quantum sensing can be used for precise monitoring of infrastructure and detection of changes in its environment, while quantum communication and post-quantum cryptography technologies can help protect transmitted data and communication systems. For startups, this is an area that combines needs related to security, business continuity, and infrastructure monitoring with specific applications of quantum technologies.

4. Market Entry and Commercialization

The biggest challenge for quantum technologies is the transition from a technology demonstration to a product that customers are willing to pay for. For startups, this means they must simultaneously develop the technology and validate its applications with potential customers.

Collaboration with large companies and the development of specific use cases

For startups, a key opportunity lies in collaborating with companies that face specific business challenges that can be solved using quantum technologies. This applies particularly to sectors such as energy, manufacturing, pharmaceuticals, chemicals, finance, transportation, and defense. Projects carried out in collaboration with industry may include proof-of-concept studies, demonstrations, and pilot programs, and may subsequently lead to the implementation of a solution. For large companies, such collaboration allows them to develop quantum capabilities and evaluate their potential applications in existing processes.

Building a Product Around the Customer's Problem

A startup should define as early as possible the measurable business impact that the technology is intended to deliver, such as reducing computation time, increasing

measurement accuracy, or improving security. The easier it is to compare a quantum solution with existing technology in terms of cost and impact, the easier it is to move from a demonstrator to a paid implementation.

Where Companies Can Look for Funding, Partners, and Quantum Projects

For quantum startups, it's worth looking beyond programs explicitly labeled as "quantum." The most interesting opportunities also arise in programs focused on deep tech, defense, space, cybersecurity, photonics, and electronics, where quantum technologies can address specific technological or strategic challenges. The list below includes R&D funding, acceleration programs, access to infrastructure, industry partners, and potential customers.

Program / initiative	Type	What it offers	Link
EIC Accelerator	Financing + Equity	Grant of up to 2.5 million EUR + investment of up to 10 million EUR, mentoring, and networking	EIC Accelerator
EIC Pre-Accelerator	Grant + acceleration	Technology, business, and investment readiness development; grant of 0.5–1 million EUR	EIC Pre-Accelerator
EIC STEP Scale Up	Equity / scale-up	Equity investment of 10–30 million EUR with a 20% pre-commitment requirement from the investor; budget of 300 million EUR in 2026; quantum technologies identified as a priority sector	EIC STEP Scale Up
Eureka Xecs Quantum Call	R&D / grant	International R&D projects, technology development, and TRL advancement	Xecs Quantum Call
Eurostars	R&D / grant	International R&D projects with foreign partners	Eureka Eurostars
Horizon Europe	Grant / R&D	Research projects, demonstrators, and consortia	EU Funding & Tenders

EuroHPC JU	Infrastructure / R&D	Access to European quantum computers and infrastructure	EuroHPC Quantum Computing
ESA	R&D / space	Raising TRL, demonstrations, and collaboration with industry	ESA Tender Portal
NATO DIANA	Accelerator/ defence	Funding, test facilities, mentors, access to end users, and a path to deployment	NATO DIANA
NATO DIANA Challenges	Challenge	Specific NATO challenges, technology testing and validation	DIANA Challenges
NATO Innovation Fund	VC	VC capital and access to the investor ecosystem	NATO Innovation Fund
European Defence Fund	Grant / R&D	Funding for technology development and industrial consortia	European Defence Fund
QAI Ventures Accelerator	Accelerator + VC	Funding of up to $200,000, with subsequent equity rounds of up to $2 million, mentoring, infrastructure, and industry connections	QAI Ventures Accelerator
Creative Destruction Lab Quantum	Accelerator / mentoring	Mentoring led by founders and experts, access to investors, and business development	CDL Quantum
Qubit-IL Startup Launchpad	Accelerator / mentoring	Mentoring sessions, connections with investors and strategic partners	Qubit-IL Launchpad
Quantum Launchpad	Incubator / accelerator	A two-year program preparing startups for a seed round, infrastructure, mentoring, and an investment of up to 0.5 mln EUR	Quantum Launchpad

Quantum World Congress Startup Pitch	Pitch / competition	Pitch at the conference, 25,000 USD + Startup Launchpad Table	QWC Startup Pitch
Global Quantum + AI Challenge	Challenge / PoC	Real-world challenges faced by large companies, PoC, access to tools, and a $200,000 prize pool	Global Quantum + AI Challenge
XPRIZE Quantum Applications	Grand Challenge	A $5 million prize pool, benchmarking, and application development in the fields of health, climate, energy, and materials	XPRIZE Quantum Applications
Quantum Delta NL Startup Program + Challenge	Government program / ecosystem	Grants, access to QuTech and TU Delft, investor connections, talent, and competitions	Quantum Delta NL

Conclusion

The European quantum technology market is entering the early stages of commercialization. Europe has a strong scientific position, a growing number of companies, and infrastructure being developed at the EU and member state levels, but it still lags behind in terms of private funding and scaling up companies. The coming years will therefore be crucial for translating research advantages into economic advantages.

First, European quantum development is increasingly linked to security and strategic autonomy. PQC, quantum sensing, secure communication, navigation, and dual-use technologies are supported by both civilian and defense programs. This means that market growth will be largely driven by the needs of nations and critical infrastructure, rather than solely by future demand for quantum computing.

Second, Europe does not have to compete solely in the construction of quantum computers. Its opportunity may lie across the entire value chain, from photonics, semiconductors, and sensors to software, cybersecurity, and the integration of quantum solutions into existing infrastructure. This provides an opportunity to build a competitive advantage even in segments with lower capital barriers than quantum computing.

Third, scale-up remains the biggest challenge. Europe is capable of funding research and technology development, but it must more effectively support the transition from prototype to the first customer, and then to a global scale. The European infrastructure currently being developed can reduce the technological barrier, but it will be equally important to increase the availability of follow-on financing and industrial demand.

Fourth, the current climate favors companies that can combine quantum technology with a specific application. Within the European ecosystem, solutions that address existing needs in security, defense, industry, energy, and the space sector are particularly promising. In the case of quantum computing, the path to commercialization remains longer, while some sensing and security applications can already be developed today.

As a result, Europe has an opportunity to build a strong position in the quantum market, but simply increasing R&D funding will not be enough. The key will be to ensure a smooth transition from research, through infrastructure and demonstrators, to deployments, customers, and business scaling. It is at this stage that it will be determined whether Europe's scientific potential will translate into a lasting economic advantage.

To sum it up, although the European quantum market is not as competitive as in the US and China, we are currently seeing a window of opportunity to change that. Already existing and upcoming programs as well as new funding schemes provide a

development and commercialization framework that can potentially help European companies get traction and scale fast.