Quantum research and innovation in Europe

EU strategy, governance and funding opportunities

11 November 2026

FUNDING

Public investment and planned funding

>€11bn

Historical public investment

EU and Member States combined in the five years preceding the July 2025 strategy.

~€1bn

Flagship envelope

Multi-year quantum R&I initiative launched in 2018.

€138m

EuroHPC JU calls

Indicative Horizon Europe budgets across ten quantum calls launched in 2026.

€40–50m

Per Chips JU pilot line

Joint EU and national funding envisaged for each of six quantum chip pilot lines.

The figures cover different periods and instruments and may overlap.

Quantum Europe Strategy to 2030

Research & innovation	Align EU and national research agendas around shared priorities.
Quantum infrastructure	Expand access to hybrid computing, secure networks and testbeds.
Industrial ecosystem	Develop pilot lines and help startups scale and reach lead customers.
Space & dual use	Coordinate work on space, security and defence applications.
Quantum skills	Build training capacity and support researcher and workforce mobility.

European Commission strategy adopted on 2 July 2025.

Quantum Act and EU governance

Quantum Act	Announced legislative initiative on R&I coordination, industrial capacity and resilient supply chains.
EuroHPC JU	Its Governing Board adopts work programmes. The expanded mandate includes a dedicated quantum pillar.
Commission & Member States	Set shared priorities. The Quantum Technology Coordination Group brings together national representatives.

Quantum Act status on 11 November 2026: Commission proposal pending.

EuroHPC Joint Undertaking

Research calls	Funds work on computing platforms, communications, sensors, standards and shared test infrastructure.
Infrastructure & access	Procures quantum computers, integrates them with supercomputers and allocates access through dedicated calls.
Czech example	VLQ, hosted at IT4Innovations in Ostrava, is part of the LUMI-Q consortium and the European quantum computing infrastructure.

FUNDING OPPORTUNITIES

EU programmes by research stage

Frontier science & talent	ERC for investigator-led research and MSCA for doctoral training, fellowships and exchanges.
Collaborative R&I	EuroHPC JU for dedicated quantum calls. Horizon for relevant digital, industry and space topics. EU Competitiveness fund (Digital leadership, defense)
Cross-border research	QuantERA pools national and EU funds.
Commercialisation	EIC Pathfinder and Transition support development and validation. Accelerator supports eligible startups and SMEs.
Manufacturing & deployment	Chips JU for chip design and pilot production. Digital Europe and CEF Digital support EuroQCI deployment.

FUNDING OPPORTUNITIES

Selected EuroHPC calls and deadlines

Area	Topic	Budget	Deadline
Computing platforms	Trapped ions, superconducting circuits and neutral atoms	**€20m each**	Nov 2026
Communications	Next-generation quantum key distribution	**€24m**	Nov 2026
Shared infrastructure	Quantum testing and experimental pilot lines	**€20m + €15m**	Nov 2026
Algorithms	Quantum machine learning	**€6m**	Jan 2027

Source : EU Funding & Tenders Portal.

QC: QC presents a $1.3T to $2.7T use case opportunity, with rapid acceleration expected in the next five to ten years.

Value estimates are approximate and not definitive projections of business value

Deep dive to follow Economic value: + Low ++ Medium +++ High

Industry	Key segment for QC	Economic value of QC[1] ~2025–30	Economic value of QC[1] ~2030–35	Value at stake for QC by 2035,[2] $ billion
Global energy and materials	Chemicals	++	+++	450–800
	Electric power	+	++	50–150
	Oil and gas	+	++	50–150
Financial industry	Financial services	++	+++	400–600
Pharmaceuticals, medical products	Pharmaceuticals	++	+++	
Travel, transport, and logistics	Travel, transport, and logistics	++	+++	80–400
Advanced industries	Automotive	+	++	
	Aerospace and defense	++	+++	
	Advanced electronics	+	++	200–500
	Semiconductors	+	++	
Insurance	Insurance	++	++	
Telecom, media, and technology[3]	Telecom	+	++	50–100
	Media	+	+	
Total				1,280–2,700

The incremental impact of QC exhibits an overlap with the impact of gen AI, meaning the total value at stake is not entirely additive.

1. Defined as impact on revenue and cost savings relative to industry size.
2. Defined as absolute impact in terms of revenue and cost savings.
3. Excluding technology companies and QC players.

Source: Oxford Economics; McKinsey analysis

Ministry
of Industry and Trade
of the Czech Republic



Quantum Technologies Ecosystem in the Czech Republic

Research, infrastructure, projects and talent

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01

The Czech quantum ecosystem

Four technology pillars, five regional hubs, one connected community

Four pillars of Czech quantum technologies

Quantum computing

- Problems beyond classical computers
- Drug discovery and materials design
- Optimisation and AI acceleration
- Cryptography and cybersecurity

Quantum communication

- Unconditionally secure communication
- Quantum key distribution (QKD)
- Quantum internet
- Securing critical infrastructure

Sensing and metrology

- Ultra-precise measurement
- PNT-Positioning, Navigation,Timing
- Medical imaging and diagnostics
- Geophysics and monitoring

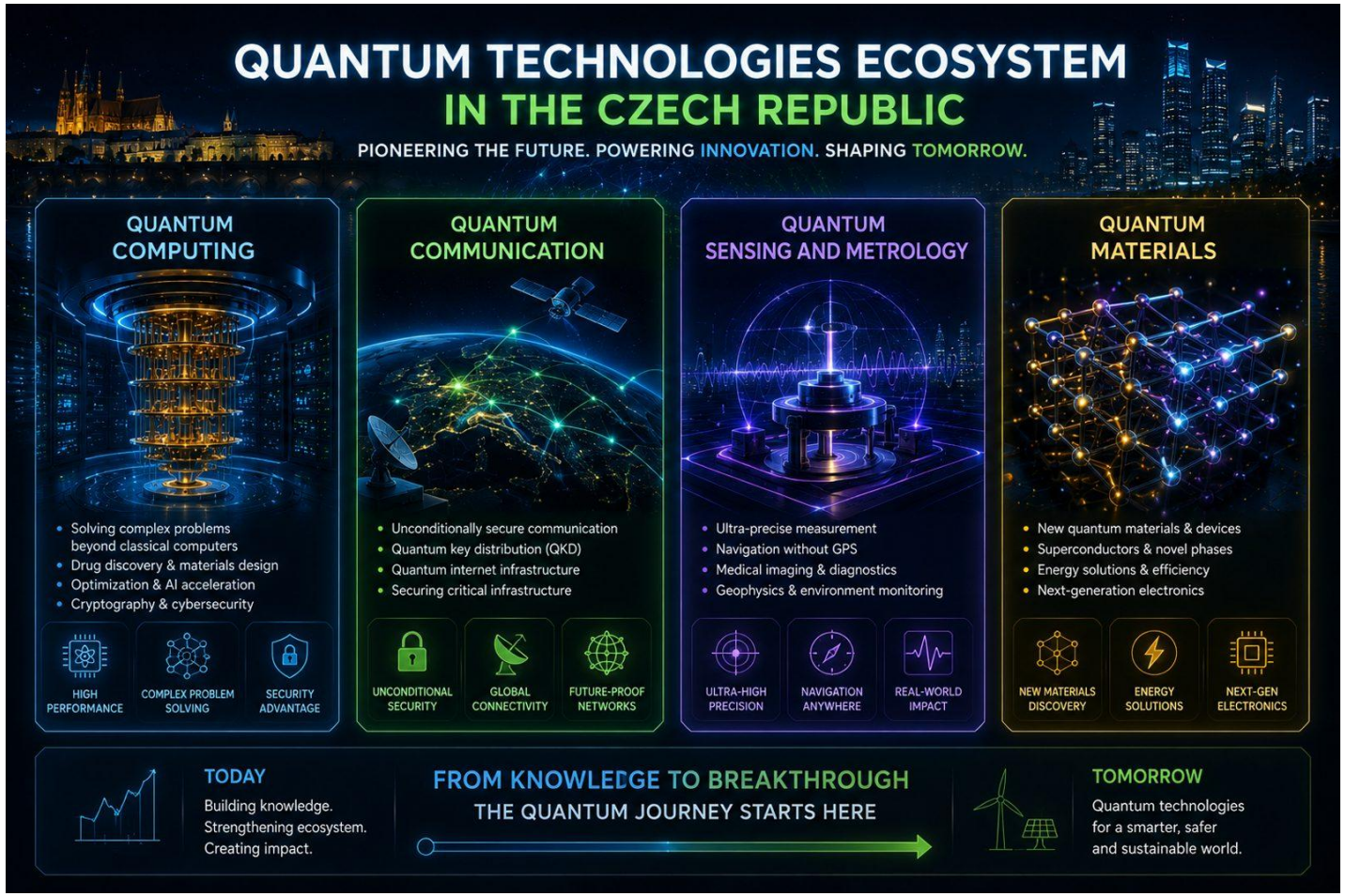
Quantum materials

- New quantum materials and devices
- Superconductors and novel phases
- Energy solutions and efficiency
- Next-generation electronics

Dual use applications

Four pillars, one national ecosystem

An ecosystem that connects



1. **Excellence in research**
   Academia and institutes at the forefront

2. **Industrial capabilities**
   Strong engineering and manufacturing base

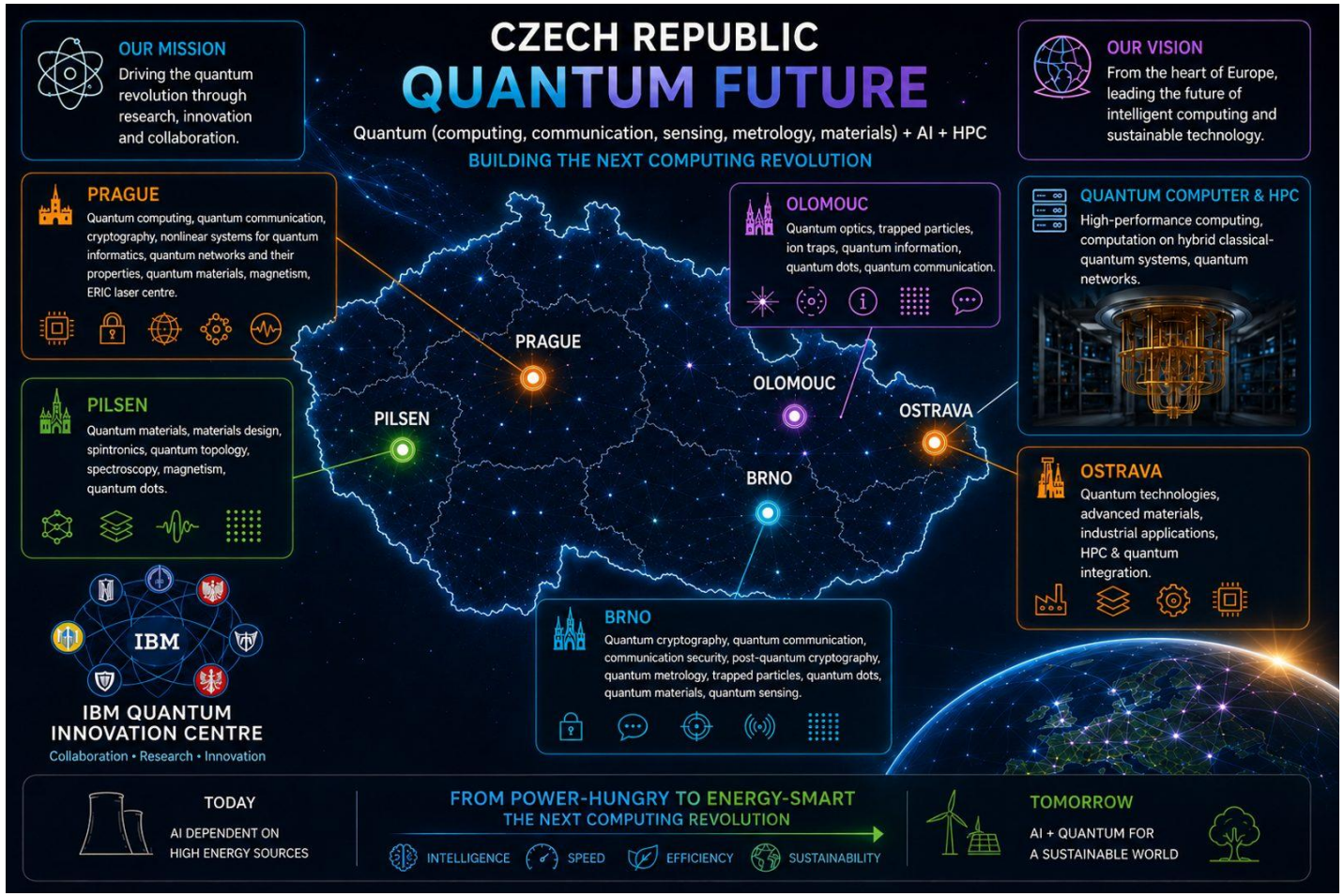
3. **Talent and education**
   Dedicated quantum degrees and courses

4. **Global collaboration**
   Embedded in European and global networks

From laboratory to application

Computing	Drug discovery, materials design, optimisation, AI acceleration, cryptography
Communication	Quantum key distribution(Euro QCI) , quantum internet, protection of critical infrastructure
Sensing and metrology	Precise time and frequency, Positioning, Navigation,Timing, medical imaging, geophysics
Materials	Superconductors, energy efficiency, next-generation electronics

Five hubs, one connected ecosystem



Prague

Q computing, q communication, networks, cryptography, q materials

Brno

Q metrology, q sensing, secure communication

Ostrava

Q computing, AI, HPC integration, q communication

Pilsen

Q materials, spintronics, magnetism, Q sensing

Olomouc

Q optics and ion traps

02

Flagship infrastructure

Quantum computing, high-performance computing and AI under one roof

VLQ: the first Czech quantum computer



VLQ at IT4Innovations, VSB – Technical University of Ostrava. The name combines VSB, LUMI-Q and Quantum.

- 24 superconducting qubits in a star-shaped topology
- Connectivity between all qubits, built for error correction and complex algorithms
- Delivered by IQM, about €5 million, co-funded by EuroHPC JU and LUMI-Q
- Inaugurated 23 September 2025, the second EuroHPC quantum computer
- Coupled to the 15.7 petaflops Karolina supercomputer

IBM Quantum Innovation Centre (CZ QIC)

Coordinator

Czech Technical University in Prague

- Czech Academy of Sciences
- Charles University in Prague
- Masaryk University Brno
- Palacký University in Olomouc
- University of Defence
- Brno University of Technology
- University of West Bohemia in Pilsen
- University of Chemistry and Technology Prague
- VSB Technical University Ostrava
- Technical University of Liberec

A national consortium of universities and the Academy of Sciences

03

Research and projects

National and European projects across all four pillars

Projects at a glance

Project	Czech lead	Domain
LUMI-Q (VLQ)	IT4Innovations, VSB-TUO	Quantum computing
CZ-QCI / EuroQCI	NÚKIB Cybersecurity Hub	Quantum communication
EPIQUE	Czech Technical University	Optical quantum computing
CLONETS	Institute of Scientific Instruments	Quantum metrology
CLARA	VSB-TUO and CTU	AI and quantum, brain research
Quantum Engineering and Nanotechnologies	Institute of Scientific Instruments	Engineering
Quantum Materials for Sustainable Technologies	University of West Bohemia	Quantum materials

04

Talent and education

Building the next generation of quantum experts

Quantum study programmes across the country

Czech Technical University

Quantum technologies (Bc., MSc., PhD) and Quantum Informatics (MSc.)

VSB-TUO Ostrava

Quantum Informatics (MSc.) with courses in computing, hardware and cryptography

Masaryk University Brno

Quantum informatics course

Palacký University Olomouc

Quantum optics and quantum information courses

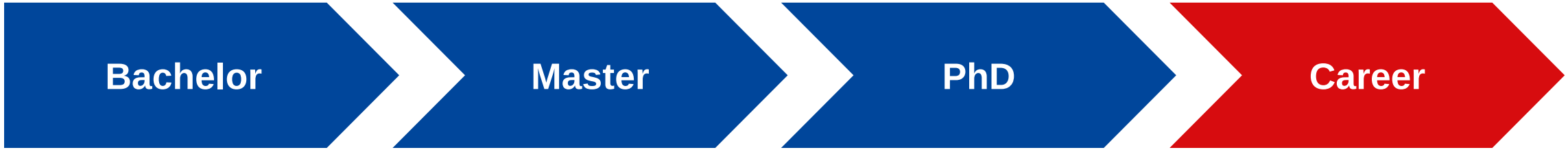
University of West Bohemia

Quantum Materials Physics PhD, in preparation

EU Quantum Academy

Hosted by the Czech Technical University

A talent pipeline from bachelor to industry



Bachelor	Master	PhD	Career
Quantum technologies (CTU)	Quantum informatics (CTU, VSB-TUO)	Quantum technologies (CTU), Quantum Materials Physics (UWB, in preparation)	Research institutes, HPC centres, industry and startups

EU Quantum Academy at the Czech Technical University supports training across Europe

05

Strategy and partnerships

National priorities and international cooperation

National Quantum Strategy: under revision

1 Research and development

- Fundamental and applied research
- Academia–industry collaboration

2 Education and talents

- Next generation of quantum experts
- Attract and retain global talent

3 Quantum competitive economy

- Startups and scaleups
- Technology transfer and commercialisation

4 International collaboration

- EU and global partnerships
- Promote Czech expertise worldwide

5 Defence

- Quantum for national security
- Dual-use applications and resilience

6 Infrastructure

- National quantum infrastructure
- Testbeds and link to the European Quantum Internet

Policy and governance

1

Ministry of Industry and Trade

Under Ministry operates Czech Envoy for Quantum technologies

Czech priorities in step with the EU Quantum Europe Strategy and the EU Quantum Act

Ministry also leads the revision of the National Strategy for Quantum Technologies

Strategy revision under way to keep Czech priorities aligned with Europe

Global collaboration in quantum technologies

Partner regions

- EU countries
- USA
- United Kingdom
- Canada
- Japan
- South Korea
- Israel
- Australia



Research **Innovation** **Partnership** **Impact**

Quantum in the Czech Republic

1. **Full-stack ecosystem**
   From materials and metrology to computing and communication

2. **Hybrid infrastructure**
   Quantum computer coupled to HPC and an AI Factory, Quantum Innovation Centre

3. **Trusted networks**
   Secure communication and precise time across Europe

4. **Talent pipeline**
   Dedicated quantum degrees from bachelor to PhD

5. **Policy backing**
   National strategy and a National Envoy

If you have any questions or proposals, please contact us at - **kvantum@mpo.gov.cz**