

# Market Intelligence Briefing

June 2025

**Digest of  
Luxembourg's  
national strategies  
to accelerate  
digital sovereignty**

**Communication  
from the  
Government of  
Luxembourg**



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# Accelerate digital sovereignty 2030

## Context

In an era defined by digital transformation, Luxembourg is positioning itself at the forefront of Europe's deep tech revolution. Amidst accelerating global competition and evolving technological paradigms, the Grand Duchy is concentrating national efforts on three interlinked strategic pillars: [Artificial Intelligence \(AI\)](#), [Quantum Technologies](#), and the [Data Economy](#) (strategies published in May 2025).

This focus is not only aligned with the European Union push for **digital sovereignty** and technological leadership, as represented by initiatives like [the AI Continent Action Plan](#), the [European Strategy for Data](#), or the [European Quantum Communication Infrastructure](#) (EuroQCI), but also stems from Luxembourg's ambition to future-proof its economy, enhance societal resilience, and consolidate its role as a trusted digital hub in Europe.

These pillars are central to **Luxembourg's updated national innovation strategy**, which responds to the shifting landscape of international competition, the emergence of **dual-use technologies**, and the **growing importance of trusted, sovereign digital infrastructures**.

Luxembourg's deep tech agenda is grounded in three imperatives:

- **Resilience and Sovereignty:** Reducing dependency on foreign technological infrastructures by nurturing sovereign capabilities.
- **Innovation-Driven Growth:** Positioning emerging technologies as accelerators of economic diversification and competitiveness.
- **Strategic Alignment with Europe:** Serving as a laboratory and enabler of European strategic autonomy, especially in secure data, AI ethics, and quantum research.

Luxembourg sees AI, quantum and data not as isolated technologies but as *mutually reinforcing enablers* of cross-sector transformation.

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## Levers for action across AI, Quantum and Data

Luxembourg has built a harmonised and integrated strategic framework:

### Skills & Talent Development

Luxembourg's ambition is to develop excellence in those three sectors at national level by training experts, practitioners, the workforce and citizens. Initiatives include the AI4All continuing education platform, the integration of specialised curricula into education notably via the “AI Sphere” initiative , the “[Elements of AI](#)” MOOC, the creation of the “Deep Tech Lab”, etc.

### Trusted Infrastructure & Sovereignty

Building reliable, secure and resilient infrastructure is a priority across all three pillars to reinforce strategic autonomy and ensure alignment with EU values and initiatives on trust, security, and privacy (such as [EuroHPC](#) and [EuroQCCI](#)). While addressing ecological considerations, the country will continue to invest in sovereign digital capabilities, such as **Meluxina and sovereign cloud solutions**. It will establish a dynamic national quantum communications network, accompanied by measures for the transition to post-quantum cryptography.

### Range of Services

Luxembourg will support and promote innovation to encourage the acceleration of the country's maturity in those three expertise, such as the **AI** and the **Quantum Factories**, targeted financing, and facilitation of experimentation.

### Research, Development & Innovation Ecosystem

A vibrant research environment and strong public-private collaboration translate knowledge into usable innovations. AI will also play a role as a catalyst of innovation.

### Supportive Regulation & Governance

Luxembourg is committed to the rapid implementation of the **AI Act**, and to contributing to the work of the Council of Europe's Committee on Artificial Intelligence (CAI). Moreover, the Grand-Duchy is putting in place a single, effective, centralised data governance system to manage access to public sector data and common European data spaces. Regarding Quantum, a National Quantum Coordination office (NQCO) will be created to align resources and initiatives to implement national quantum strategy.

### European and International Collaboration

International partnerships reinforce Luxembourg's ability to participate in and influence key EU and global initiatives, as well as contribute to promote Luxembourg as an excellence pole around data and quantum.

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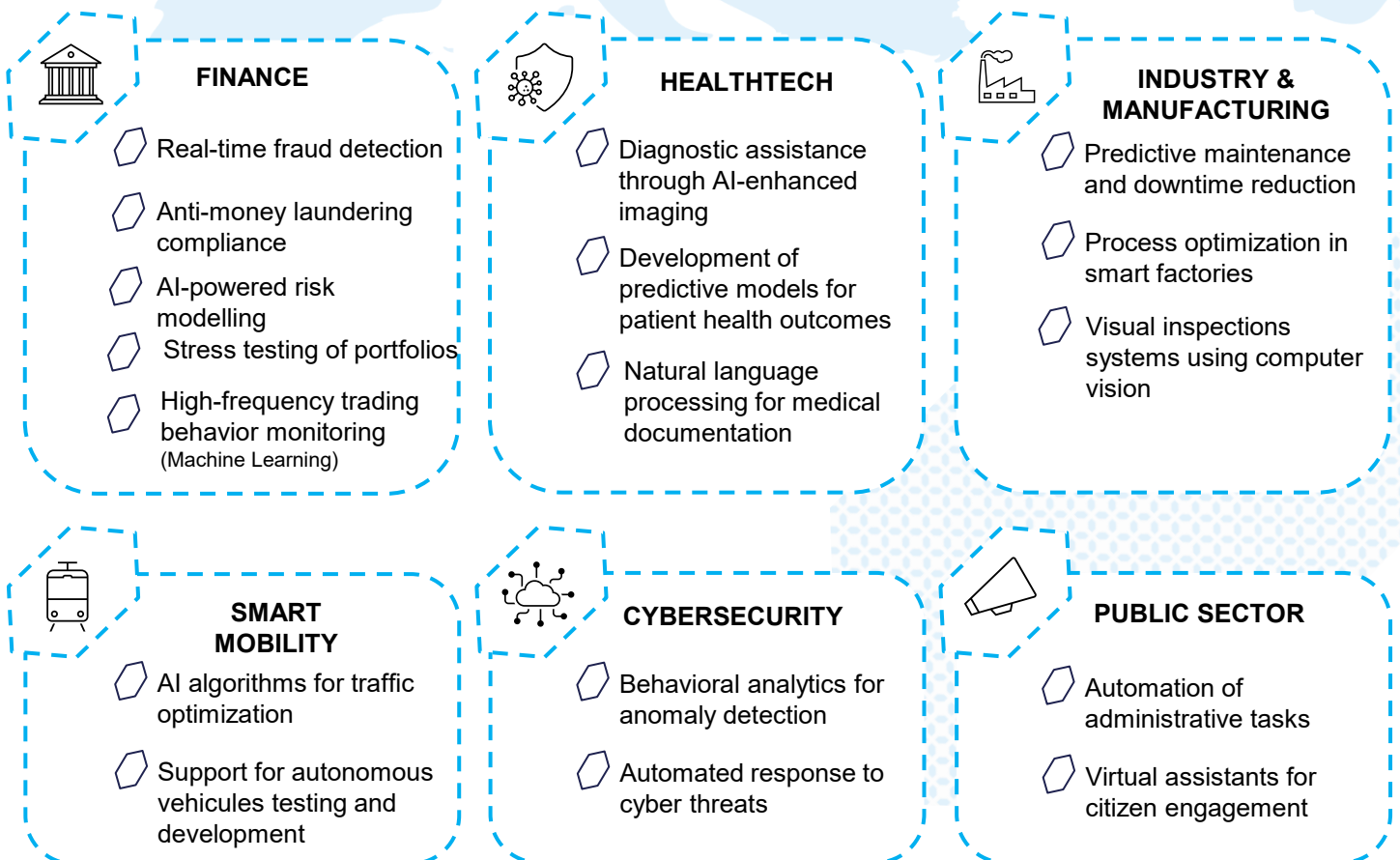
## Artificial Intelligence & Data economy

Luxembourg's AI strategy, supported by the data strategy, is rooted in the ambition to develop a **human-centric, ethical and transparent AI ecosystem** that is embedded across both public and private domains.

As a **digital economy** deeply embedded in global services, Luxembourg views data as the essential enabler of innovation and decision-making. Its strategy aims to build a **data infrastructure** that is trusted, interoperable, and aligned with **European values** around privacy and fairness.

To name but a few concrete applications, in **finance**, the Luxembourg House of Financial Technology (LHoFT) will play a key role in promoting AI adoption with its Experience Center. In **healthtech**, the initiative 1+Million Genomes will seek to create a formal data space for the collection, curation and sharing of genomic data across Europe. By exploiting AI, HPC and sovereign cloud, the **Regional Digital Twin Climate Change (RDTCC)** project aims to provide advanced climate services and risk management solutions for energy, finance, agriculture and public services.

### Key Priority Markets and Applications:



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## Quantum Technologies

Quantum technologies represent Luxembourg's long-term investment into next-generation capabilities. The country's strategy focuses on developing **foundational infrastructure** such as the **quantum communication infrastructure (QCI)**, **nurturing talent** through advanced education and research funding, and integrating Luxembourg into the broader European quantum ecosystem.

**Quantum computing** holds the promise of solving complex problems beyond the reach of classical systems. This includes modelling new materials for energy efficiency, simulating drug interactions in healthcare, or optimising logistics at an unprecedented scale.

**Quantum communication**, in particular, offers **new levels of cybersecurity** through quantum key distribution (QKD), essential for **data protection** in finance and government.

Luxembourg also sees strategic opportunities in **space applications**, where **quantum sensors** could enable ultra-precise **navigation, imaging, and communication** via satellites.

As one of the few EU countries proactively investing in quantum infrastructure, Luxembourg is carving out a **niche for high-impact, high-trust quantum experimentation**.

## Conclusion

Luxembourg's deep tech strategy reflects a clear, coherent vision **to drive digital transformation** through **secure, ethical, and impactful technologies**. By leveraging AI, quantum, and data as synergistic tools, the country seeks to reinforce its role in shaping Europe's digital future.

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## Key Takeaways

Below is a schematic summary of the three strategies and their applications across the priority sectors.

### Priority Sectors Impacted

Sector	AI	Quantum	Data Infrastructure
Finance	Risk modelling, fraud detection, AML supervision	Post-quantum security, QKD	Real-time reporting, regulatory data exchange
Health	Diagnostics, medical imaging, patient journey	Drug discovery, biomedical simulations	Health data spaces, personalised care data
Space	Earth observation, anomaly detection	Quantum sensing, secure comms (QKD)	Satellite data integration, onboard analytics
Industry 4.0	Predictive maintenance, process automation	Materials science, logistics optimisation	Digital twin systems, Industrial IoT platforms
Mobility	Autonomous navigation, traffic AI	Traffic optimisation, secure vehicle comms	Connected vehicle data, smart grid interfacing
Cybersecurity	Threat detection, behavioral AI	Quantum cryptography, post-quantum protocols	Trusted identity frameworks, secure infrastructure

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