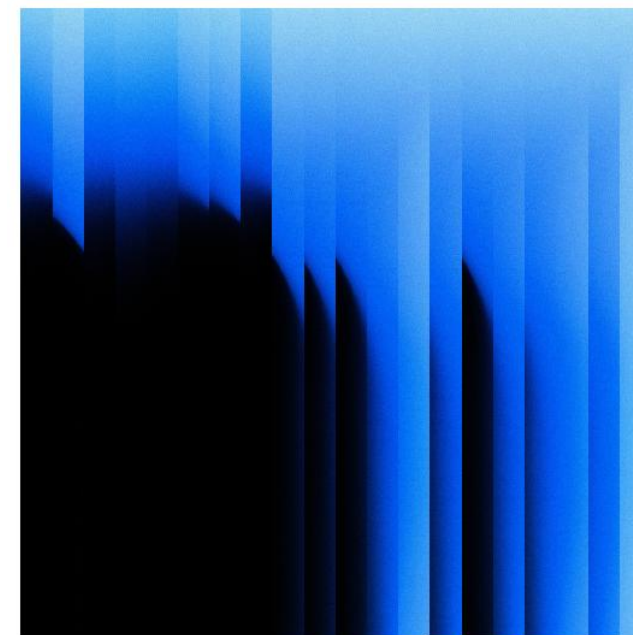




National Strategy on Quantum Technologies



Accelerating digital sovereignty 2030

Luxembourg's Quantum Strategy

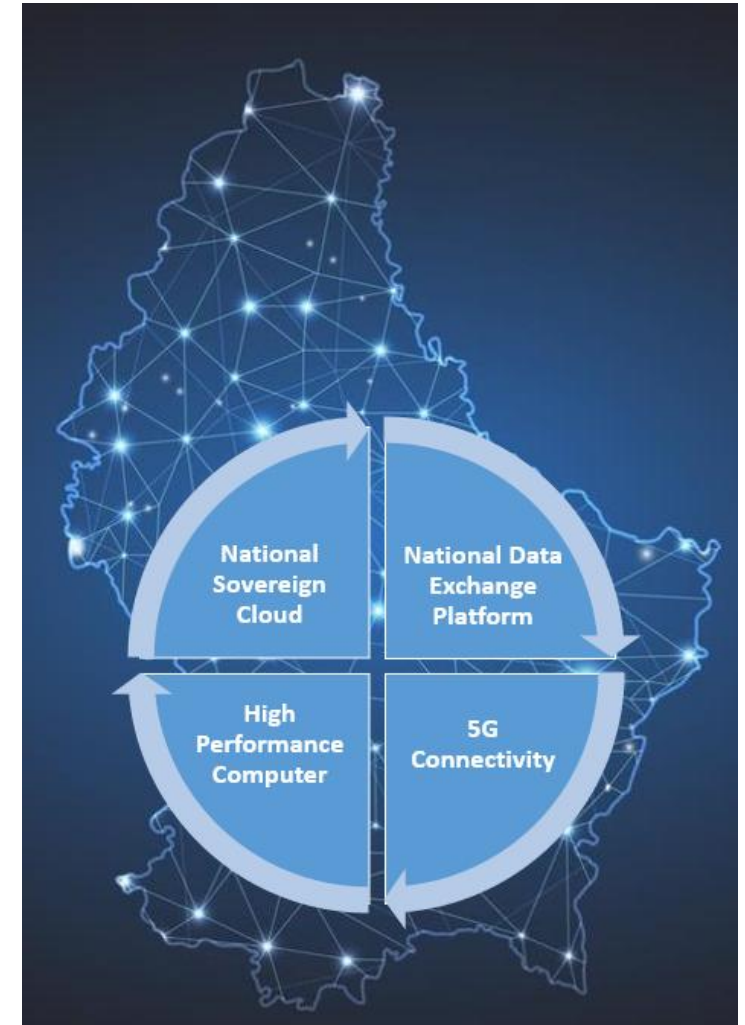
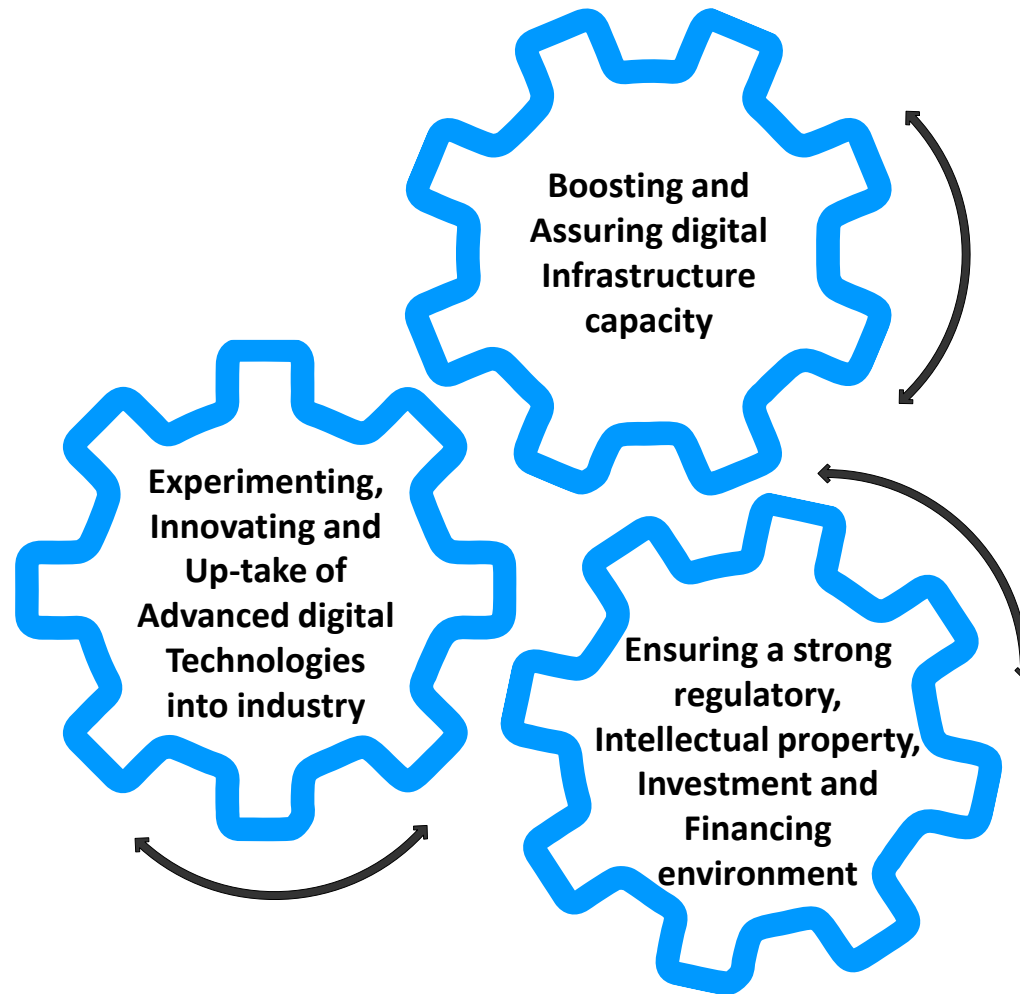
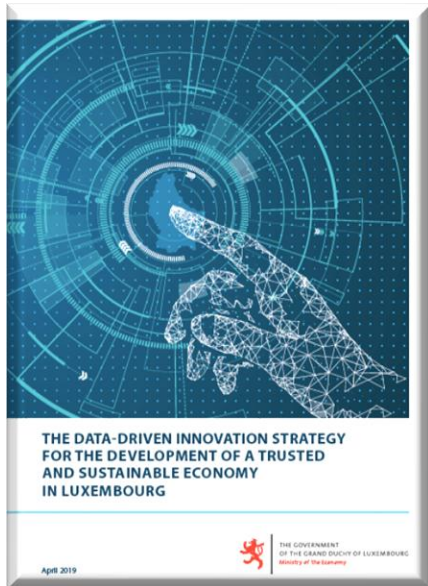


Luxembourg as a digital Trust Center in the EU



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

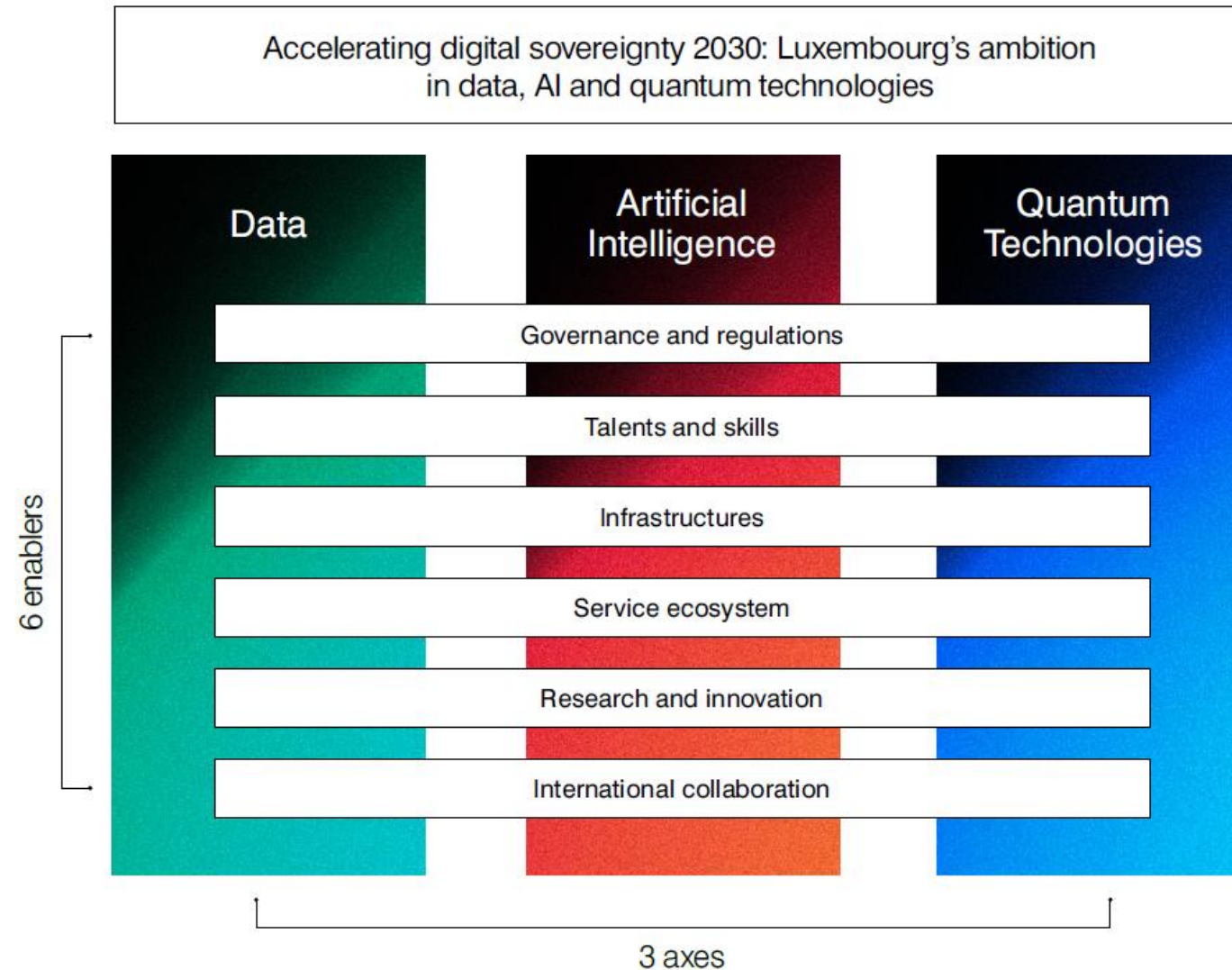
Towards a data-driven innovation economy



National digital strategies

6 common enablers to the 3 priority areas in the digital field

Strengthening Luxembourg's position as a European digital hub



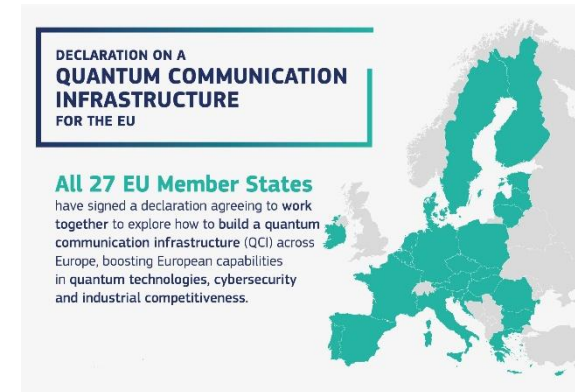
Luxembourg and its quantum ecosystem



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

- Luxembourg has a rich and diverse quantum technology research and innovation community
- Significant public and private investment has enabled:
 - The development of the basis for a solid quantum infrastructure with participation in major European initiatives (EuroQCI, EuroHPC)
 - The initiation of projects, particularly in quantum communication, including satellite communication as a priority
- To consolidate these advances and maximize their impact, a coordinated approach is essential.
- Key objectives :
 - Align existing initiatives between research, industry and policy
 - Define new strategic actions to strengthen Luxembourg's role in quantum
 - Ensure a sustainable positioning as a leading global player

EuroQCI



EuroHPC



Quantum vision and roadmap for Luxembourg



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

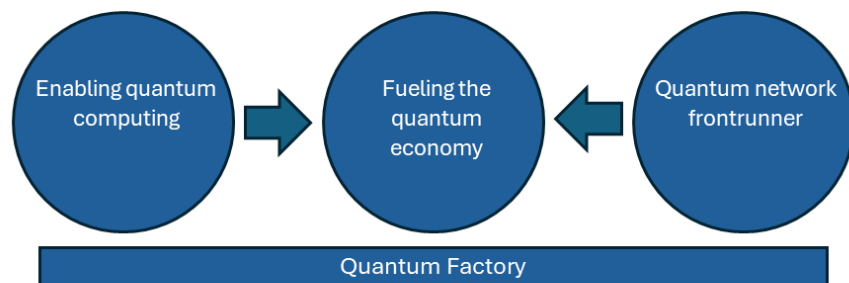
Development of a **National Strategy on Quantum Technologies** aiming to :

- Define a roadmap with clear objectives and actions
- Strengthen research and innovation through strategic funding and partnerships
- Promote transfer to industry with concrete applications
- Train and attract talents by focusing on education and skills

Luxembourg's quantum vision

Making Luxembourg Quantum Ready to Harness the Full Potential of Quantum Technologies for Scientific, Technological, and Economic Progress

Strategy objectives



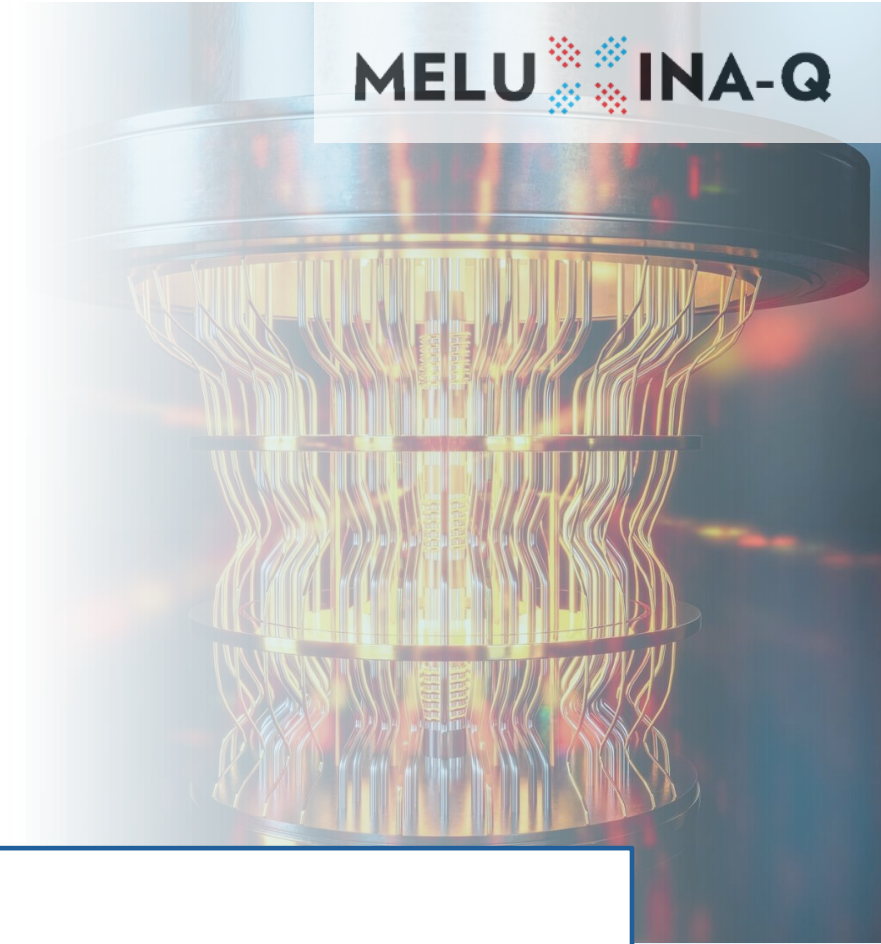
Six levers of action



- Strong engagement and alignment with the EU Q-Strategy

- **Objective 1 - Develop competencies and stimulate the adoption of quantum computing**
- MeluXina-Q: Luxembourg's quantum computing platform
- Key Actions :
 - Ensure the deployment and adoption of MeluXina-Q as a national strategic digital infrastructure
 - Develop expertise and partnerships to exploit the full potential of quantum computing
 - Develop and test quantum algorithms and software, in partnership with research actors
 - Building a quantum software ecosystem

- Relevant use cases for Luxembourg:
 - Financial risk modeling
 - Optimization in logistics and transport
 - Development of new drugs and new materials
 - Quantum ML



National Strategy on Quantum Technologies



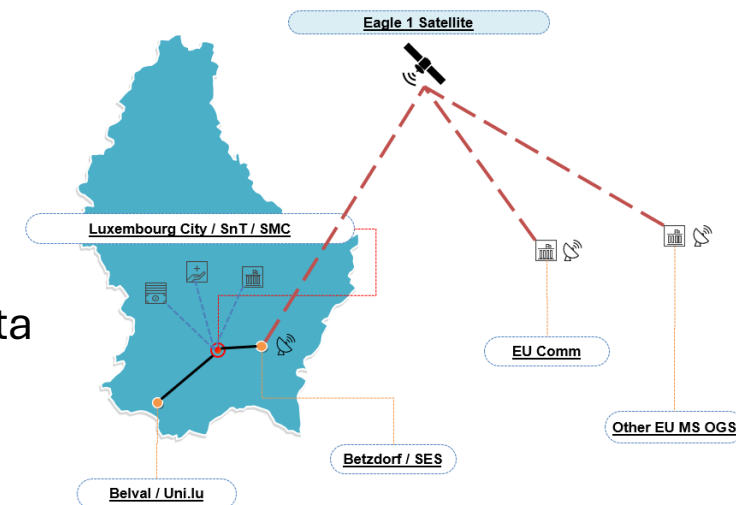
LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

Objective 2 - Securing Communications & Post-Quantum Cryptography

- Anticipating the threat of quantum computers capable of breaking current encryption systems
- Strengthen Luxembourg's position as a trusted global center for data-driven innovation
- Key actions :
 - Promoting the development of quantum communication based on QKD
 - Develop significant use cases for the first generation of quantum communication
 - Positioning Luxembourg as a test-bed for new-generation multi-user quantum networks



- Prepare for and address the transition to post-quantum cryptography
 - Protect critical infrastructure and public entities that handle sensitive data
 - Support companies in the adoption of post-quantum cryptographic protocols





■ **Objective 3 - Economic impact and industrial applications**

- Stimulate the development of new quantum technologies and skills with the aim of achieving economic benefits in the medium and long term
- Examples:
 - Intensify support in promising areas, such as the development of key components for quantum networks (for example, wide bandgap semiconductors, essential for quantum chips, or advances in the software layer)
 - Promoting the development of products and services in the field of quantum communication and information
 - Encourage the creation of start-ups & develop highly-skilled jobs in the quantum sector
 - Attracting interesting global quantum companies to strengthen the industrial ecosystem



Quantum Strategy Roadmap

