UKTIN

OVERVIEW
Summary of Findings
Spectrum Policy Forum July 2025

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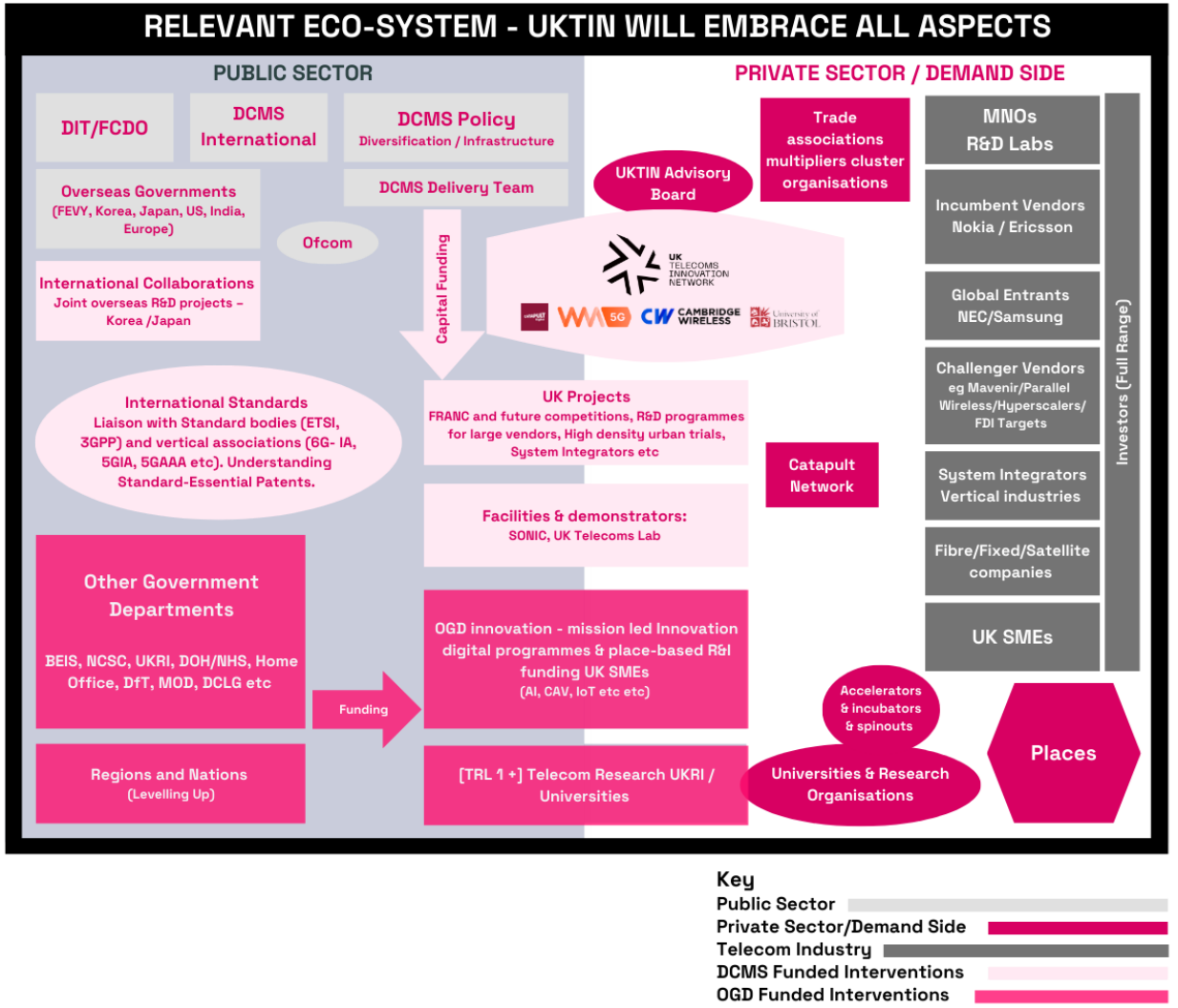
UKTIN

1. CONTEXT

COMPLEX & FRAGMENTED ECOSYSTEM

- The global telco sector is potentially transforming from into a more open networking ecosystem
- An opportunity and challenge vital to the UK's Security and Economic interests
- A complex fragmented ecosystem that requires coordinated strategy led by experts



2. AIMS

- **VISION.** A thriving, resilient, and diversified UK telecoms ecosystem that attracts investment, and drives innovation and growth
- **MISSION.** Transform the UK telecoms innovation ecosystem, by forging connections and aligning the sector, enabling the UK to capitalise on its strengths as new opportunities emerge in telecoms.
- **PROPOSITION.** UKTIN is an inclusive and collaborative forum for the UK telecoms innovation ecosystem, bringing together industry, government, and academia to catalyse R&D investment, cooperation, and commercialisation

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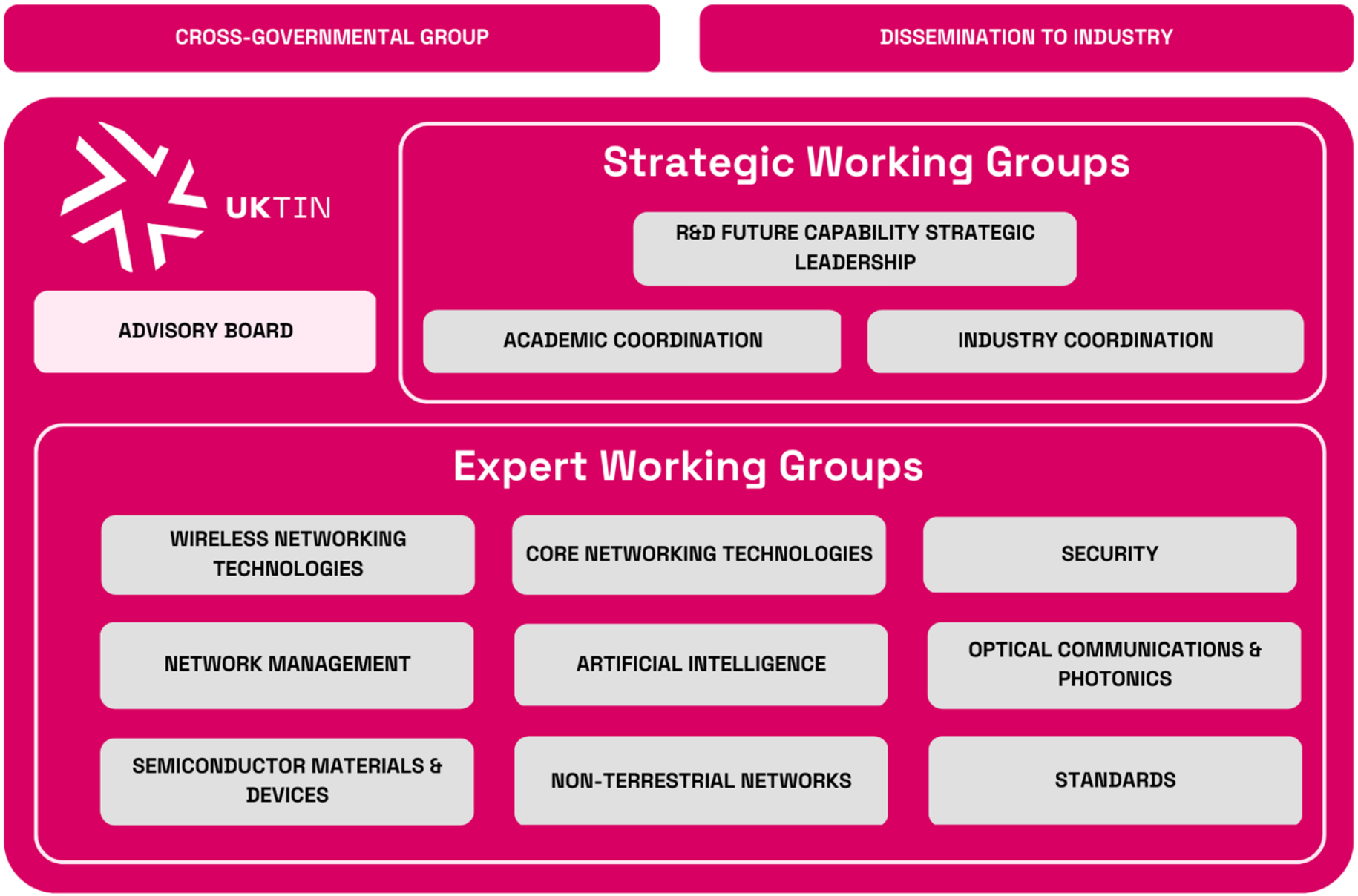
The Expert Working Groups (EWGs), Strategic Working Groups (SWGs) and Advisory Board (AB)

- Strengths
- Gaps
- Overlaps
- Roadmap



5 Adoption WGs: Regional, Transport & Logistics, Health & Social Care, Agri-Tech, Manufacturing

3. KEY OUTPUTS

- **TECHNOLOGY ROADMAP.**
  - Insights into the future of telecoms innovation in the UK
  - Potential for investment in UK industry
- **PRIORITIES.**
  - Sovereignty & Security of supply chain
  - Focus on resilience of critical infrastructure
  - Align with National Missions: Establish a National Institute
  - Synthesise & Harmonise priorities across DSIT, UKRI & MOD
- **RECOMMENDATIONS.**
  - Build Capacity by supporting innovation through a portfolio of interventions. Apply a portfolio approach.
  - Commit long term funding across government cycles.
  - Incentivise Cross-Sector Collaboration
  - Prioritise skills development and adoption
  - Strengthen Regional cluster implementation

1) Insights from the AI Experts Working Group

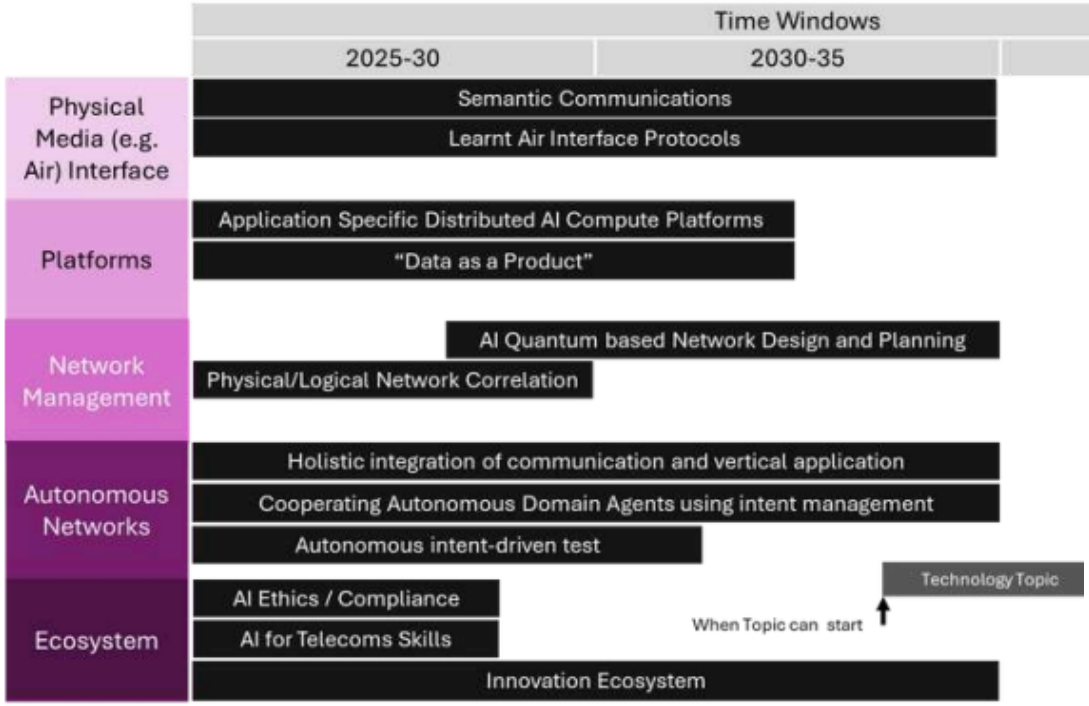


Figure 4: AI-EWG Roadmap for AI in Telecoms

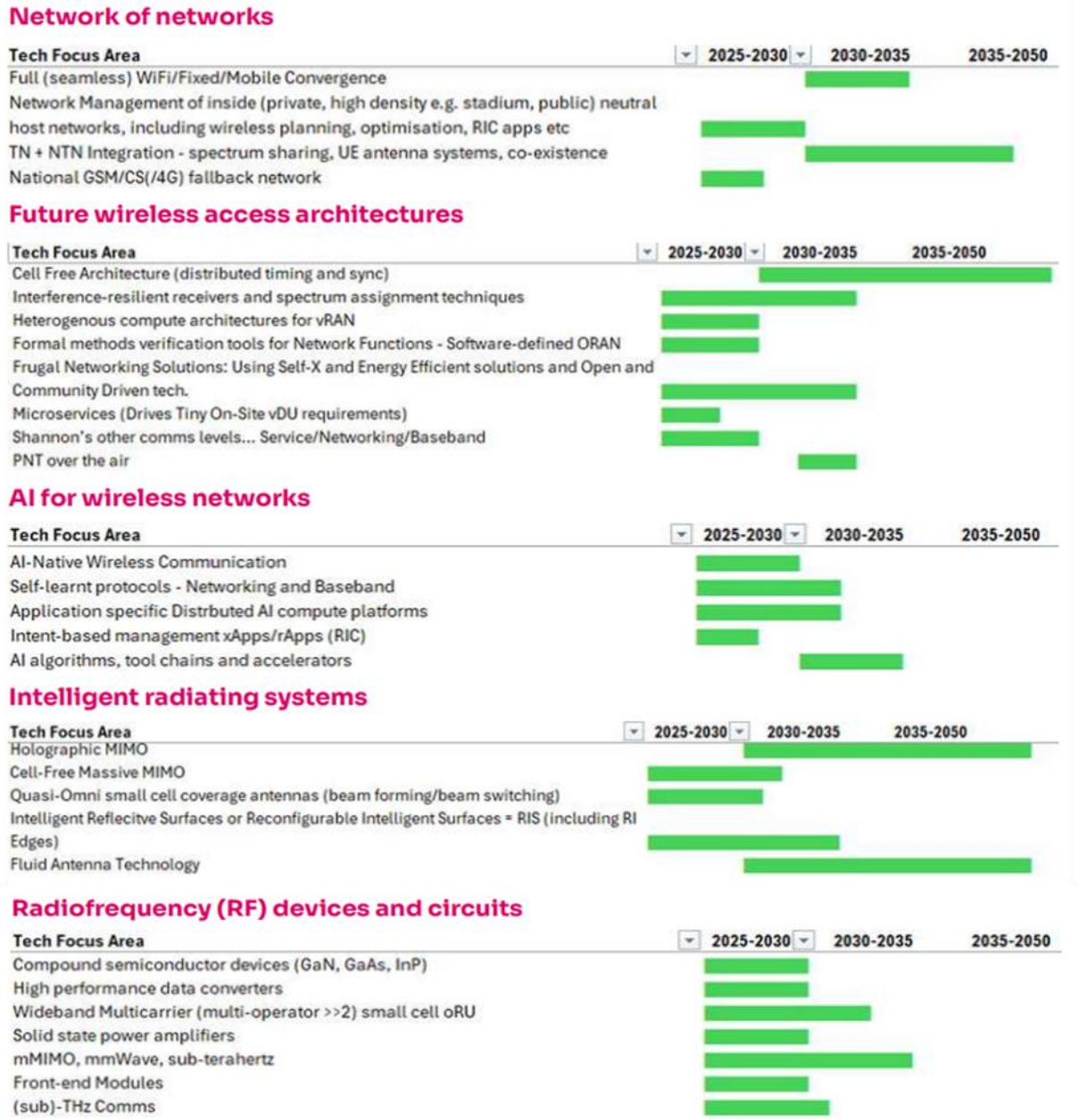
Technology Topic	Ranking	
	Average	Median
Cooperating Autonomous Domain Agents using intent management	**1**	**1**
Holistic integration of communication and vertical application	**2**	**4**
Efficient Application-Specific Distributed AI Compute Platform	**3**	**3**
Autonomous intent-driven test	**4**	**2**
Semantic Communications	**5**	**3**
Learnt Air Interface Protocols	**5**	**5**
Physical & Logical Network Correlation	**5**	**5**
Data as a Product	6	6
AI (Quantum) based Network Design and Planning	7	7

Table : 1 Ranking of the technology topics based on AI-EWG expert opinion (BOLD = selected for consideration)

Key Requirements:

- Telecoms-specific AI Ethics & Regulatory Compliance resources and specialist support
- Assessment and planning of long-term telco-specific AI skills requirements for the UK
- Access to funding for telecom-specific AI innovation by entrepreneurs and startups

2) Insights from the Wireless Experts Working Group



Highlighted Challenges:

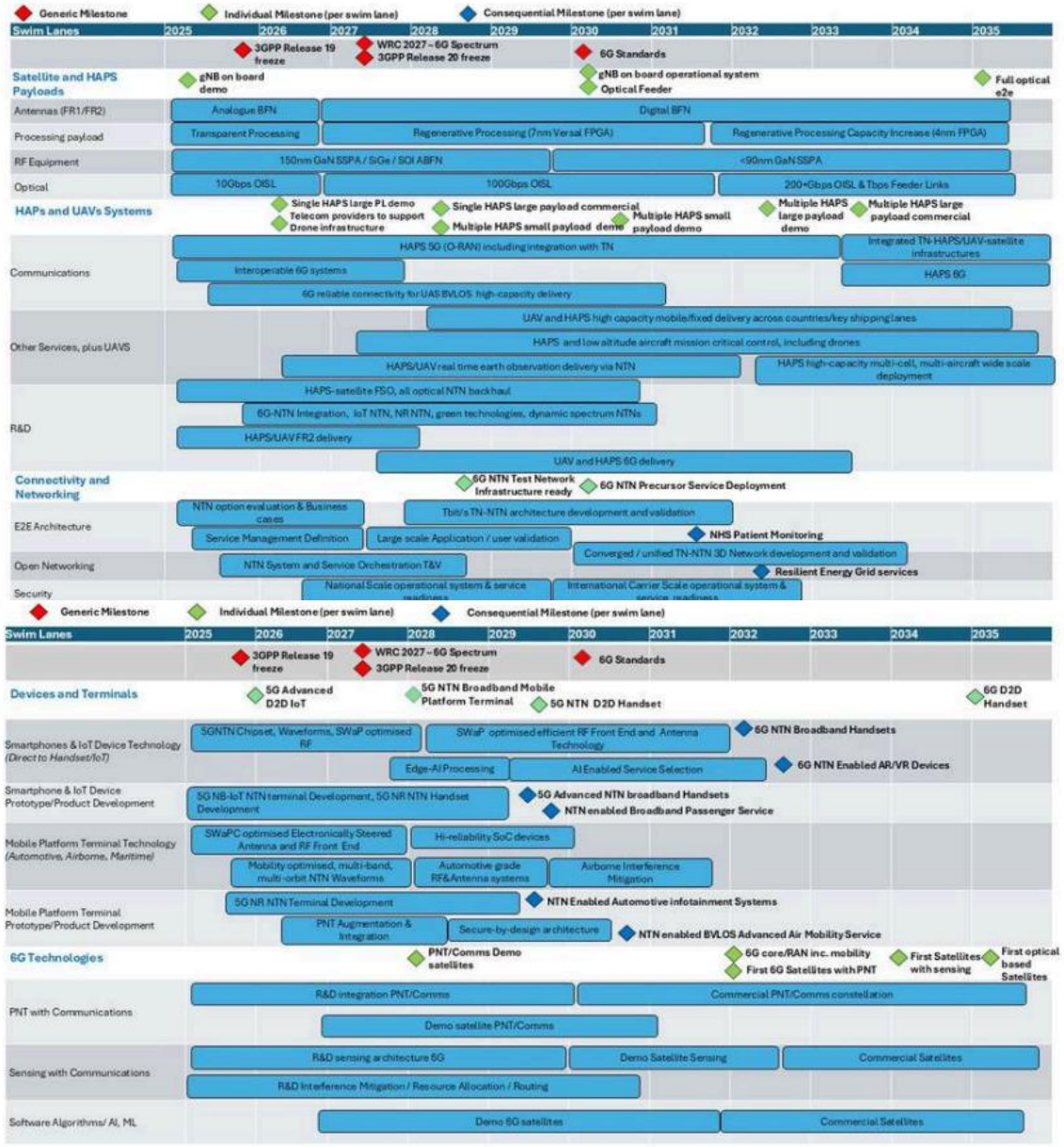
- WiFi/ Fixed/ Mobile convergence
- Network Management, neutral hosting
- Wireless Planning (and Monitoring)

- TN+NTN integration
- Spectrum sharing
- UE Antenna systems
- Co-existence

Thematic Cross-cutting Requirements:

- Wireless security
- Resilience
- Sustainability

3) Insights from Non-Terrestrial Network Experts Working Group



High Level considerations

- HAPS and Satellites both have relevance
- Direct-Device generate opportunities for scale
- Services include from Comms, PNT & sensing
- AI integration and automation prevalent

Key Challenges:

- Disruption in business models
- Interoperability between TN & NTN systems
- Interference Mitigation Techniques
- Spectrum sharing policies

4) Insights from the Security Experts Working Group

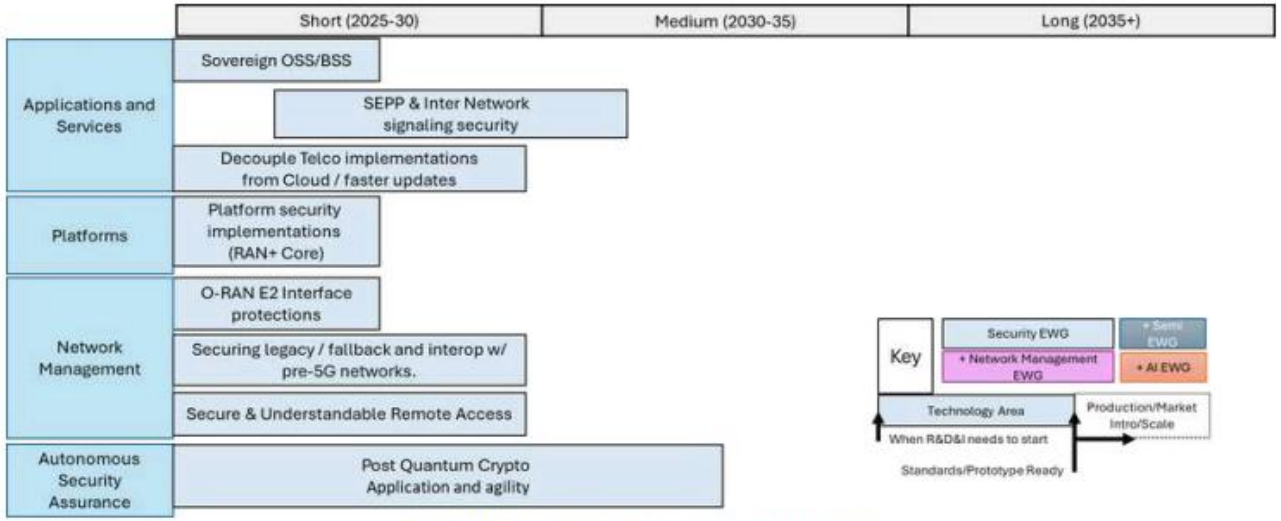


Figure 1: Security EWG Technology Roadmap

Technology Roadmap Focus Areas	Topic	EWG Synergy				
		WN	Semi	NM	Stand	AI
Applications and Services	Sovereign OSS / BSS		(✓)	✓	✓	✓
	SEPP & Inter Network / signalling security	✓		✓	✓	✓
	Decouple Telco implementations from Cloud / faster updates	✓		✓	✓	✓
Platforms	Platform security implementations (RAN + Core)		✓	✓		✓
Network Management	O-RAN E2 Interface protections			✓		✓
	Securing legacy / fallback and interop w/ pre-5G networks			✓		
	Secure & Understandable Remote Access			✓	✓	✓
Autonomous Security Assurance	Post Quantum Crypto Application & Agility		✓	✓	✓	✓

Table 1 Topic TRL score and synergies with other EWGs

Top 5 Security related R&D topics:

- SEPP & Inter Network/ signalling security
- Platform security implementations
- RAN & Core Secure & Understandable remote access
- Securing legacy/ fallback and interop with pre-5G networks
- Decouple Telco implementations from Cloud / faster updates

Other considerations:

- Quantum-safe cryptography

Security underpins all aspects of the systems

5) Insights from the Network Management Experts Working Group

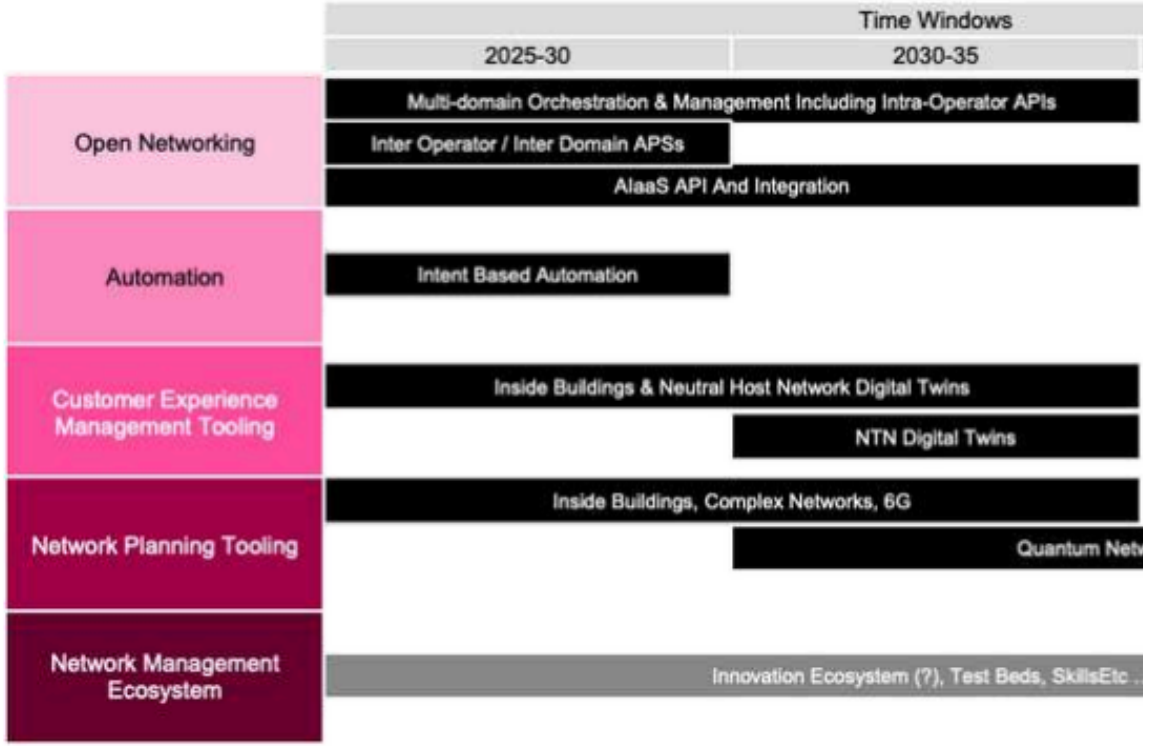


Figure 5: NM-EWG Roadmap for Network Management Technologies in Telecoms

Highlighted Challenges and Opportunities :

- Open Networking
- Automation (Zero-touch NM)
- Customer Experience
- Network Planning Tooling
- Network Management Ecosystems

Thematic Cross-cutting Challenges:

- Explainable/ Trustworthy AI for mission critical systems
- Seamless integration of AI into systems & workflows
- Transition from network management
  → service management paradigms

6) Insights from the Core Network Tech Experts Working Group

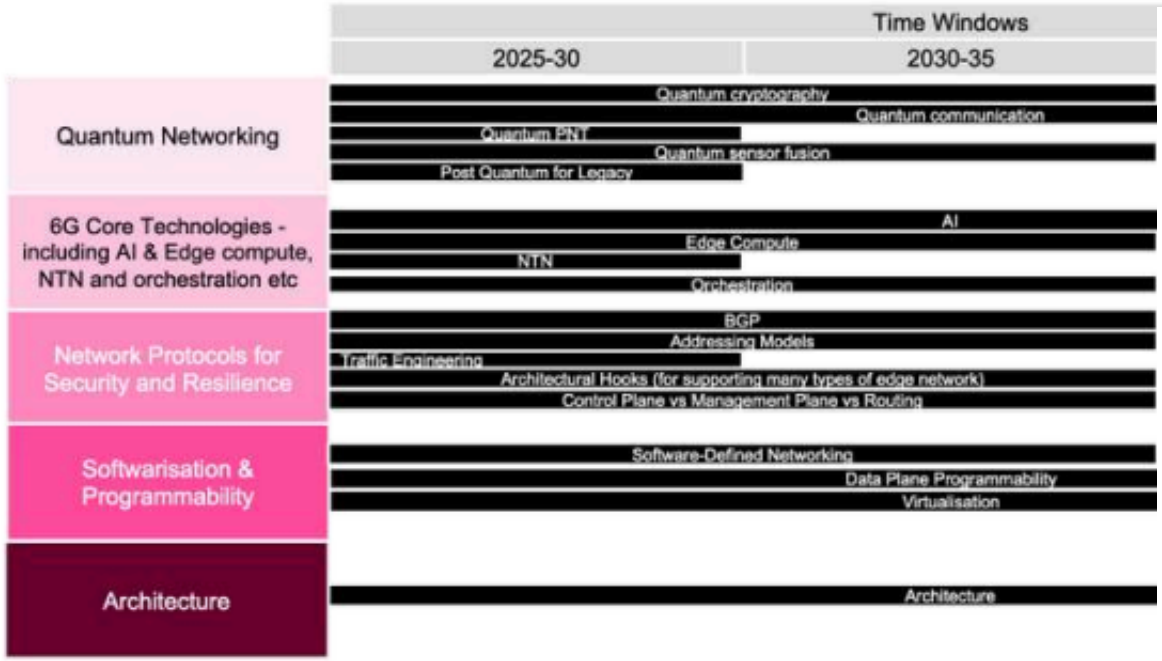


Figure 6: Core-EWG Roadmap for Core Networking Technologies i

Highlighted Challenges and Opportunities :

- Quantum Networking & QKD
- 6G Core Technologies, Integrated AI/Edge, NTN
- Network Protocols for Security & Resilience
- Softwarisation and Programmability
- Future Telecoms Architecture

Thematic Cross-cutting Challenges:

- Software defined networks and systems
- Complexity derived cyber-vulnerabilities

7) Insights from the Optical Comms Experts Working Group

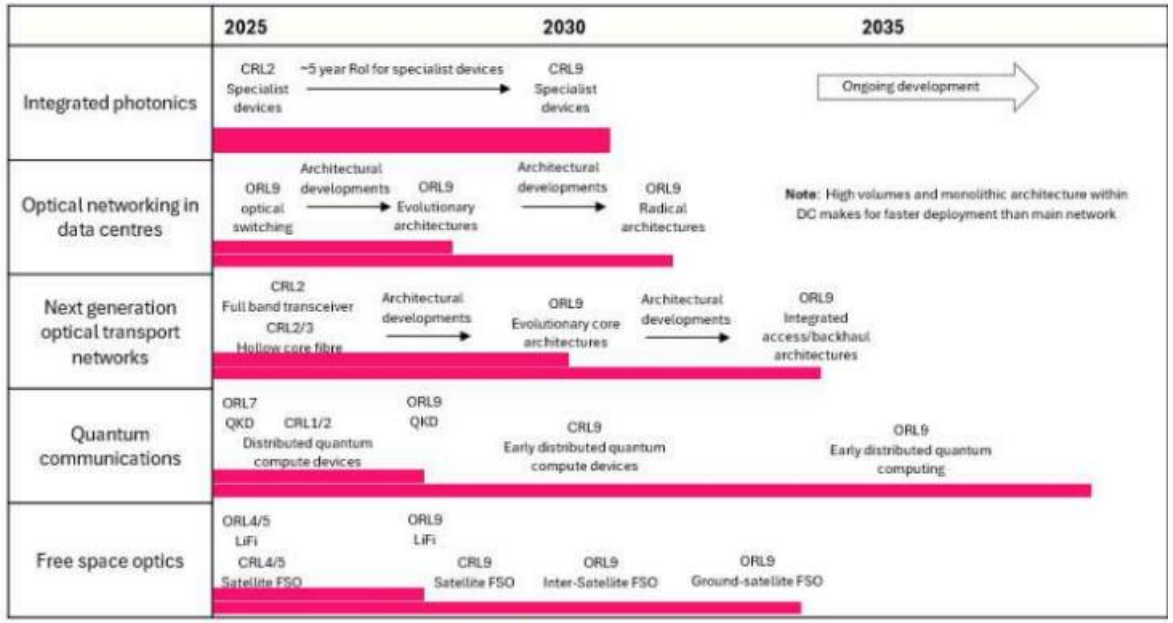


Figure 7: Development Timelines

Highlighted Challenges and Opportunities :

- Integrated Photonics
- Optical Networking in Data Centres
- Next Gen Optical Transport Networks
- Quantum Communications
- Free-Space Optics

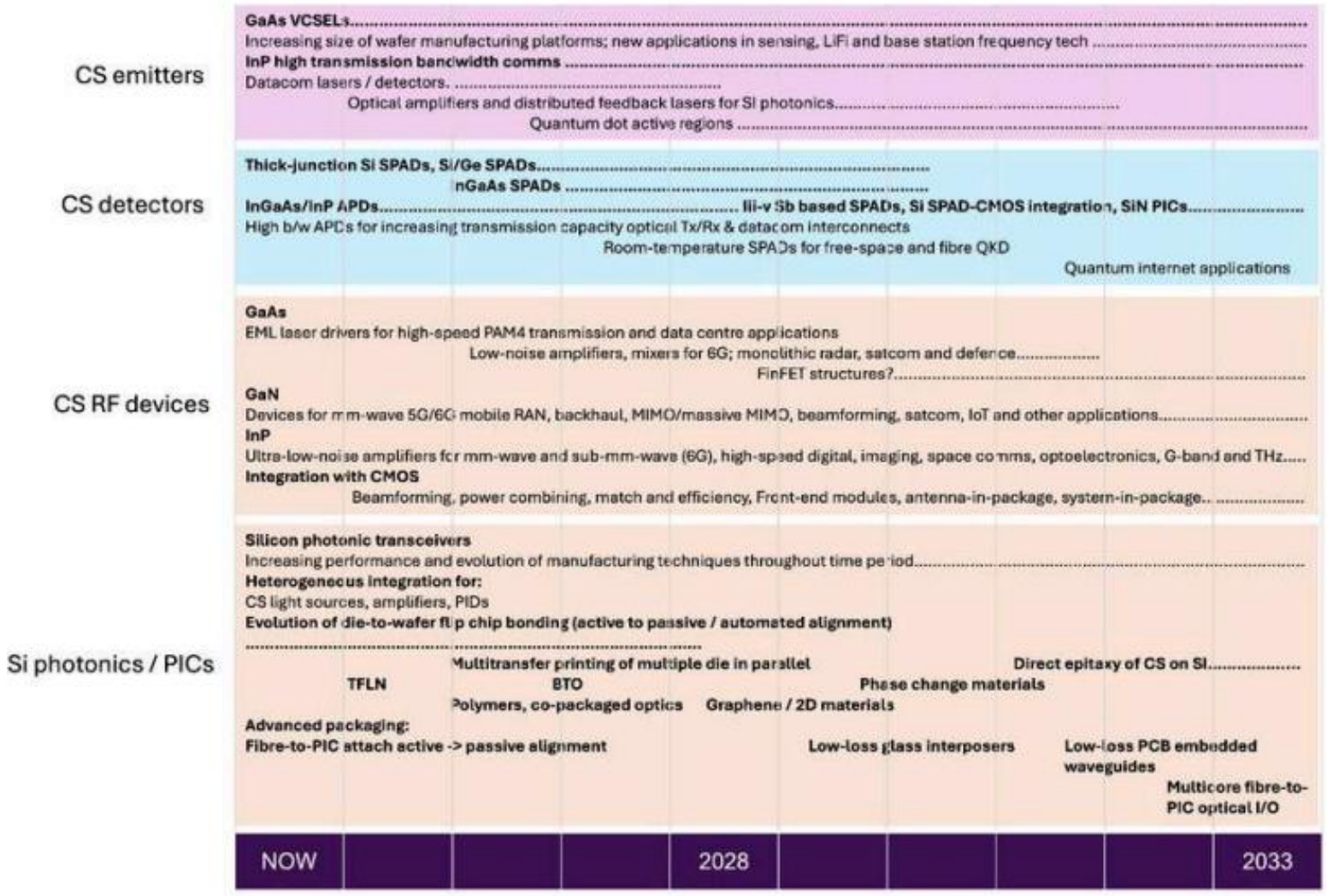
Cross-cutting considerations

- Supply chain resilience (eg Semiconductor & fibre)
- Security architectures

Spectrum and regulatory considerations

- Free-space optics vs mmWave or sub-THz systems

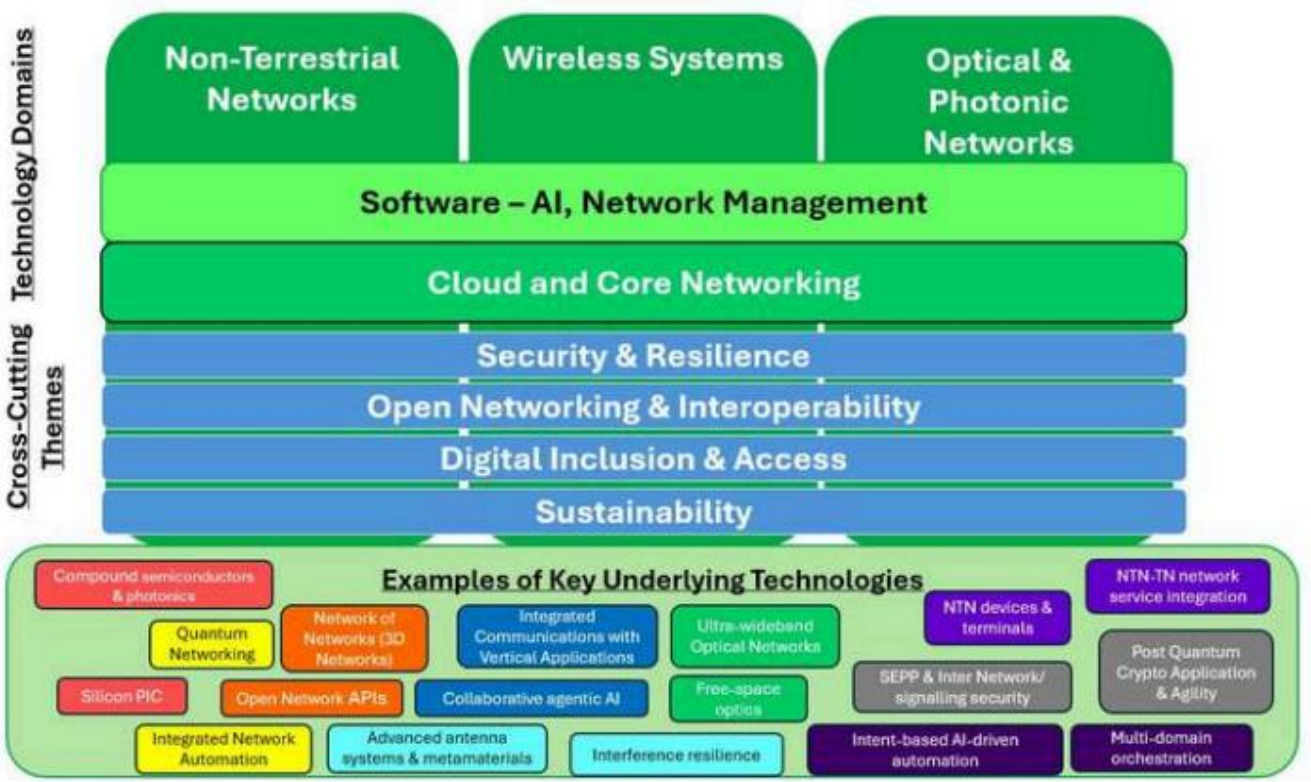
8) Insights from the Semiconductors Experts Working Group



General Recommendations

1) Recognition
2) Coordination
3) Scale-Up
4) Resilience & Security
5) International Partnerships
6) Infrastructure Investments

9) Insights from the Standards Experts Working Group → Future Capabilities Leadership Forum



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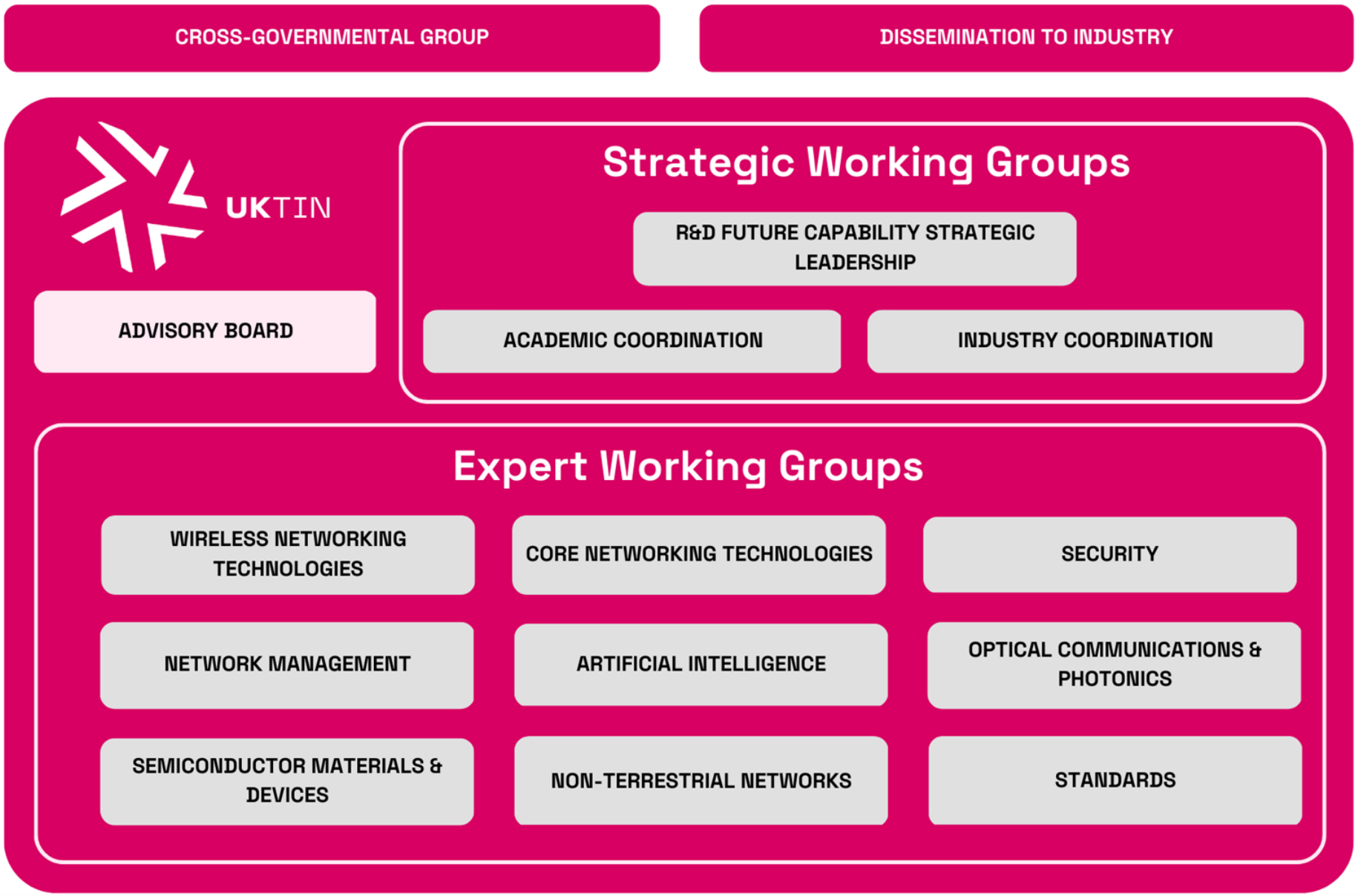

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Spectrum Policy Forum Considerations

- Q&A / Discussion on Implications and Next Steps

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Thank you