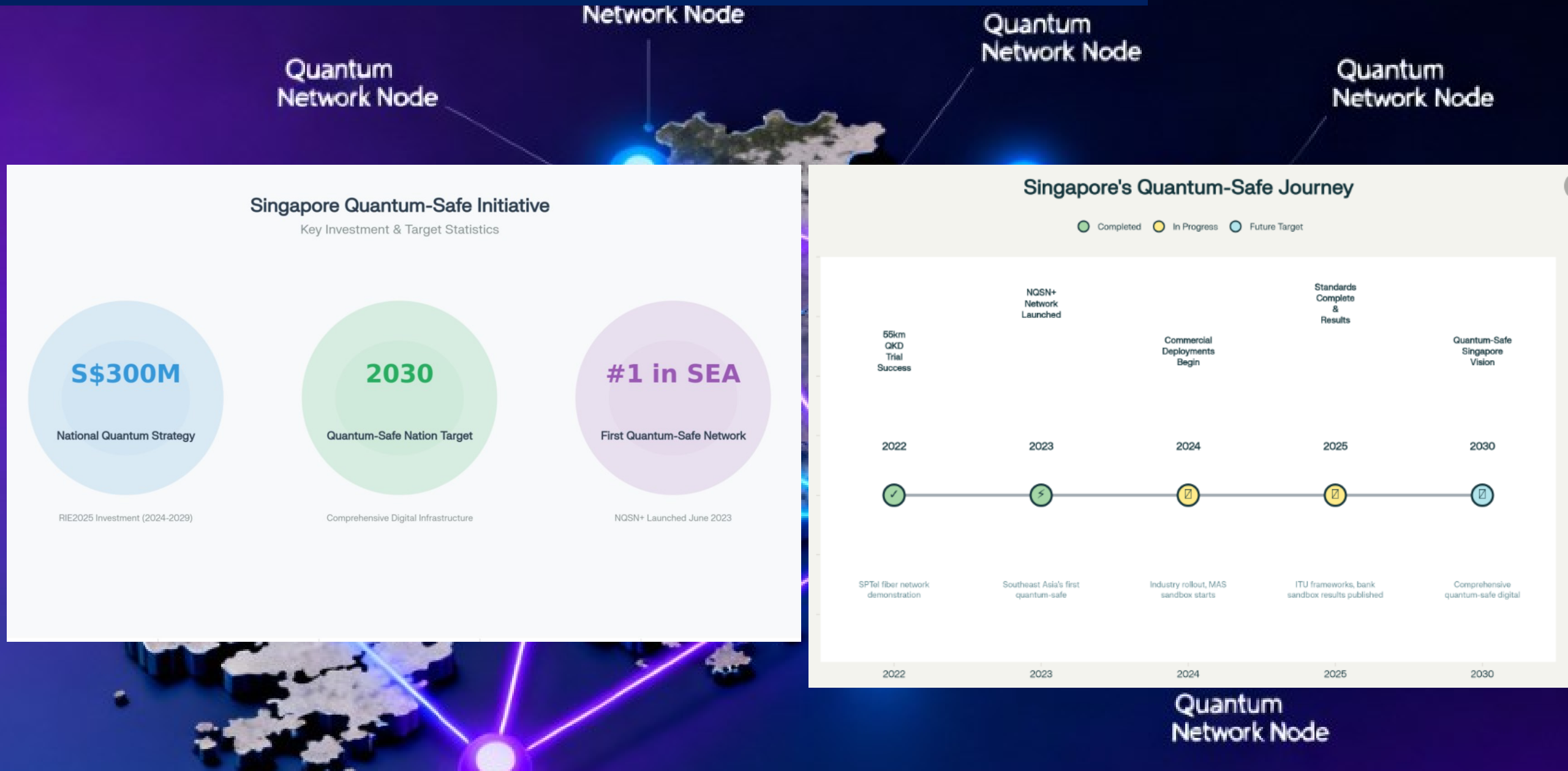
SINGAPORE QUANTUMN INITIATIVES AND UPDATES

SINGAPORE QUANTUM-SAFE JOURNEY



Singapore Quantum-Safe Initiative

Key Investment & Target Statistics

S$300M
National Quantum Strategy
RIE2025 Investment (2024-2029)

2030
Quantum-Safe Nation Target
Comprehensive Digital Infrastructure

#1 in SEA
First Quantum-Safe Network
NQSN+ Launched June 2023

Singapore's Quantum-Safe Journey

Completed · In Progress · Future Target

2022	2023	2024	2025	2030
55km QKD Trial Success	NQSN+ Network Launched	Commercial Deployments Begin	Standards Complete & Results	Quantum-Safe Singapore Vision
SPTel fiber network demonstration	Southeast Asia's first quantum-safe	Industry rollout, MAS sandbox starts	ITU frameworks, bank sandbox results published	Comprehensive quantum-safe digital

QKD PROOF-OF-CONCEPT - EXECUTIVE SUMMARY

Project: MAS Quantum Key Distribution (QKD) Proof-of-Concept Sandbox

Duration: August 2024 (MoU) ⟶ September 2024 - March 2025 (Execution) ⟶ September 29, 2025 (Report)

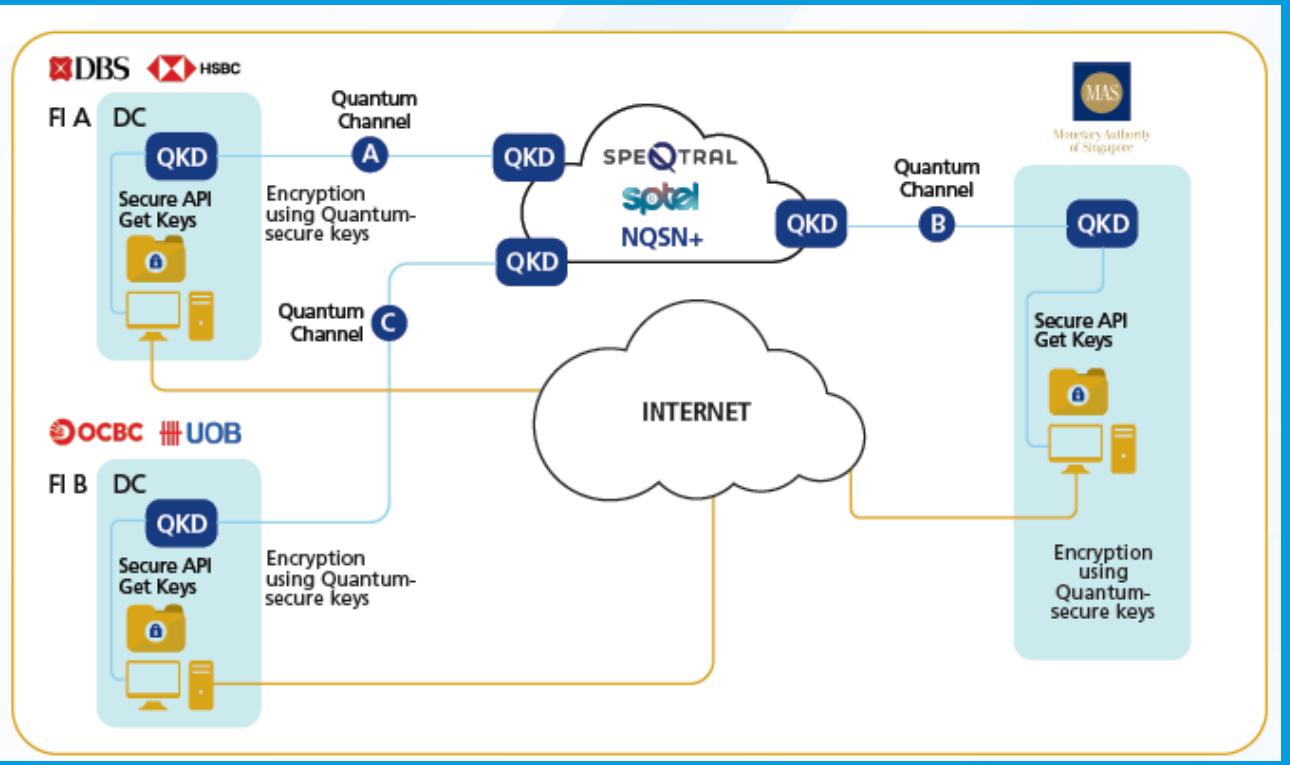
Participants:

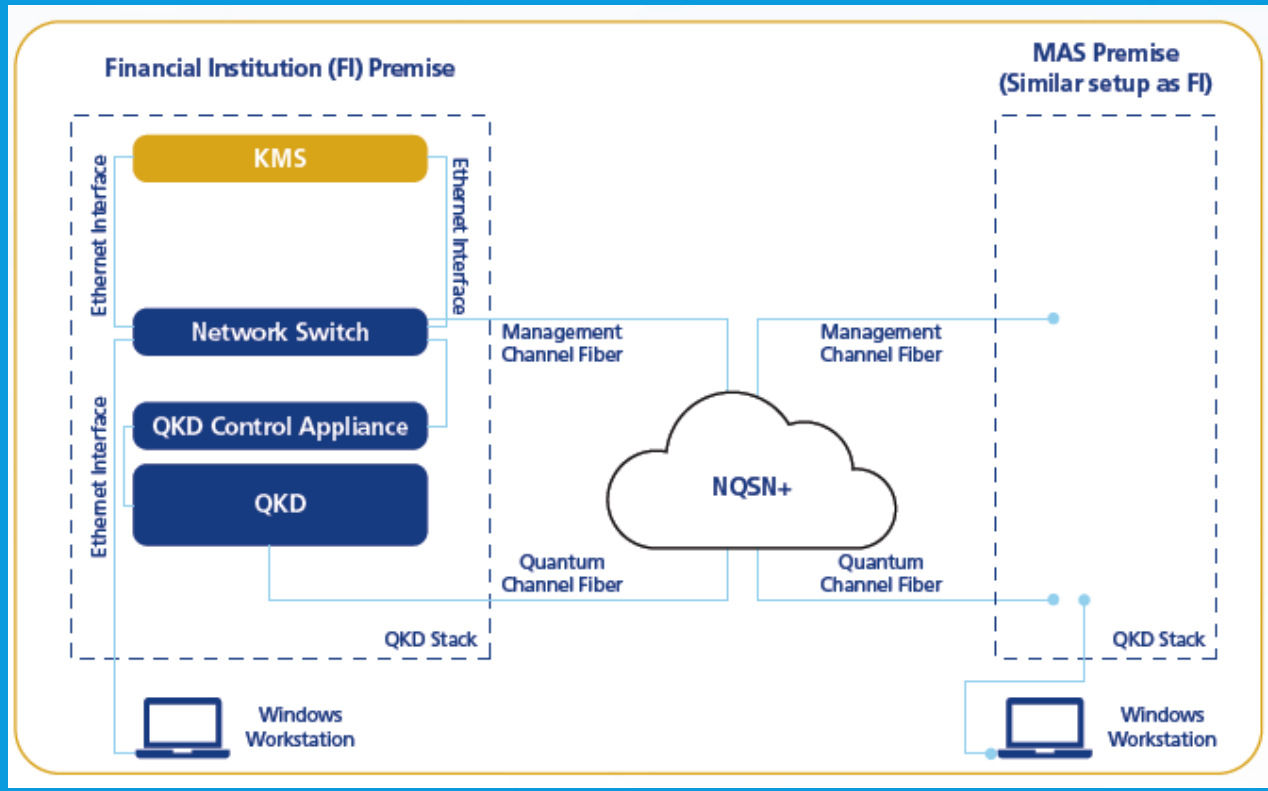
- Banks: DBS, HSBC, OCBC, UOB
- Tech Partners: SPTel, SpeQtral
- Regulator: MAS

Key Achievements ✓

- ✅ Deployed QKD stacks in real production banking data centers
- ✅ Generated 6.75 million AES-256 keys per day
- ✅ Achieved 2.5 months outage resilience (using key buffer)
- ✅ Successfully tested advanced use cases (digital signing, hybrid encryption, file transfers)
- ✅ Validated settlement file encryption between banks and MAS
- ✅ Maintained security during simulated eavesdropping attacks

QKD PROOF-OF-CONCEPT - EXECUTIVE SUMMARY





QKD PROOF-OF-CONCEPT - EXECUTIVE SUMMARY

Key Challenges Identified ⚠️

- Trusted Node Security - Need stronger security standards for intermediate nodes
- Interoperability - Different QKD providers not compatible
- Integration Complexity - Complex to integrate with existing banking systems
- Cost Barriers - Significant implementation costs
- Skill Gap - Shortage of quantum-safe expertise
- Governance & Standards - Still being developed globally
- Diverse IT Environments - Banks have varied legacy systems
- Cross-Border Requirements - International coordination needed

Critical Success Factors

- Leadership commitment and senior management support
- Dedicated budgets and resources
- In-house expertise development
- Phased, risk-based implementation
- Industry collaboration and standards alignment

CSA PUBLIC CONSULTATION ON QUANTUM-SAFE MIGRATION

Purpose: Guide Singapore organizations in transitioning to quantum-safe cryptography to address the risks of quantum computers breaking current encryption.

Lead Agency & Partners:

- CSA Singapore, GovTech, IMDA and industry/cybersecurity partners.

Key Deliverables:

- Quantum-Safe Migration Handbook: Practical, actionable guidance for organizations, especially those managing critical infrastructure.
- Quantum Readiness Index (QRI): Self-assessment tool to benchmark organizational quantum-safe readiness and prioritize actions.

Five Guidance Domains Covered:

- Risk Assessment: Inventory cryptographic assets, prioritize by risk and data longevity
- Governance: Assign leadership, set policies, allocate resources
- Technology: Choose and pilot quantum-safe solutions (PQC, QKD, or hybrid)
- Training & Capability: Build internal skills and expertise, close workforce gaps
- External Engagement: Work with vendors, partners, and comply with regulations.