CYBER QUANTA

SPARC

Secure **P**ost-quantum **A**rchitecture for **R**esilient **C**harging

SPARC

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Teaser

SPARC

Main Benefit:

A practical Post-Quantum Cryptography (PQC) upgrade path for EV charging stations — securing the smart grid against quantum threats.

Added Value:

- *Real-world performance benchmarks for next-gen quantum-safe encryption.*
- *Future-proof EV charging protocols with embedded PQC.*
- *Trusted key protection using secure hardware (HSM/TEE).*

Why Join:

Help shape Europe’s PQC-ready EV infrastructure — standards-based, future-proof, and open-source-driven.

Organisation Profile

CYBER QUANTA

- Deep-tech **SME** focused on **Post-Quantum Cryptography**, secure IoT, and critical infrastructure protection

- Based in **Teknopark İstanbul**, operating across EU and international markets

- Led by founders with **55+ years of combined experience** in cybersecurity and cryptography

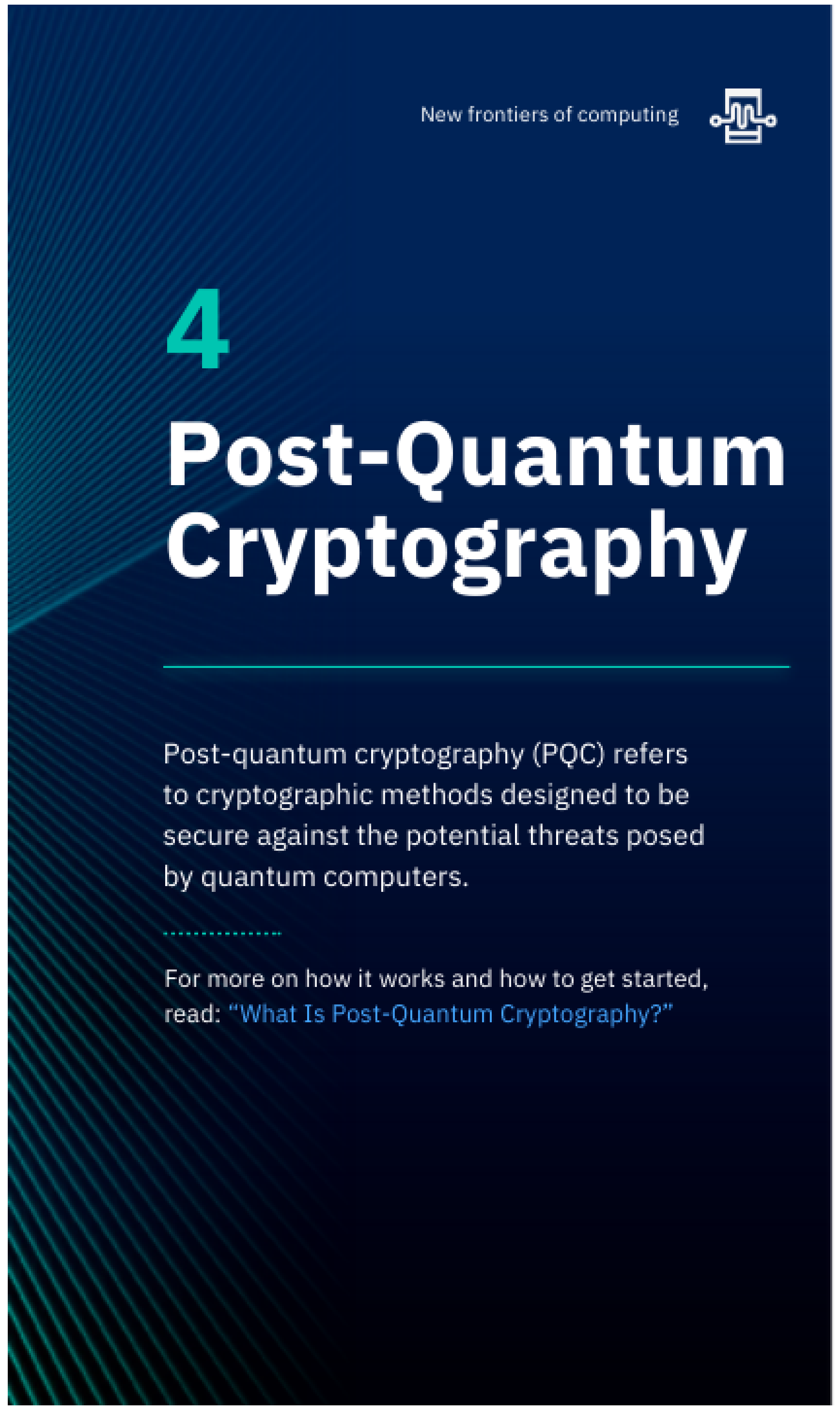
- Builds **quantum-safe, regulation-aligned** solutions (CRA, GDPR) and contributes to global PQC transition efforts

Proposal Introduction

Quantum Risk Is Real — and Closer Than You Think

Gartner

2025 Top Strategic Technology Trends



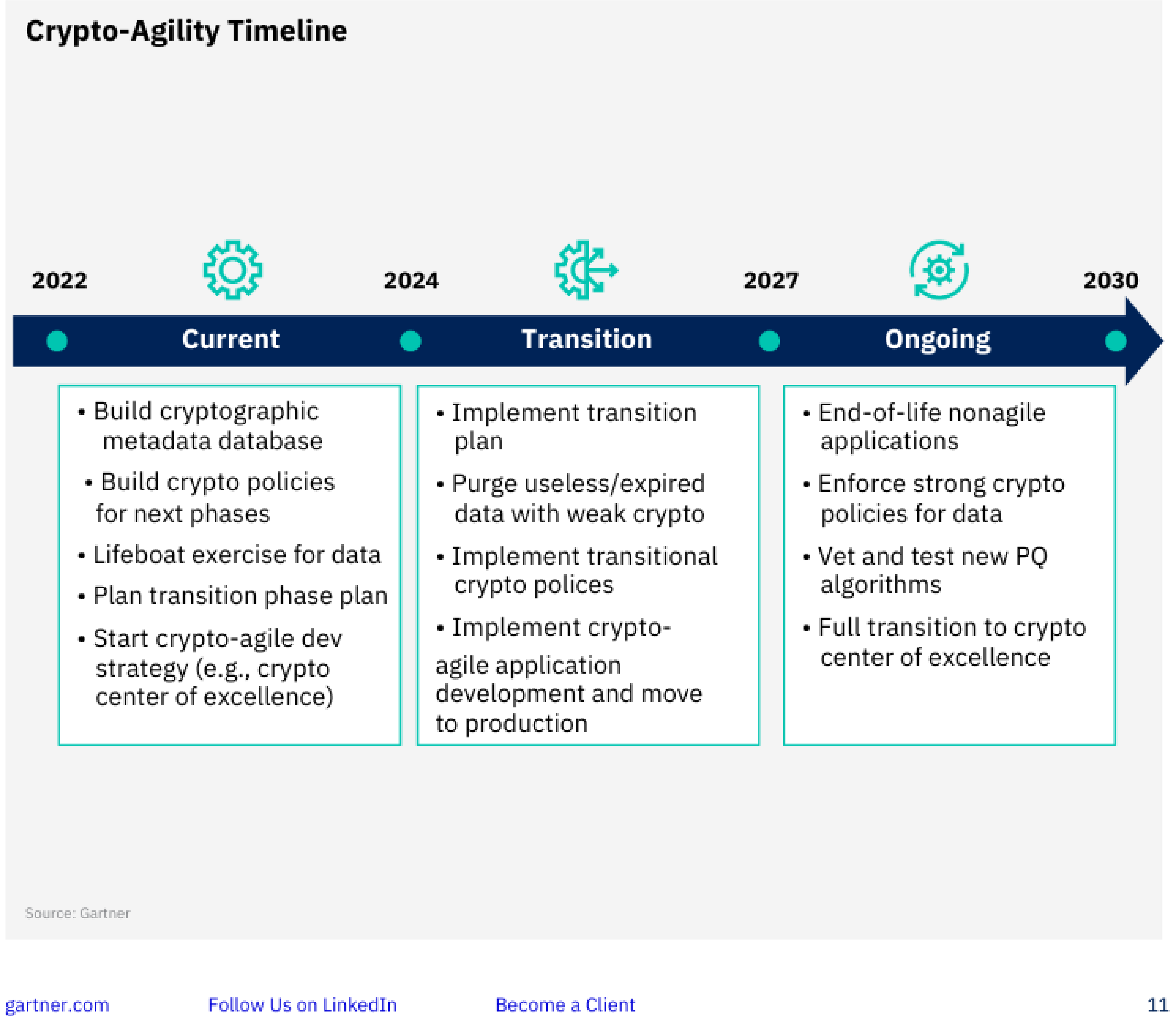
New frontiers of computing

4

Post-Quantum Cryptography

Post-quantum cryptography (PQC) refers to cryptographic methods designed to be secure against the potential threats posed by quantum computers.

For more on how it works and how to get started, read: "What Is Post-Quantum Cryptography?"



Crypto-Agility Timeline

2022 — 2024 — 2027 — 2030

Current

- Build cryptographic metadata database
- Build crypto policies for next phases
- Lifeboat exercise for data
- Plan transition phase plan
- Start crypto-agile dev strategy (e.g., crypto center of excellence)

Transition

- Implement transition plan
- Purge useless/expired data with weak crypto
- Implement transitional crypto polices
- Implement crypto-agile application development and move to production

Ongoing

- End-of-life nonagile applications
- Enforce strong crypto policies for data
- Vet and test new PQ algorithms
- Full transition to crypto center of excellence

Source: Gartner

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Proposal Introduction

Vision & Motivation

- Future-proof EV charging infrastructure against quantum threats.
- Comply with EU CRA, NIS2, GDPR.

Core Idea

- Integrate PQC (ML-KEM, HAWK, etc.) into ISO 15118 & OCPP.
- Benchmark on EVSE hardware + secure keys via HSM/TEE.

Impact

- Efficient, scalable path to quantum-safe smart grids.

Proposal Introduction

Expected Outcomes

- PQC-enabled protocol extensions for ISO 15118 & OCPP
- Benchmarked lightweight PQC algorithms (ML-KEM, HAWK, MQOM...) on EVSE smart meters
- Embedded secure key management using HSM/TEE

Expected Impact

- Accelerates PQC transition in critical smart grid infrastructure
- Contributes to European PQC standards and open-source ecosystem
- Enhances compliance with EU-CRA, NIS2, and future PQC mandates

Schedule (36 Months)

- Months 1–6: PQC scheme selection, embedded HW setup
- Months 7–18: Implementation & benchmarking
- Months 19–30: Protocol extension, key mgmt prototyping
- Months 31–36: Testing, documentation, standardization input

Partners

Consortium Members

- Cyber Quanta (Türkiye): *System integration, PQC migration, secure key management*
- University of Tartu (Estonia): *PQC algorithm evaluation, cryptographic benchmarking*

Looking For Partners With Expertise In:

- Electric vehicle charging systems, OCPP/mobility platforms, and secure protocol stack development
- Embedded system design teams capable of secure boot, filesystem encryption, and integration of hardware-based secure elements on Linux platforms
- Companies with experience in secure IoT device manufacturing and field deployment of cryptographic hardware

Contact Info

For more information and for interest to participate please contact:

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Presentation is available via:

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