CELTIC-NEXT
Proposers Brokerage Day

30th January 2026, Vienna

Pitch of the Project Proposal

Q-LOCK: Remote Key & Certificate Management Without Key Transmission

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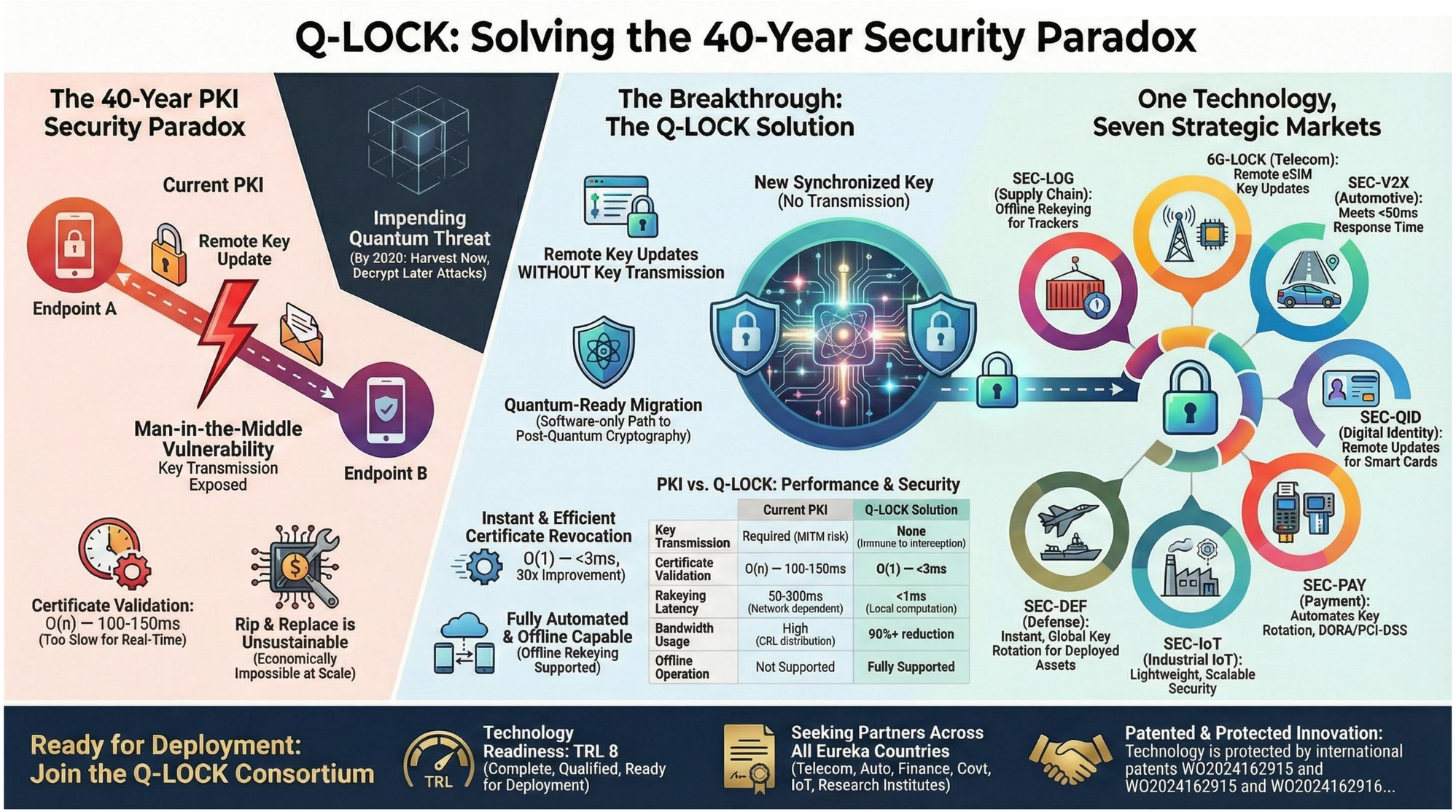
Q-LOCK


Q-LOCK: Solving the 40-Year Security Paradox
The 40-Year PKI Security Paradox
Current PKI
Endpoint A
Remote Key Update
Man-in-the-Middle Vulnerability
Key Transmission Exposed
Endpoint B
Impending Quantum Threat
(By 2020: Harvest Now, Decrypt Later Attacks)
Certificate Validation:
O(n) – 100-150ms
(Too Slow for Real-Time)
Rip & Replace is Unsustainable
(Economically Impossible at Scale)
The Breakthrough: The Q-LOCK Solution
Remote Key Updates WITHOUT Key Transmission
New Synchronized Key
(No Transmission)
Quantum-Ready Migration
(Software-only Path to Post-Quantum Cryptography)
Instant & Efficient Certificate Revocation
O(1) – <3ms,
30x Improvement)
Fully Automated & Offline Capable
(Offline Rekeying Supported)
PKI vs. Q-LOCK: Performance & Security
Current PKI
Q-LOCK Solution
Key Transmission
Required (MITM risk)
None
(Immune to intereception)
Certificate Validation
O(n) – 100-150ms
O(1) – <3ms
Rakeying Latency
50-300ms
(Network dependent)
<1ms
(Local computation)
Bandwidth Usage
High
(CRL distribution)
90%+ reduction
Offline Operation
Not Supported
Fully Supported
One Technology, Seven Strategic Markets
SEC-LOG (Supply Chain): Offline Rekeying for Trackers
6G-LOCK (Telecom): Remote eSIM Key Updates
SEC-V2X (Automotive): Meets <50ms Response Time
SEC-QID (Digital Identity): Remote Updates for Smart Cards
SEC-PAY (Payment): Automates Key Rotation, DORA/PCI-DSS
SEC-IoT (Industrial IoT): Lightweight, Scalable Security
SEC-DEF (Defense): Instant, Global Key Rotation for Deployed Assets
Ready for Deployment: Join the Q-LOCK Consortium
TRL
Technology Readiness: TRL 8
(Complete, Qualified, Ready for Deployment)
Seeking Partners Across All Eureka Countries
(Telecom, Auto, Finance, Covt, IoT, Research Institutes)
Patented & Protected Innovation:
Technology is protected by international patents WO2024162915 and WO2024162915 and WO2024162916...

The Problem

40 Years of PKI Limitation

THE SECURITY PARADOX

To update a key remotely, you must TRANSMIT the key — exposing it to interception.

CURRENT LIMITATIONS

- Security vulnerability during transmission
- Dependency on secure channels
- Manual processes required
- Cannot scale to billions of devices

⚠ QUANTUM THREAT

Quantum computers will break RSA/ECC by 2030

URGENT CHALLENGES

- "Harvest now, decrypt later" attacks
- NIST PQC standards finalized 2024
- Billions need algorithm transition
- "Rip & replace" economically impossible

2030

Quantum Deadline

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Organization Profile

Deep-Tech R&D Company

FINTECH

- EMV KERNELS, ANALYZER, SOFTPOS, SCRIPTING

TELCO

- CARD APPLETS, CORE NETWORK, OTA OPERATIONS, RFM/RAM

IOT

- FIRMWARE DEVELOPMENT, DIGITALTWIN

CYBER

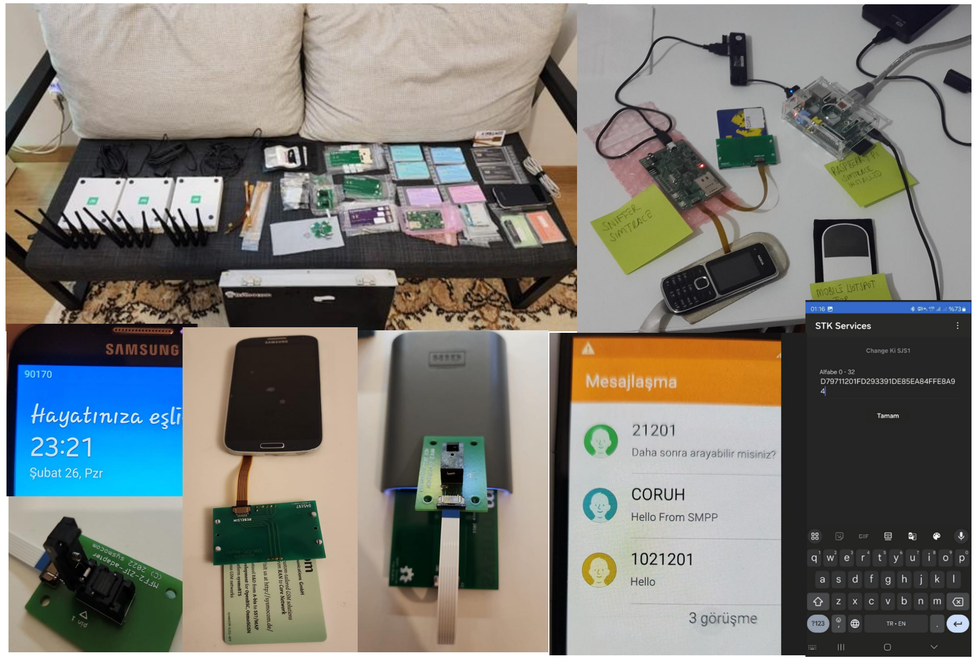
- APPLICATION SECURITY, TAMPER-PROOF APPS. DEV.
- CRYPTOLOGY, SECURE COMM. SECURE DATA STORAGE

V2X

- ITS/C-ITS PROTOCOL DESIGN AND IMPLEMENTATION

MEDICAL

- DEVICE AND PLATFORM DESIGN AND DEVELOPMENT



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The Q-LOCK Solution

Breakthrough Innovation

Remote Key Update WITHOUT Key Transmission

Mathematically proven secure • Patent protected • SDK Available

REMOTE KEY UPDATE

Asymmetric keys updated without transmission

ENHANCED CRL

Improved certificate revocation control

CERTIFICATE RENEWAL

Remote renewal preserving key secrecy

QUANTUM MIGRATION

Legacy systems → PQC without hardware change

ZERO MANUAL

Fully automated key lifecycle management

EXISTING INFRA

Software-only deployment

Universal Security Enabler — Works with ANY PKI-based system

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Seven Application Domains

One Core Technology • Multiple Markets

6G-LOCK

Telecom

6G/B5G Security

3GPP, ETSI

SEC-V2X

Automotive

Connected Vehicles

ETSI, SAE

SEC-QID

Identity

eID & Wallets

eIDAS 2.0

SEC-PAY

Payment

Card & Fintech

EMV, PCI

SEC-IoT

IoT

Billions of Devices

IEC 62443

SEC-DEF

Defense

Critical Infra

NATO

SEC-LOG

Supply Chain

Multimodal Logistics

ISO 28000

Target Partners: Telecom • Automotive • Finance • Government • IoT • Defense • Logistics

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Technology Readiness & IP

Production-Ready Technology • Protected Innovation

INTERNATIONAL PATENTS

WO2024162915

WO2024162916

TÜBİTAK FUNDED + SDK DEVELOPED

✓ SDK developed and tested
✓ System qualified in operational environment
✓ Ready for deployment

NATIONAL PHASE PENDING

US USA EU EU CN China

TECHNOLOGY READINESS: TRL 8

System complete and qualified

READY FOR COMMERCIAL DEPLOYMENT & PILOT PROJECTS

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Partner Value Proposition

What Q-LOCK Brings to Your Products

INSTANT UPGRADE

Quantum-safe security without redesign

ZERO MANUAL OPS

Automated key lifecycle

FUTURE-PROOF

Algorithm agility

COMPLIANCE

NIS2, DORA, eIDAS 2.0

COST REDUCTION

No hardware changes needed

DIFFERENTIATION

Competitive edge

Q-LOCK transforms ANY product into a quantum-safe, zero-touch solution

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Seeking Consortium Partners

Join the Q-LOCK Ecosystem

TELECOM

Operators, 6G vendors

AUTOMOTIVE

OEMs, Tier-1, C-ITS

FINANCE

Banks, payment networks

GOVERNMENT

ID agencies, CERTs

IoT

Industrial, smart city

DEFENSE

Contractors, agencies

LOGISTICS

Ports, carriers, customs

RESEARCH

Universities, institutes

OPEN FOR ALL EUREKA COUNTRIES

EU • Turkey • UK • Switzerland • Korea • Canada

Let's Talk! →

www.celticnext.eu

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Contact Info

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Presentation is available via:

Join the Consortium Building Sessions

2nd February from 10:00-11:00 CET

Connection details:
Via
www.celticnext.eu/new-ideas