TeleTrusT-EBCA "PKI-Workshop" 2020

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"Adoption of quantum-safe crypto in PKI"

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Quantum Computing will decimate the security infrastructure of the digital economy
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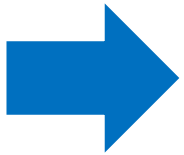
Quantum-safe cryptography

utimaco®

TeleTrusT
Pioneers in IT security.
Bundesverband IT-Sicherheit e.V.

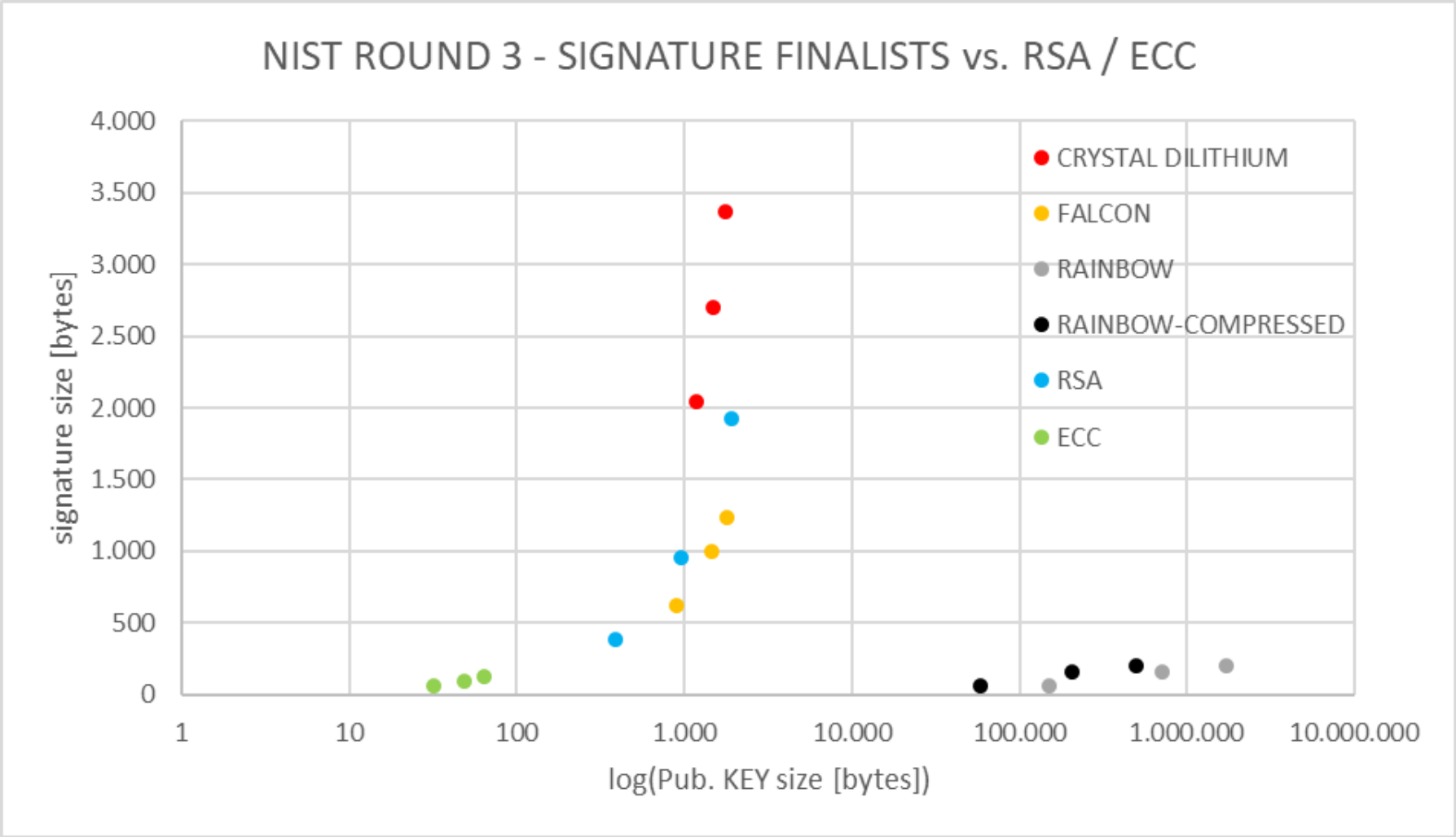
Type	Algorithm	Key Strength Classic (bits)	Key Strength Quantum (bits)	Quantum Attack
Asymmetric	RSA 2048	112	0	Shor's Algorithm
	RSA 3072	128		
	ECC 256	128		
	ECC 521	256		
Symmetric	AES 128	128	64	Grover's Algorithm
	AES 256	256	128	



NIST PQC Round 3 finalists

- Digital Signature
  - CRYSTALS-DILITHIUM
  - FALCON
  - Rainbow
- Public-key Encryption and Key-establishment
  - Classic McEliece
  - CRYSTALS-KYBER
  - NTRU
  - SABER

NIST ROUND 3 - SIGNATURE FINALISTS vs. RSA / ECC



Adoption of quantum-safe crypto in PKI

- What‘s the impact on certificate size ?
  - Communication overhead
- Is this performant (enough) ?
  - Key generation
  - Signature generation / verification
- And when do we go live ?