

Cyber-Resilience in Quantum-Ready Research Research and Education Networks: A Framework for African NRENs

Subtheme: Network Resilience and
Cybersecurity



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CONTENTS

1. Title Slide

2. Introduction

3. The Threat

4. The Contextual Gap

5. The Solution

6. Pillar 1

7. Pillar 2

8. Pillar 3

9. Global Position

10. Conclusion

11. Discussion



1. Title Slide

1 Title

Cyber-Resilience in Quantum-Ready Research and Education Networks: A Framework for African NRENs

2 Author

Mr. Takayidza Clayton

3 Event

UbuntuNet-Connect Conference



2. Introduction

The Strategic Value of African NRENs and Resilience Imperative

NRENs are essential for enhancing research collaboration.

Emphasizing the need for resilience in resilience in networking infrastructure. infrastructure.

The intersection of quantum computing and network security.



3. The Quantum Cliff: A Looming Security Crisis

CRQCs, Shor's Algorithm, and the "Harvest Now, Decrypt Later" Risk

1

Understanding the capabilities of CRQCs.

2

Implications of Shor's Algorithm on current cryptographic methods.

3

The risk posed by delayed decryption tactics in network security.

4. The Contextual Gap

Why Global Roadmaps Fail African NRENs

Latency issues in existing global frameworks.

Resource constraints specific to African NRENs.

The need for tailored solutions that consider local contexts.



5. The Solution

The CRQR Framework: An Evolutionary and Contextualized Roadmap

1

Overview of the CRQR Framework.

2

Importance of proactive measures in cybersecurity.

3

Aligning framework with international standards and practices.



6. Pillar 1

Crypto-Agility and PQC Dual-Stack Integration

Definition of Crypto-Agility in network security.

Technical mechanisms for integrating PQC.

Benefits of a dual-stack approach for future-proofing networks.

7. Pillar 2

Empirical Validation and Methodology

1

Focus on simulation techniques for risk assessment.

2

Key metrics: latency and throughput evaluations.

3

Importance of empirical data in validating the CRQR Framework.



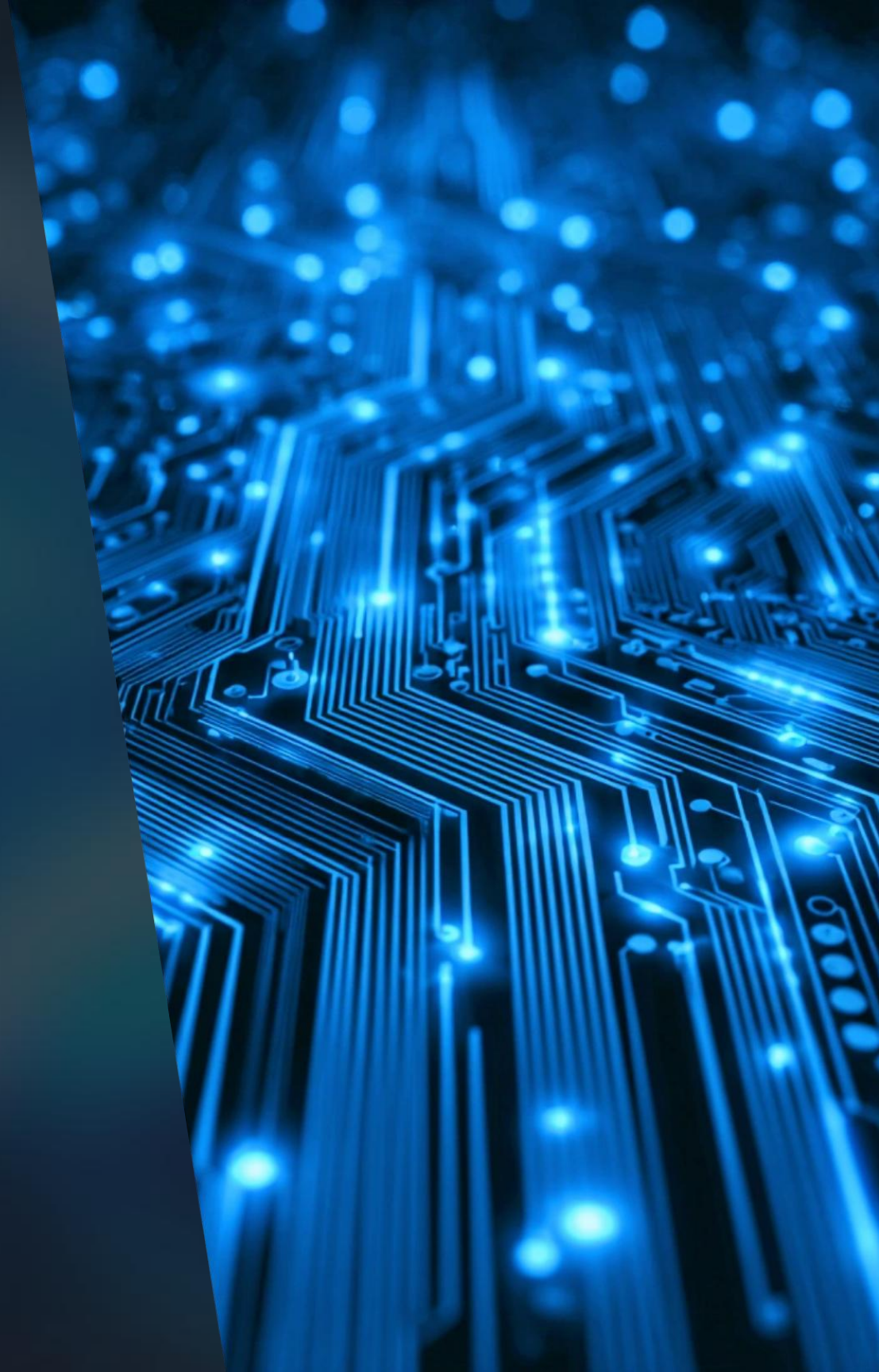
8. Pillar 3

Strategic Global Collaboration

Collaborations with entities like GÉANT and APAN.

The role of NIST/ETSI in global cybersecurity standards.

Building a network of support among African NRENS.





9. Global Position

Positioning African NRENs as Contributors

1

Highlighting the unique contributions of African NRENs.

2

Potential roles in global cybersecurity discourse.

3

Establishing a voice for African perspectives in technology.



10. Conclusion

Summary of Framework Benefits and Alignment

Recap of the CRQR Framework's key benefits.

Alignment with the UbuntuNet-Connect Conference theme.

Call for investment and focus on cyber resilience.



11. Discussion

Call to Action and Contact Details

1

Form a multi-NREN working group by 2026 to coordinate pilot implementations and shared capacity building.

2

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Thank You