

**Workshop on
Standardization and Certification of QKD Systems
and QKD Networks**

QKD related work at ITU-T

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28 September, 2021**



ITU-T

QKD related activities in ITU-T

Study Group 13 – Future Networks (Q16/13 and Q6/13):

Focus on network architecture aspects of QKDN

- 5 recommendations published, 11 in draft
- Y.3800 series – QKDN layered framework, design considerations and basic functions

Study Group 17 – security (Q15/17, formerly Q4/17):

Focus on security aspects of QKD/N

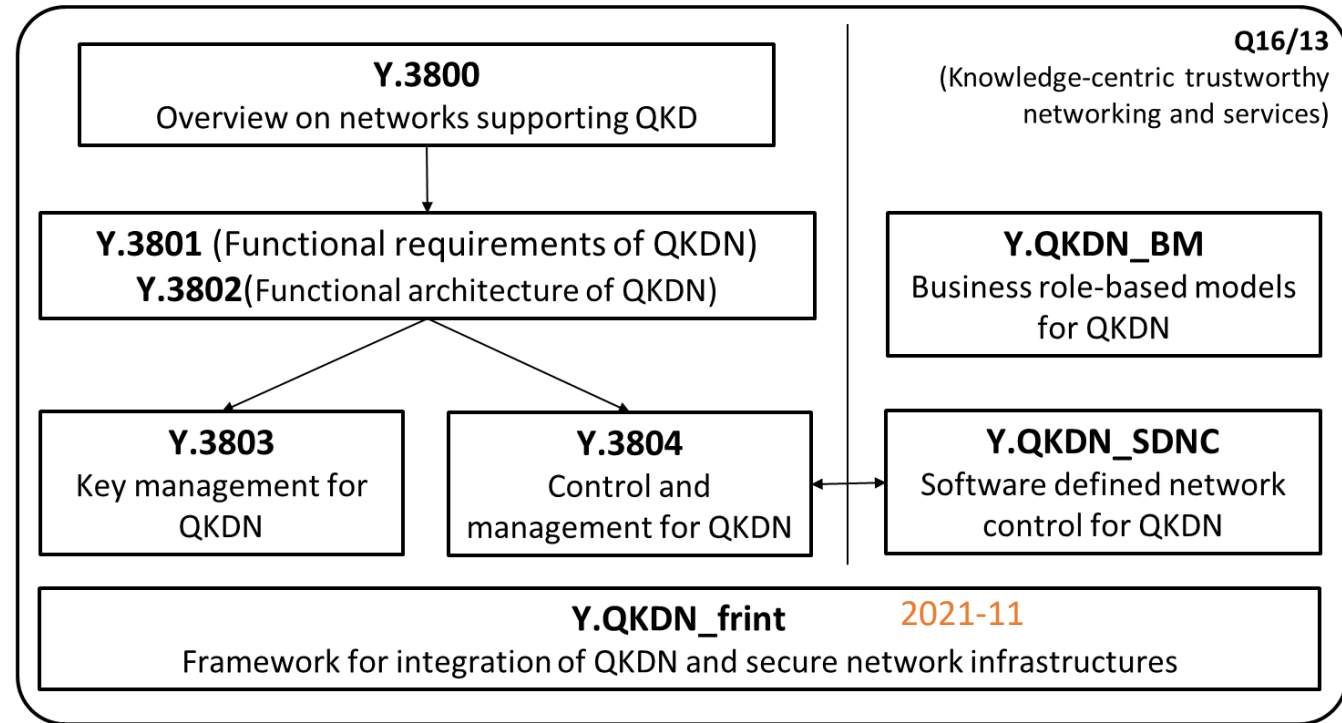
- 3 recommendations published, 5 in draft
- Y.1702 – QRNG Architecture
- Y.1710 series – a security framework of QKDN including security threats, requirements and measures

Focus Group on Quantum information technology for networks (FG-QIT4N):

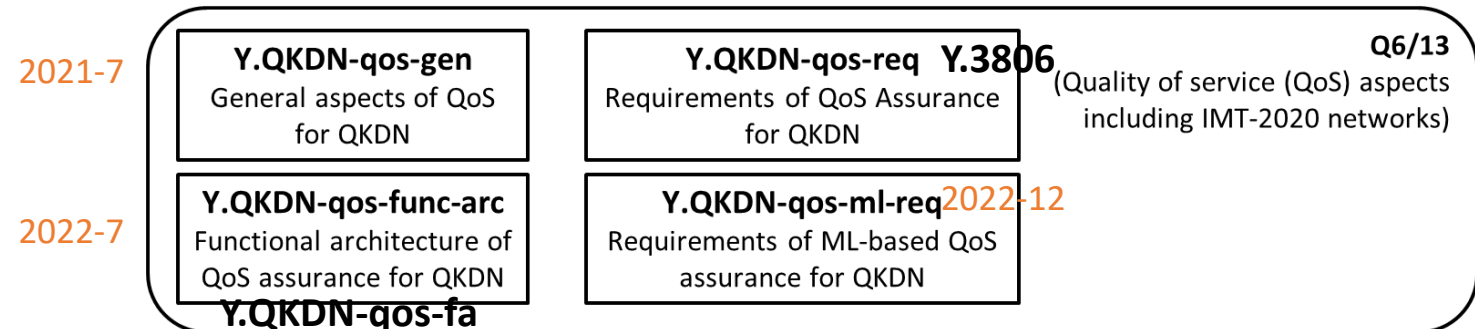
Pre-standardization activities to study the implications of QITs for quantum and ICT network
(participation is open: see www.itu.int/en/ITU-T/focusgroups/qit4n for draft reports)

SG13: network architecture aspects

- Q16/13



- Q6/13



From: ITU-T FG-QIT4N D2.5 Draft Technical Report: Standardization outlook and technology maturity part 2: QKDN

SG13: network architecture aspects

Q16/13

Knowledge centric
trustworthy networking
and services

**Y.supp.QKDN-
roadmap** 2023-12

Standardization
roadmap on QKDN

Y.3800

Overview on networks supporting QKD

Y.3801 (Functional requirements of QKDN)
Y.3803 (Functional architecture of QKDN)

Y.3803

Key management for
QKDN

Y.3804

Control and
management for QKDN

Y.QKDN_BM 2021-11

QKDN – Business role-based models

Y.QKDN-iwfr 2023-Q1

QKDN – interworking framework

Y.QKDN-rsfr 2022-12

QKDN – resilience framework

Y.QKDN-ml-fra 2022-12

QKDN – Functional requirements and
architecture for machine learning

Y.3805

Software defined network control
for QKDN

Y.QKDN_frint

2021-11

Security requirements for integration of QKDN and secure network infrastructure

Q6/13

Quality of service (QoS) aspects

Y.QKDN-qos-gen 2021-07

General aspects of QoS for QKDN

Y.3806

Requirements of QoS assurance
for QKDN

Y.QKDN-qos-fa 2022-07

Functional architecture of QoS
assurance for QKDN

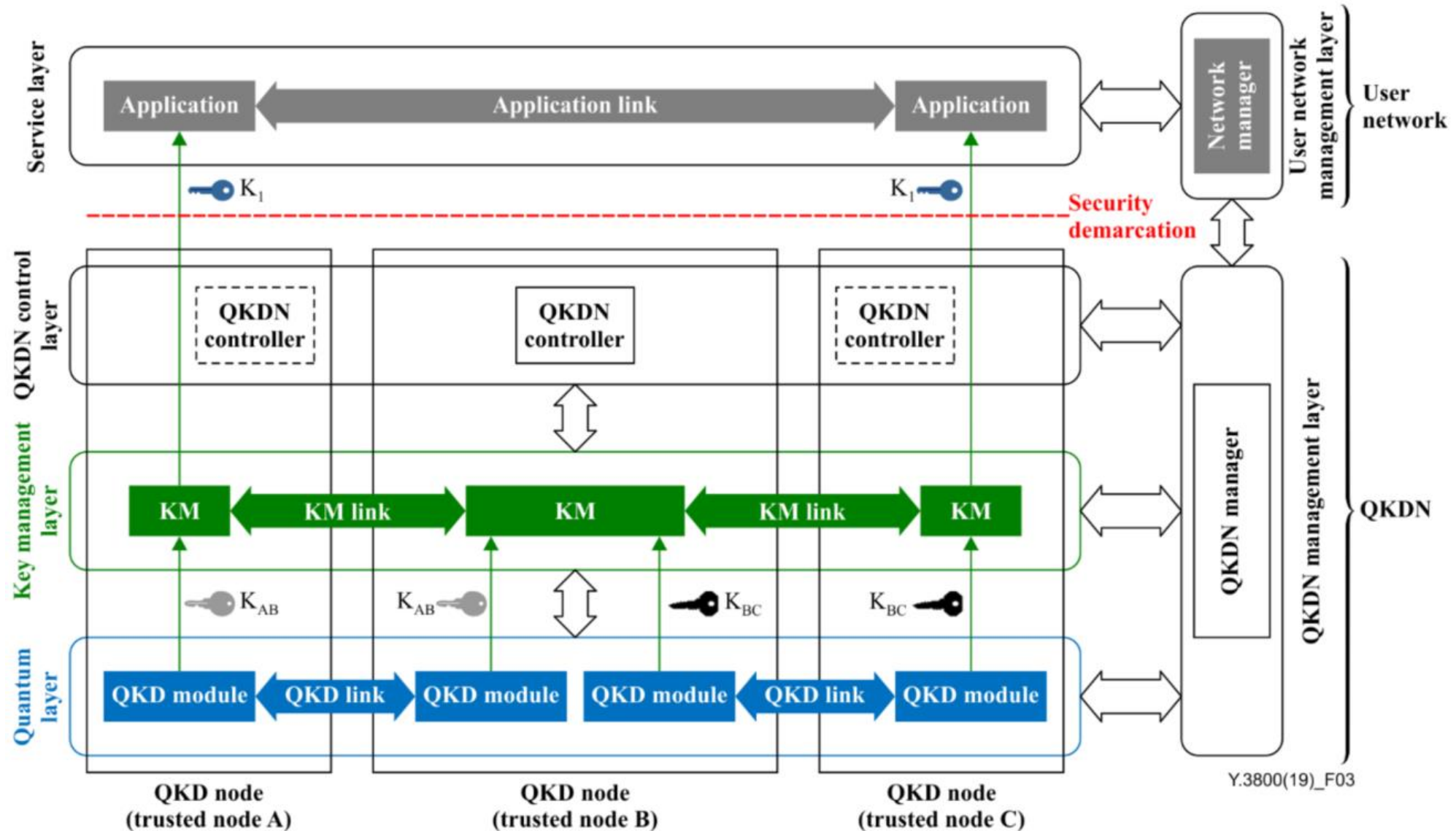
Y.QKDN-qos-ml-req 2022-12

Requirements of ML-based QoS
assurance for QKDN

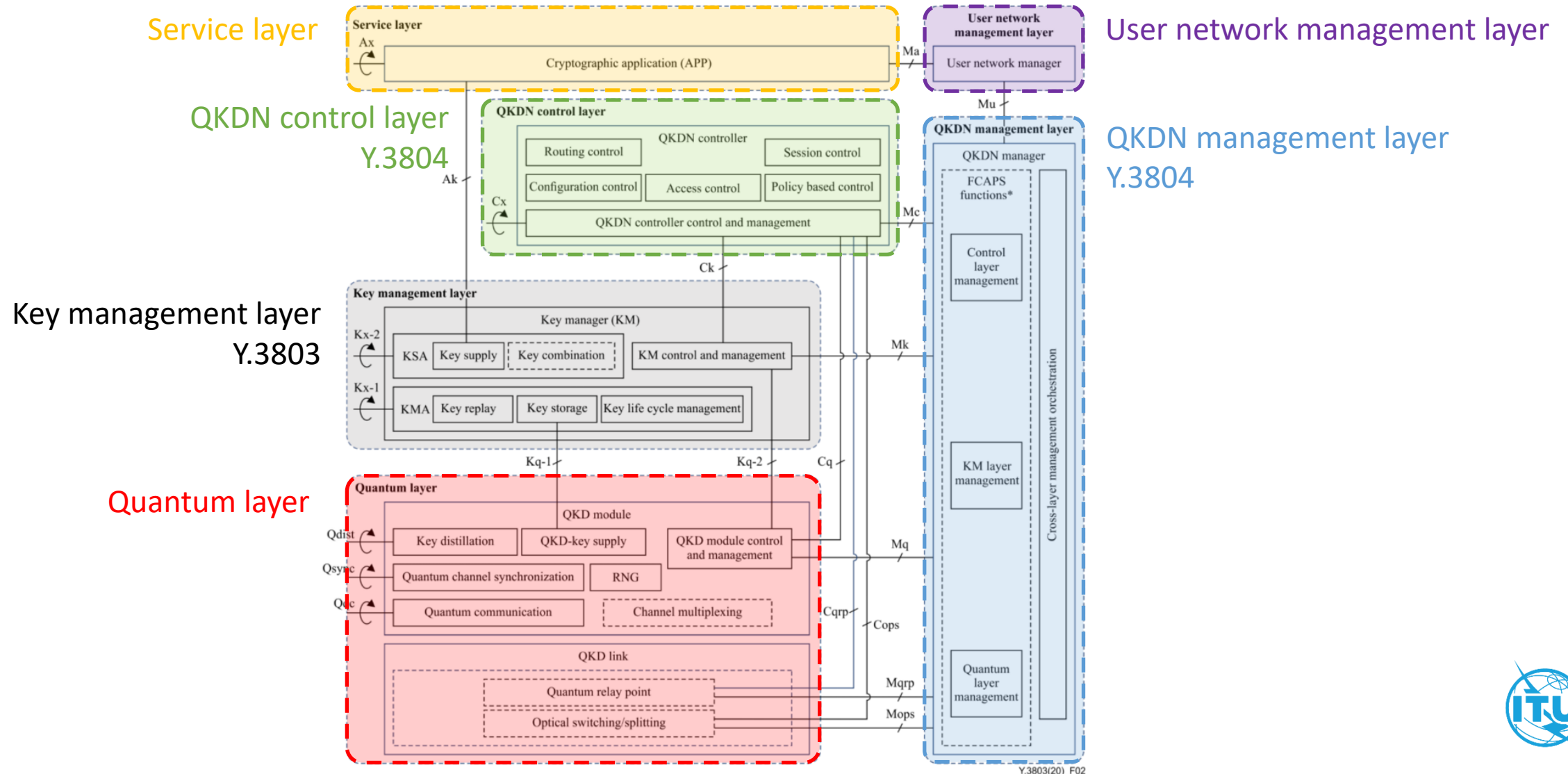


Target approval date

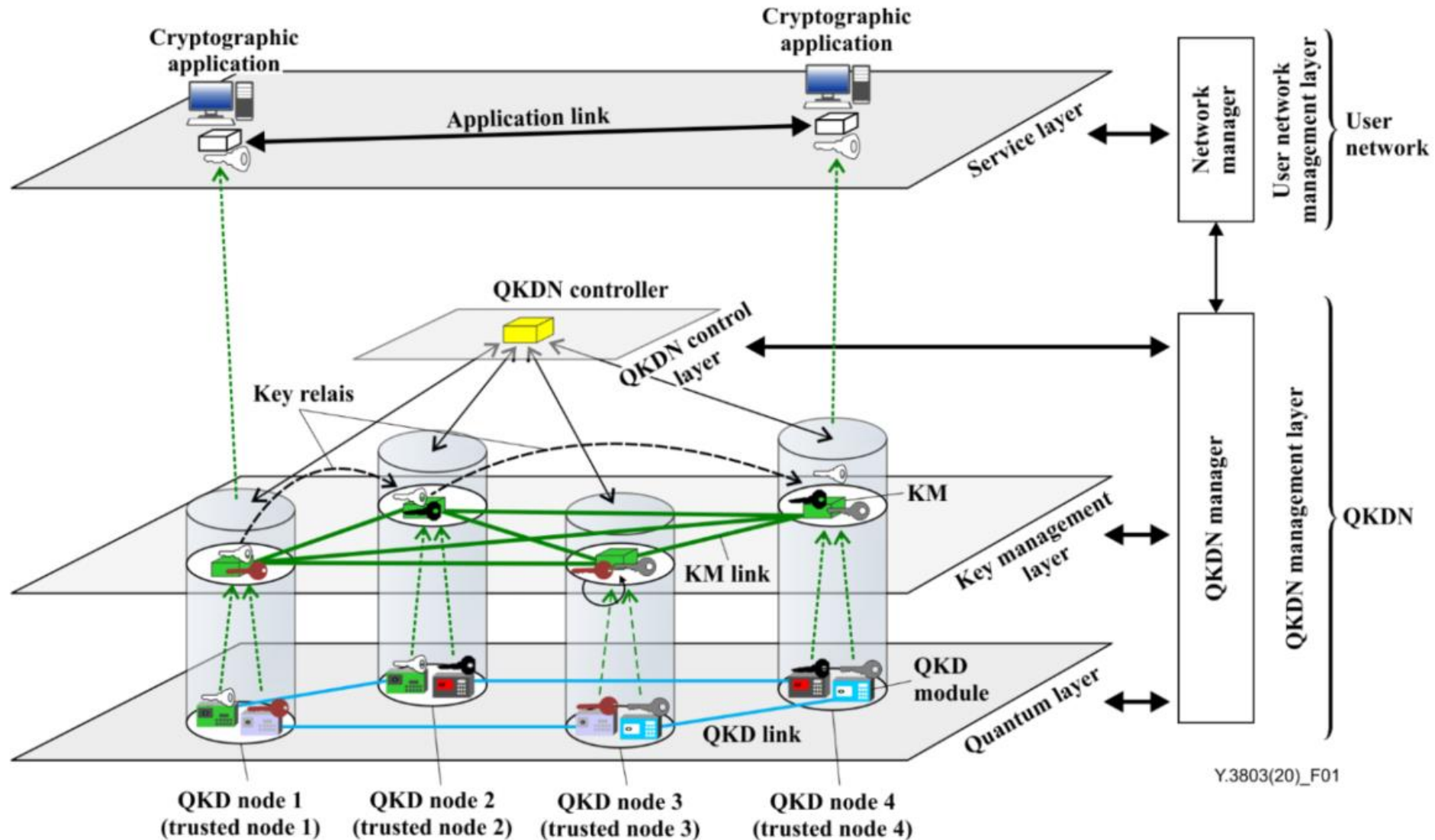
Y.3800: Conceptual structure of a QKDN



Y.3802: Functional architecture of a QKDN



Y.3803: Key management for QKD



SG17: security aspects

Q15/17

Security for/by emerging technologies including quantum-based security

X.1710

Security framework for QKDN

TR.hybsec-qkdn

2022-09

Overview of hybrid security approaches applicable to QKD

Security framework and design of QKDN
(Planned series „X.1710-X.1719“)

X.1712

Security requirements for QKDN – Key Management

X.sec_QKDN_tn

2022-09

Security requirements for QKDN – Trusted node

X.1714

Key combination and confidential key supply for QKDN

X.sec_QKDN_AA

2022-09

Authentication and authorization in QKDN using QSC

X.sec_QKDN_CM

2022-09

Security requirements and measures for QKDN – control and management

X.sec_QKDN_intrq

2022-05

Security requirements for integration of QKDN and secure network infrastructure

Q4/17 Cybersecurity and countering spam

X.1702

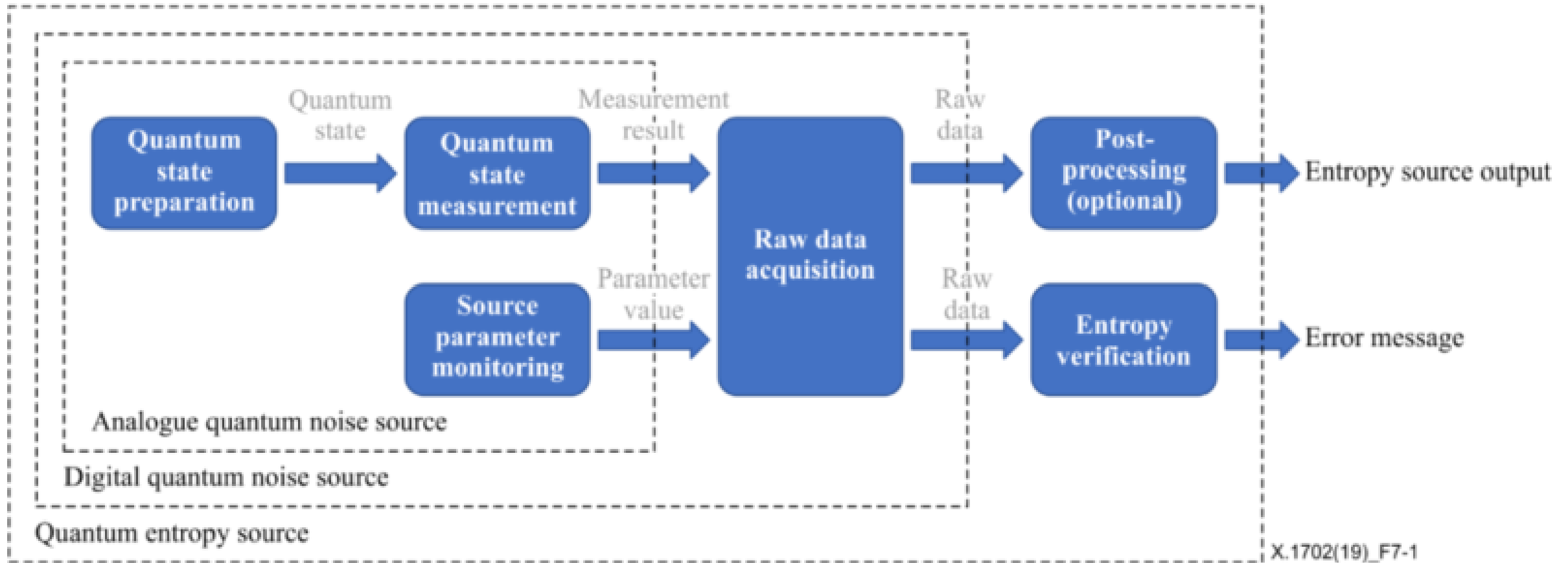
QRNG architecture

Quantum random number generator
(Planned series „X.1702-X.1709“)

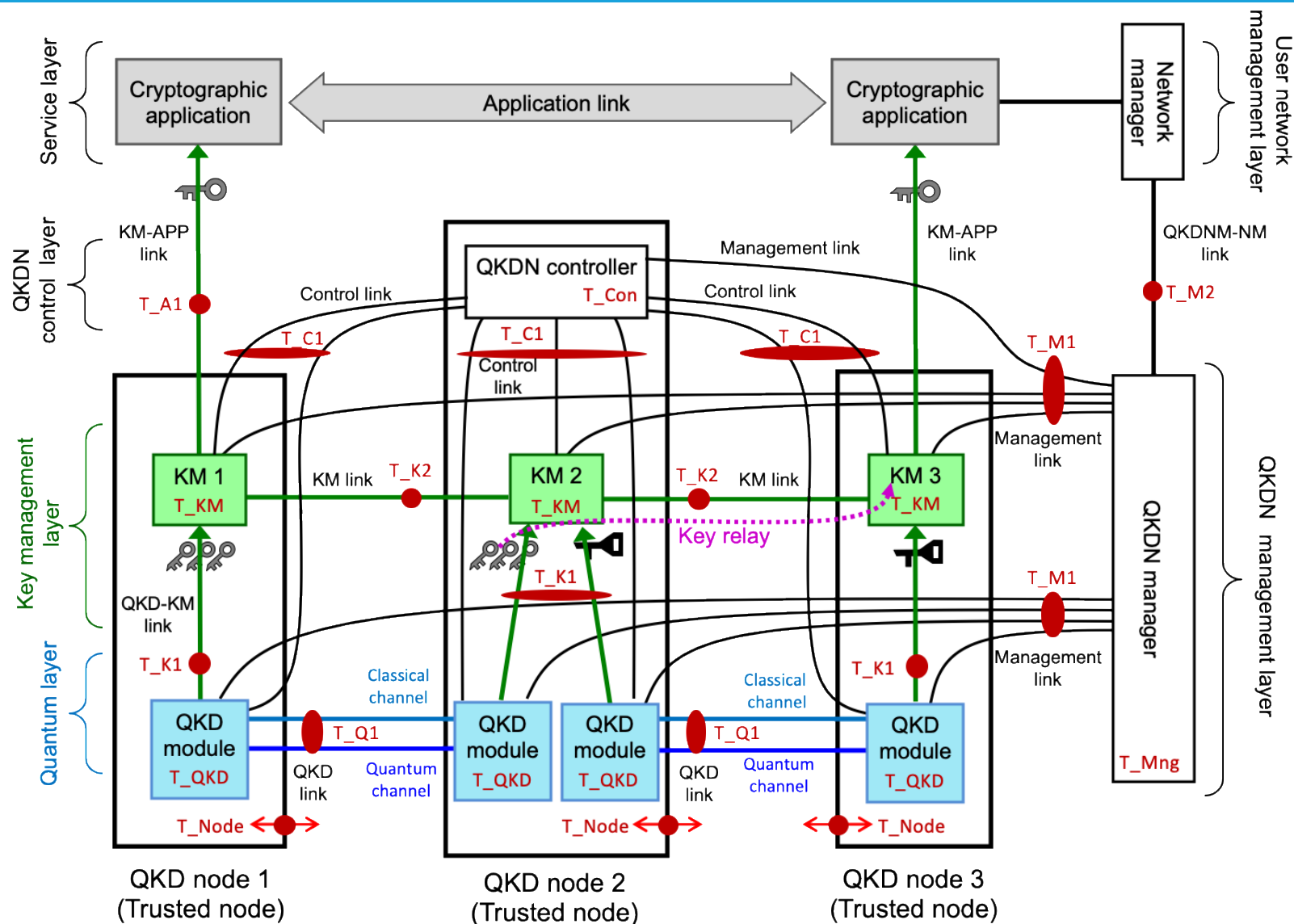
Target approval date



X.1702: QRNG architecture



X.1710: Security threats to a QKDN



ITU-T Focus Group QIT4N

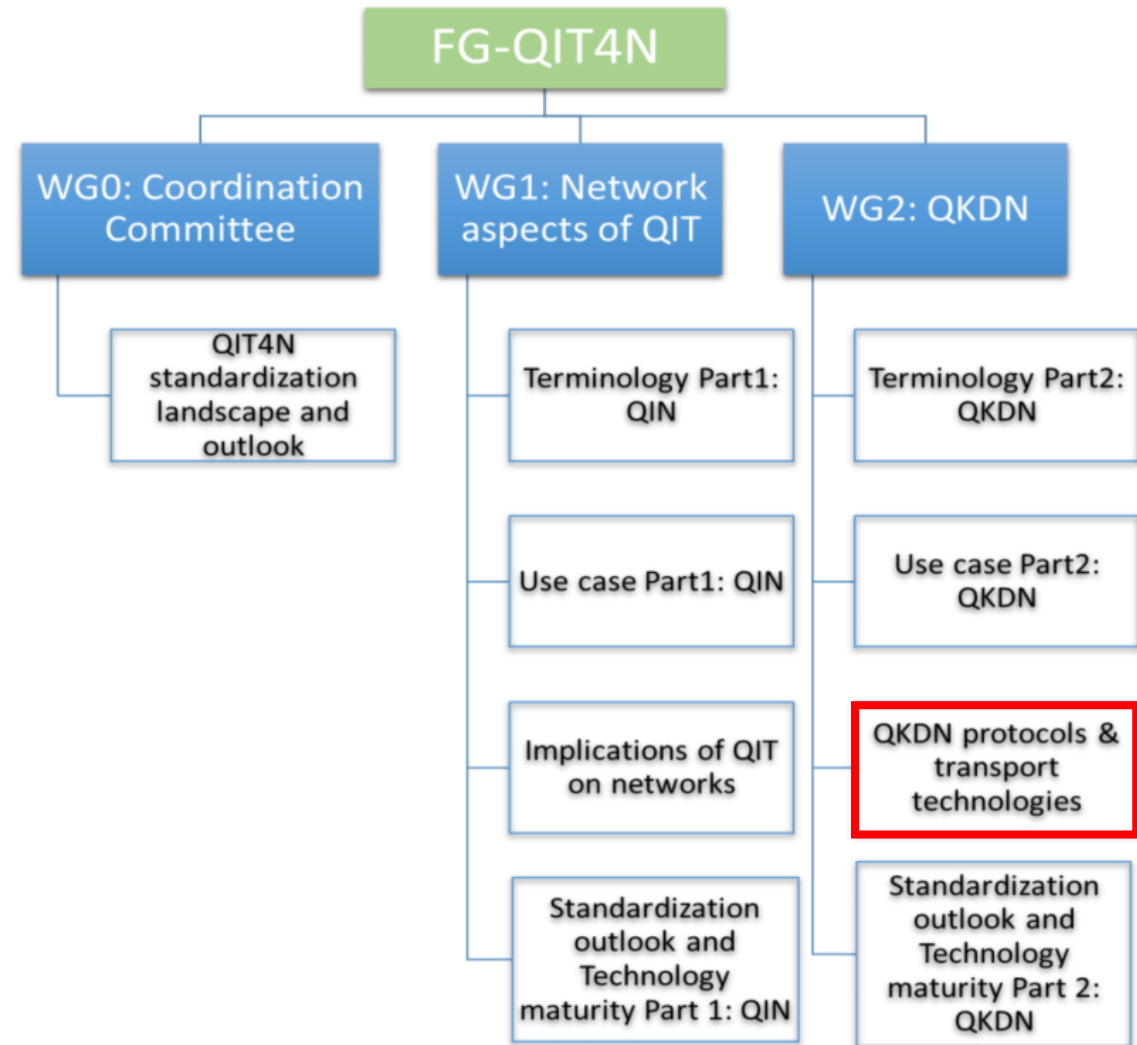
Focus Group on Quantum Information Technology for Networks (QIT4N):

WG1: Network aspects of QIT

network aspects of quantum information technology

WG2: QKDN

quantum key distribution networks and aspects not covered in SG 13 and SG 17



Current and potential future work

Current activities

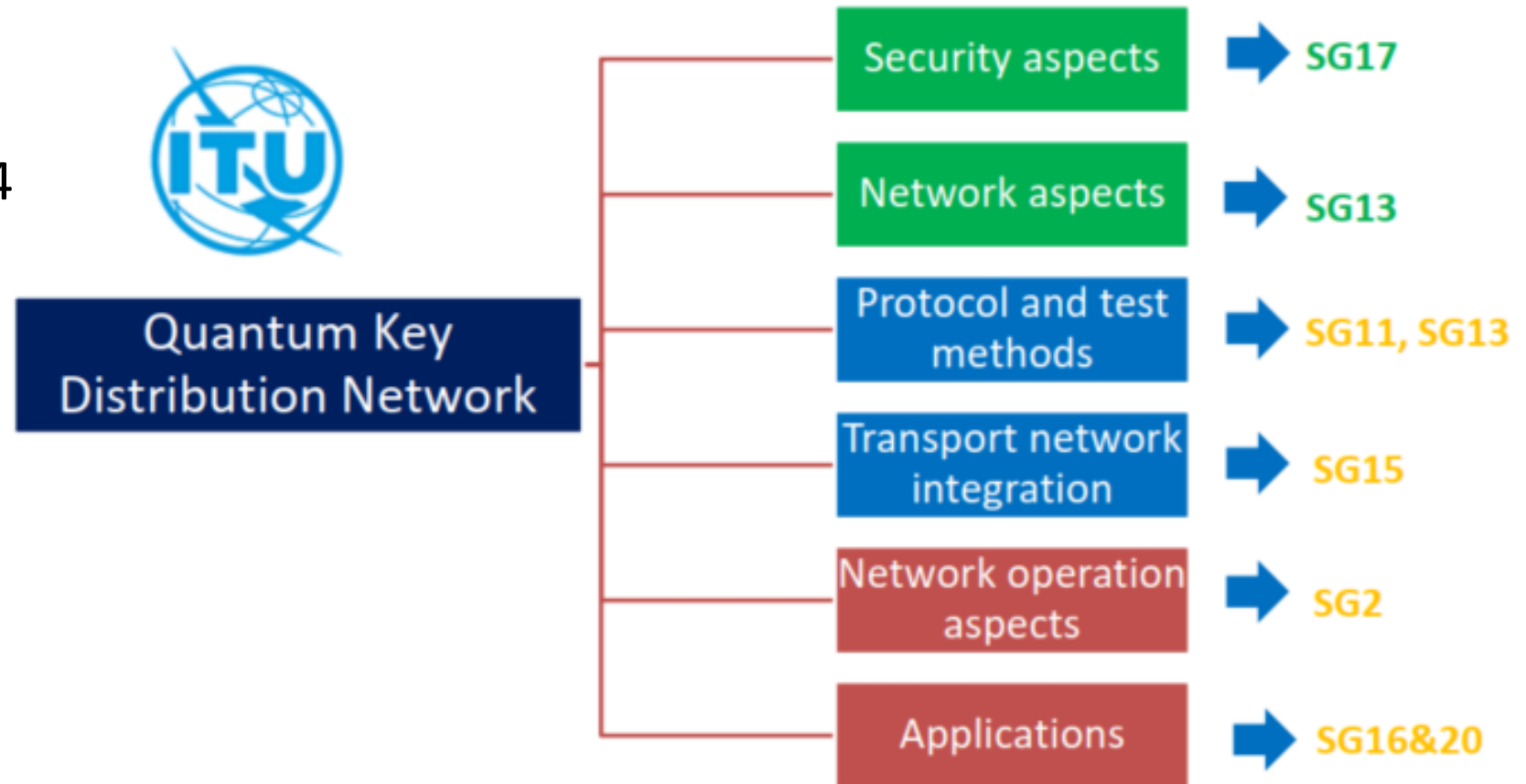
in FG-QIT4N D2.3 and D2.4

Ongoing studies

in ITU-T study groups

Potential studies

after FG-QIT4N



From: ITU-T FG-QIT4N D2.5 Draft Technical Report: Standardization outlook and technology maturity part 2: QKDN



Thank you

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