



Question(s): 16

Geneva, 13 March 2020

TD

Source: Rapporteur

Title: Meeting report of Q16/13 (Seoul, 16-20 December 2019)

Purpose: Admin

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Abstract: This document contains the interim meeting report for Q16/13 which was held in Seoul hosted by KT, 16-20 December 2019.

CONTENTS

1.	Question 16/13 – Knowledge-centric trustworthy networking and services.....	2
2.	Results.....	3
2.1	Recommendations for Approval under TAP	3
2.2	Recommendations proposed for Consent in accordance with Rec. A.8.....	3
2.3	Other documents for Approval.....	3
3.	Outgoing liaison statements.....	3
4.	Discussions	3
4.1	Y.trust-pdm.....	3
4.2	Y.OBF_trust	3
4.3	Y.QKDN_KM	4
4.4	Y.QKDN_Arch.....	4
4.5	Y.QKDN_CM	5
4.6	Y.QKDN_SDNC	6
4.7	Y.QKDN_req	6
4.8	Y.QKDN_BM	7

4.9	Others	8
5.	Work programme.....	8
6.	Future meetings	10
7.	Closure.....	11
	Annex A: List of the participants.....	12
	Annex B: Summary of Q16/13 meeting activities.....	13

1. Question 16/13 – Knowledge-centric trustworthy networking and services

Question 16/13 was addressed in 11 sessions on 16-20 December 2019 under the chairmanship of Gyu Myoung LEE (KAIST, Korea (Rep. of)). The group adopted the agenda in **Q16-13-Dec19-Agenda-9**.

The objective for this meeting was:

- To review the progress of on-going draft Recommendations – Y.trust-pdm and Y.OBF_trust;
- To review the progress of on-going draft Recommendations on QKDN (Y.QKDN_KM, Y.QKDN_Arch, Y.QKDN_CM, Y.QKDN_SDNC, Y.QKDN_BM, Y.QKDN_req);
- To discuss other items such as LS, the first CQ meeting result, NSP preparation, etc.

Question 16/13 discussed 17 contributions. Q16/13 made progress on 8 draft Recommendation. At the meeting, Q16/13 produced 9 output documents including the meeting report.

The main results of the meeting are the following:

- The updated draft Recommendation ITU-T Y.trust-pdm (**Q16-13-Dec19-DOC-18**), Framework for Trust based Personal Data Management Platform;
- The updated draft Recommendation ITU-T Y.OBF_trust (**Q16-13-Dec19-DOC-19**), Open Bootstrap Framework enabling trustworthy networking and services for distributed diverse ecosystem;
- The updated draft Recommendation ITU-T Y.QKDN_KM (**Q16-13-Dec19-DOC-20**), Key management for Quantum Key Distribution network;
- The updated draft Recommendation ITU-T Y.QKDN_Arch (**Q16-13-Dec19-DOC-21**), Functional architecture of the Quantum Key Distribution network;
- The updated draft Recommendation ITU-T Y.QKDN_CM (**Q16-13-Dec19-DOC-22**), Control and Management for Quantum Key Distribution Networks (QKDN-CM);
- The updated draft Recommendation ITU-T Y.QKDN_SDNC (**Q16-13-Dec19-DOC-23**), Software Defined Network Control for Quantum Key Distribution Networks;
- The updated draft Recommendation ITU-T Y.QKDN_BM (**Q16-13-Dec19-DOC-24**), Business role-based models in Quantum Key Distribution Network;
- The updated draft Recommendation ITU-T Y.QKDN-req (**Q16-13-Dec19-DOC-25**), Functional Requirements for Quantum Key Distribution Network;

– Q16/13 meeting report (**Q16-13-Dec19-Report-9**).

2. Results

2.1 Recommendations for Approval under TAP

No Recommendations were considered under TAP approval at this meeting.

2.2 Recommendations proposed for Consent in accordance with Rec. A.8.

No Recommendations were considered for consent at this meeting.

2.3 Other documents for Approval

No Appendices, Supplements, Implementers' Guides or Technical Papers were proposed by Q16/13 for approval at this meeting.

3. Outgoing liaison statements

No outgoing liaison statements were proposed by Q16/13 for approval at this meeting.

4. Discussions

4.1 Y.trust-pdm

Base document: TD323/WP3

C-49	KAIST	Y.trust-pdm: proposed revised texts for the document	Q16/13
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- This contribution proposes revised texts for draft new Recommendation Y.trust-pdm based on the latest output document (TD 323/WP3).

Meeting result

- The contribution was agreed.

4.2 Y.OBF_trust

Base document: TD325/WP3

C-50	India	Proposed modifications to the draft Recommendation ITU-T Y.OBF_trust: "Open Bootstrap Framework enabling trustworthy networking and services for distributed diverse ecosystems"	Q16/13
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- This document proposes the content for section 10.3.4 "Changing of Authentication Provider Flow (Symmetric keys)" to draft Recommendation ITU-T Y.OBF_trust.

Meeting result

- The contribution was agreed. The proposed text was added in clause 10.3.4 and additional changes were made for consistency.

4.3 Y.QKDN_KM

Base document: TD316/WP3

C-51R1	NICT, NEC Corporation, Toshiba Corporation	Proposed modifications to the draft Recommendation ITU-T Y.QKDN_KM: "Key management for quantum key distribution Network"	Q16/13
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- This document includes proposed modifications to the draft Recommendation Y.QKDN_KM "Key management for quantum key distribution network".

C-61	SK Telecom	Proposed modification in the draft Recommendation ITU-T Y.QKDN_KM: "Key management for quantum key distribution network"	Q16/13
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- This contribution is based on the output document in TD316/WP3 (Geneva, 14-25 October 2019). This contribution proposes editorial changes and modifications to the existing baseline document.

Meeting result

- The meeting revised contributions in align with the published Recommendation Y.3800 and accepted the proposed modifications in C-51R1 and C-61. Editor's notes were added based on discussion results at the meeting.

4.4 Y.QKDN_Arch

Base document: TD317/WP3

C-54	SK Telecom	Proposed modification to Configuration 3 and 4 in the draft Recommendation ITU-T Y.QKDN_Arch: "Functional architecture of the quantum key distribution network"	Q16/13
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- This document includes proposed modification to Configuration 3 and 4 in the draft Recommendation ITU-T Y.QKDN_Arch "Functional architecture of the quantum key distribution network".

C-55	CAS Quantum Network Co., Ltd, QuantumCTek Co., Ltd.	Proposed modifications to the draft Recommendation ITU-T Y.QKDN_Arch: "Functional architecture of the quantum key distribution network"	Q16/13
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- This document includes proposed modifications to the draft Recommendation Y.QKDN_Arch "Functional architecture of the quantum key distribution network".

C-58	SK Telecom	Proposed modification in the draft Recommendation ITU-T Y.QKDN_Arch: "Functional architecture of the quantum key distribution network"	Q16/13
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- This contribution is based on the output document in TD317/WP3 (Geneva, 14-25 October 2019). This contribution proposes editorial changes and modifications to the existing baseline document.

Meeting result

- The meeting reviewed the following proposals from C-55:
 - To update definitions in clause 3 to be aligned with Y.3800;
 - To modify design principles part in scope and clause 8 to keep align with draft Y.QKDN_req;
 - To improve the illustration of architectural configurations and procedures in Clause 12&13;
 - To simplify the description of synchronization function in Appendix 1;
 - Other modifications are editorial improvements.
- Other contributions (C-54 and C-58) were agreed and accordingly the meeting requested to revise related figures. The meeting also agreed to move the clause on design principles into the Y.QKDN_req.

4.5 Y.QKDN_CM

Base document: TD318/WP3

C-56	KT, ETRI	Proposed modifications to the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for Quantum Key Distribution Networks”	Q16/13
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- This document includes proposed modifications to the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for the Quantum Key Distribution Network”.

C-60	SK Telecom	Proposed modification in the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for Quantum Key Distribution Network”	Q16/13
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- This contribution is based on the output document in TD318/WP3 (Geneva, 14-25 October 2019). This contribution proposes editorial changes and modifications to the existing baseline document.

C-64	KT, ETRI	Proposed M2-1 reference point description to the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for Quantum Key Distribution Networks”	Q16/13
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- This contribution proposes to add M2-1 reference point description to the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for the Quantum Key Distribution Network”.

C-65	KT, ETRI	Proposed M2-2 reference point description to the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for Quantum Key Distribution Networks”	Q16/13
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- This contribution proposes to add M2-2 reference point description to the draft Recommendation ITU-T Y.QKDN_CM: “Control and Management for the Quantum Key Distribution Network”.

Meeting result

- All contributions (C-56, C-64 and C-65) from KT and ETRI were agreed. From C-60, the meeting reviewed requirements and agreed to move the clause on requirements into the Y.QKDN_req and more detailed discussion on C-60 will be done at the Tokyo meeting.

4.6 Y.QKDN_SDNC

Base document: TD319/WP3

C-62	SK Telecom	Proposed modification in the draft Recommendation ITU-T Y.QKDN_SDNC: “Software Defined Network Control for Quantum Key Distribution Networks	Q16/13
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- This contribution is based on the output document in TD319/WP3 (Geneva, 14-25 October 2019). This contribution proposes editorial changes and modifications to the existing baseline document.

Meeting result

- The meeting discussed several issues, and agree to add some notes in the corresponding parts from C-62.

4.7 Y.QKDN_req

Base document: TD342/WP3

C-57	KT, ETRI	Proposed modifications to the draft Recommendation ITU-T Y.QKDN_req: “Functional Requirements for Quantum Key Distribution Networks	Q16/13
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- This document includes proposed modifications to the draft Recommendation ITU-T Y.QKDN_req: “Functional Requirements for the Quantum Key Distribution Network”

C-63	SK Telecom, Huawei Technologies	Proposed modification in the draft Recommendation ITU-T Y.QKDN-req: “Functional Requirements for Quantum Key Distribution Network”	Q16/13
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- This contribution is based on the output document in TD342/WP3 (Geneva, 14-25 October 2019). This contribution proposes editorial changes and modifications to the existing baseline document.

Meeting result

- From C-57, the meeting reviewed a skeleton of the document considering key contents
- From C-63, the meeting reached the agreement in the below description for the scope and decided not to add the clause on general capabilities of the QKDN functional architecture.

This Recommendation is to specify functional requirements for Quantum Key Distribution network as follows:

- *Functional requirements for capabilities of quantum/key management/QKDN control and management layers and other capabilities for QKDN*
- However, there had not been time to review much of the new text (from C-57, C-60, C-63). It will be reviewed again in a future meeting.

4.8 Y.QKDN_BM

Base document: TD324/WP3

C-52	KT	Proposed texts in relation to Service Level Agreement on the draft Recommendation ITU-T Y.QKDN_BM: “Business role-based models in Quantum Key Distribution Network”	Q16/13
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- This document includes proposed text in relation to Service Level Agreement on the draft Recommendation ITU-T Y.QKDN_BM: “Business role-based models in Quantum Key Distribution Network”.

C-53	KT	Proposed new business-role based models and service scenarios on the draft Recommendation ITU-T Y.QKDN_BM: “Business role-based models in Quantum Key Distribution Network”	Q16/13
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- This document includes proposed new business-role based models and service scenarios on the draft Recommendation ITU-T Y.QKDN_BM: “Business role-based models in Quantum Key Distribution Network”.

C-59	SK Telecom	Proposed modification in the draft Recommendation ITU-T Y.QKDN_BM: “Business role-based models in Quantum Key Distribution Network”	Q16/13
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- This contribution is based on the output document in TD324/WP3 (Geneva, 14-25 October 2019). This contribution proposes editorial changes and modifications to the existing baseline document.

Meeting result

- The meeting accepted C-52 with modification. Instead of defining new terminology, the meeting agreed to use the existing definition about SLA in ITU-T Y.1401. The definition of SLA has included in Section 3.1 (“Terms defined elsewhere”) and other issues regarding SLA has noted for Table 6-1.
- The meeting accepted C-53 with minor modification. The meeting basically agreed to accept proposed texts in Section 6.2 and Section 7.2 with minor modification based on the C-59. The alignment issue between business interfaces in this document and interfaces in other architecture documents has noted in Section 6.
- The meeting accepted C-59 with modification. The meeting discussed proposed texts one by one, and accepted items are reflected in clause 1, clause 2, clause 3, clause 5, and clause 6. The meeting agreed to accept definition about “business-role” from ITU-T X.1257 instead of “role” from ITU-T Y.3502. For clause 6, the meeting agreed to keep both “QKD network provider” and “QKDN

management provider”. Since this document has focused on QKDN issues, the meeting decided to keep “User network provider” without having separate user network management provider.

4.9 Others

(1) LS

LS-1	ETSI ISG QKD	LS out to ITU-T Working Party 3/13 on ETSI ISG QKD and its activities as of QKD#27	Q16/13
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(2) SG13 Chairman’s proposed best practice

TD-203/PLE N	Chairman, ITU-T SG13	Proposed best practice for preparation and progress of AAP	QAII/13
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(3) FG-QIT4N

QIT4N-I-046	ITU-T SG13	Current status of ITU-T SG13’s work on Quantum matters	FG-QIT4N
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(4) The 1st CQ meeting result

(5) NSP

Meeting result

- Just for information, the meeting briefly introduced the LS document from ETSI ISG QKD, SG13 Chairman’s proposed best practice, slides presented for SG13 activities at FG-QIT4N and the 1st CQ meeting result, etc.

5. Work programme

The currently on-going work items for Q16/13 are as follows:

Acronym	Title	Editor	Priority	Consent / Approval	Reference
ITU-T Y.dv-ess	Framework of distributed and virtualized energy storage systems (New.)	Taein Hwang (tihwang@etri.re.kr), Il Woo Lee (ilwoo@etri.re.kr)	High	Jul. 2020	TD 320/WP3
ITU-T Y.trust-index	Trust index for ICT infrastructures	Hyeontaek Oh (hyeontaek@kaist.ac.kr), Jun Kyun Choi (jkchoi59@kaist.edu)	Medium	Jul. 2021	TD 267/WP3

Acronym	Title	Editor	Priority	Consent / Approval	Reference
	and services (New.)				
ITU-T Y.STR	Socio-technical recommendations for contributing to socio-economic awareness (New)	Viliam Sarian (sarian@niir.ru)	Medium	Jul. 2021	TD 164/WP3
ITU-T Y.trust-arch	Functional architecture for trust enabled service provisioning (New.)	Hoan Suk Choi, Korea (Republic of), hkrock7904@gmail.com Woo Seop Rhee, Korea (Republic of), wsrhee@hanbat.ac.kr	Medium	Jul. 2020	TD 322/WP3
ITU-T Y.QKDN_FR	Framework for Networks to supporting Quantum Key Distribution (New.)	Hyungsoo KIM, KT corp., hans9@kt.com Kaoru Kenyoshi, NICT, kaoru.kenyoshi@nict.go.jp	High	Oct. 2019	TD 315/WP3
ITU-T Y.SNS-trust	Framework for Evaluation of Trust and Quality of Media in Social Networking Services (New.)	Namkyung Lee, ETRI (nklee@etri.re.kr)	Medium	Jul. 2021	TD 231/WP3
ITU-T Y.trust-pdm	Framework for Trust based Personal Data Management Platform (New.)	Hyeontaek Oh, KAIST, hyeontaek@kaist.ac.kr Nakyong Kim, KAIST, nkim71@kaist.ac.kr Jinhong Yang, Inje University/KAIST, sunupnet@kaist.ac.kr	High	Jul. 2020	TD 323/WP3 Q16-13-Dec19-DOC-18
ITU-T Y.QKDN_Arch	Functional architecture of the Quantum Key Distribution network (New.)	Zhangchao Ma, CAS Quantum Network Co., Ltd., mazhangchao@casquantumnet.com	High	Jul. 2020	TD 317/WP3 Q16-13-Dec19-DOC-21
ITU-T Y.QKDN_KM	Key management for Quantum Key Distribution network (New.)	Kaoru Kenyoshi, NICT, kaoru.kenyoshi@nict.go.jp	High	Jul. 2020	TD 316/WP3 Q16-13-Dec19-DOC-20
ITU-T Y.PII-Did	Prioritization based De-Identification Methods for Personally Identifiable Information (New.)	Yang, Jinhong KAIST, jinhong@inje.ac.kr Onik, Md Mehedi Hassan KAIST, hassan@oasis.inje.ac.kr Kim, Chul-Soo, ETRI charles@inje.ac.kr	High	Jul. 2020	TD 270/WP3

Acronym	Title	Editor	Priority	Consent / Approval	Reference
ITU-T Y.energy-brokerage	Framework of trusted electricity brokerage for distributed energy resources (New.)	Taein Hwang ETRI, tihwang@etri.re.kr , Il Woo Lee ETRI ilwoo@etri.re.kr	Low	Sep. 2021	TD 321/WP3
ITU-T Y.QKDN_SDNC	Software Defined Network Control for Quantum Key Distribution Networks (New.)	Yongli Zhao, Zhangchao Ma and Junsen Lai	Low	Sep. 2021	TD 319/WP3 Q16-13- Dec19- DOC-23
ITU-T Y.QKDN_CM	Control and Management for Quantum Key Distribution Networks (QKDN-CM) (New.)	Hans Kim, hans9@kt.com , Taesang Choi, ETRI., choits@etri.re.kr , Jaehwan Jin, LGU+	Low	Jul. 2020	TD 318/WP3 Q16-13- Dec19- DOC-22
ITU-T Y.QKDN_BM	Business role-based models in Quantum Key Distribution Network (New.)	Hyungsoo (Hans) Kim, KT, hans9@kt.com Hyeontaek Oh, KAIST, hyeontaek@kaist.ac.kr	High	Jul. 2020	TD 324/WP3 Q16-13- Dec19- DOC-24
ITU-T Y.OBF_trust	Open Bootstrap Framework enabling trustworthy networking and services for distributed diverse ecosystem (New.)	Abhay Shanker Verma, as.verma@gov.in Ranjana Sivaram, ranjana.sivaram@gov.in Sharad Arora, sharad.arora@sensorise.net	High	Jul. 2020	TD 325/WP3 Q16-13- Dec19- DOC-19
ITU-T Y.QKDN-req	Functional Requirements for the Quantum Key Distribution Network (New.)	Hyungsoo Kim, KT corp., hans9@kt.com , Taesang Choi, ETRI., choits@etri.re.kr , Kaoru Kenyoshi, NICT, kaoru.kenyoshi@nict.go.jp , Zhangchao Ma, CAS QN, mazhangchao@casquantumnet.com	High	Jul. 2020	TD 342/WP3 Q16-13- Dec19- DOC-25

NOTE – Q16/13 has living list items on the following work items:

- Trust framework of trustworthy device selection for data transmission (**TD 479 (WP3/13)**);
- Trust based ICT service and business models (**TD 480 (WP3/13)**).

However, there were no relevant contributions the above existing living lists in this meeting.

6. Future meetings

The following is a summary of the upcoming meeting proposed by Q16/13.

Dates	Place	Host	Q	Objectives
14 – 16 January 2020	Tokyo	NICT	16/13	Q16/13 will deal with 6 draft recommendations on QKDN (Y.QKDN_Arch, Y.QKDN_KM,

Dates	Place	Host	Q	Objectives
				Y.QKDN_SDNC, Y.QKDN_CM, Y.QKDN-BM, Y.QKDN-req) and other QKDN related issues.
The week of 3 February 2020	e-meeting	ITU-T	16/13	Q16/13 will deal with 6 draft recommendations on QKDN (Y.QKDN_Arch, Y.QKDN_KM, Y.QKDN_SDNC, Y.QKDN_CM, Y.QKDN-BM, Y.QKDN-req) and other QKDN related issues.
2 – 13 March 2020	Geneva	ITU-T	16/13	Q16/13 will deal with 15 draft recommendations (Y.dv-ess, Y.trust-index, Y.STR, Y.trust-arch, Y.SNS-trust, Y.trust-pdm, Y.QKDN_Arch, Y.QKDN_KM, Y.PII-Did, Y.energy-brokerage, Y.QKDN_SDNC, Y.QKDN_CM, Y.QKDN-BM, Y.QKDN-req, Y.OBF-trust), the current living list items of Q16/13, but are not limited to.

7. Closure

The Q16/13 Rapporteur thanked the delegates for their participation in the Q16/13 activities to progress the work, and particularly the meeting host KT, editors and contributors for their support and active involvement during this meeting.

Annex A:
List of the participants

No	Name	Affiliation	Note
1	Gyu Myoung Lee	Rapporteur, KAIST	
2	Hyungsoo KIM	KT	
3	Cha, Daejoon	SKT	
4	Chungwoo Hwang	KT	
5	Chunseok YOON	KT	
6	Mingeun Yoon	SKT	
7	Taesang Choi	ETRI	
8	Jeongyun Kim	ETRI	
9	Abhay Shanker Verma	TEC India	Remote
10	Ranjana Sivaram	TEC India	Remote
11	Sharad Arora	Sensorise Digital Services Pvt Ltd, India	Remote
12	Momtchil Peev	Huawei	Remote
13	Zhangchao Ma	CAS Quantum Network	Remote
14	Yongli Zhao	BUPT	Remote
15	Hongyu Wu	QuantumCTek	Remote
16	Jiajun Ma	QuantumCTek	Remote
17	Masahide Sasaki	NICT	Remote
18	Martin Ward	Toshiba	Remote
19	Kaoru KENYOSHI	NICT	Remote
20	Jun Kyun Choi	KAIST	
21	Hyeontaek Oh	KAIST	
22	Nakyoung Kim	KAIST	
23	Jinhong Yang	KAIST	

Annex B:
Summary of Q16/13 meeting activities

Date	Morning		Afternoon	
16 Dec(Mon)	Introduction (offline)	NSP (offline)	-	-
17 Dec(Tue)	Y.trust-pdm	Y.trust-pdm	Y.OBF_trust^R	-
18 Dec(Wed)	Drafting	Drafting	Drafting	Drafting
19 Dec(Thu)			Introduction for QKDN issues^R, Y.QKDN_Arch^R (12:30~)	Y.QKDN_CM^R,
20 Dec(Fri)	Y.QKDN_req^R	Y.QKDN_KM^R	Y.QKDN_SDNC^R Y.QKDN_BM^R	LS^R, CQ meeting^R, NSP^R
^R - Remote participation – https://itu.zoom.us/j/2227300013				