ITU-D SG2 Rapporteur meeting Question 3 Workshop

ITU-T Study Group 17 Security

9 October 2018

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I.   Standardization for security

Cybersecurity

- (traditional) security has always been a focus of national strategy, so is cybersecurity nowadays

- "Today we are seeing a **market failure for cybersecurity and privacy**: trusted solutions are more costly for suppliers and buyers are reluctant to pay a premium for security and privacy" (emphasis in original).   - ENISA

- "There is a market failure that governs investment in cybersecurity. First, data breaches have externalities; costs that are not accounted for by organizations. Second, even where investments are made, as a result of asymmetric information, it is difficult for organizations to convey the resulting level of cybersecurity to the rest of the ecosystem. As a result, the incentive to invest in cybersecurity is limited; organizations do not bear all the cost of failing to invest, and cannot fully benefit from having invested. "   - ISOC

Security Standardization

- National laws and regulations are often very generic so as to withstand time and technological evolvement, thus must be complimented with **standards**, i.e., specification on technical, procedural and administrative (organizational) details.

- Cyberspace doesn't recognize national boundaries, therefore security needs **international** standards.

- SG17 is a major venue where such international security standards can be, and are being, developed.

- SG17 collaborates with ISO/IEC JTC 1, ETSI, IETF, …

II. SG17 Overview

ITU-T SG17 'Security' mandate

Responsible for building confidence and security in the use of information and communication technologies (ICTs).

This includes studies relating to **cybersecurity**, **security management**, **countering spam** and **identity management**.

It also includes **security architecture and framework**, **protection of personally identifiable information**, and **security of applications and services** for the Internet of things (IoT), smart grid, smartphone, software defined networking (SDN), Internet Protocol television (IPTV), web services, social network, cloud computing, big data analytics, mobile financial system and telebiometrics.

Security subjects within Study Group 17

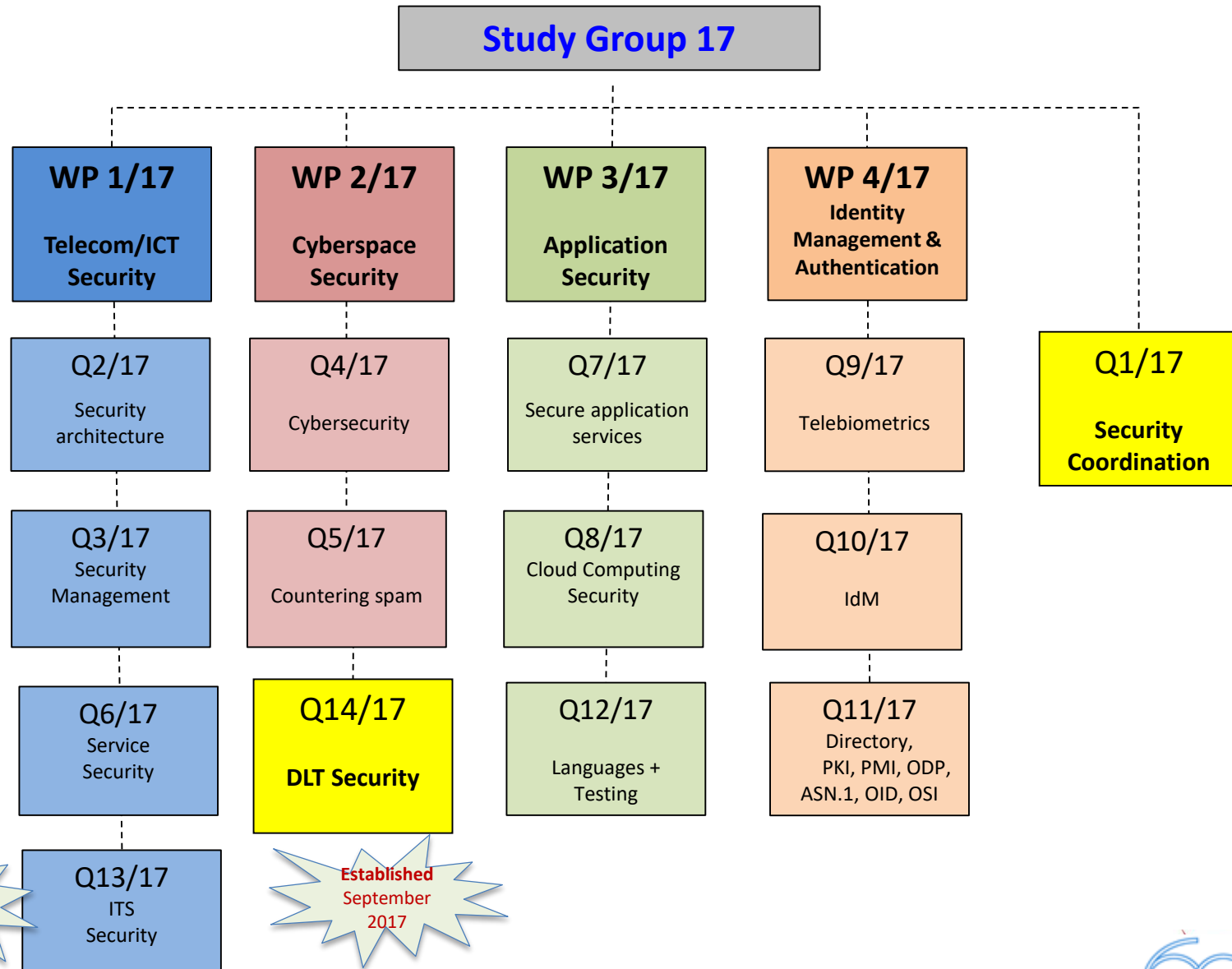**Telecom/ICT Security**

Cyberspace Security

Application Security

Security Toolkit (OIDs, IdM, telebiometrics, …)

SG17 Structure

- **Q1/17 Telecommunication/ICT security coordination**

- **WP 1 "Telecom/ICT security"**
  - Q2/17   Security architecture and framework
  - Q3/17   Telecommunication information security management
  - Q6/17   Security aspects of ubiquitous telecommunication services
  - Q13/17   Security aspects of Intelligent Transport System

- **WP 2 "Cyberspace security"**
  - Q4/17   Cybersecurity
  - Q5/17   Countering spam by technical means
  - Q14/17 Security aspects of distributed ledger technologies

- **WP 3 "Application security"**
  - Q7/17   Secure application services
  - Q8/17   Cloud computing security
  - Q12/17   Formal languages for telecommunication software and testing

- **WP 4 "Identity Management & Authentication"**
  - Q9/17   Telebiometrics
  - Q10/17   Identity management architecture and mechanisms
  - Q11/17   Generic technologies to support secure applications

ITU-T SG17, Security

Study Group 17

WP 1/17

Telecom/ICT Security

WP 2/17

Cyberspace Security

WP 3/17

Application Security

WP 4/17

Identity Management & Authentication

Q2/17

Security architecture

Q4/17

Cybersecurity

Q7/17

Secure application services

Q9/17

Telebiometrics

Q1/17

Security Coordination

Q3/17

Security Management

Q5/17

Countering spam

Q8/17

Cloud Computing Security

Q10/17

IdM

Q6/17

Service Security

Q14/17

DLT Security

Q12/17

Languages + Testing

Q11/17

Directory, PKI, PMI, ODP, ASN.1, OID, OSI

Q13/17

ITS Security

Established March 2017

Established September 2017

1956 2016
CCITT / ITU-T

SG17 statistics

- **SG17 meets every 6-months:**
  - March 2018: 130 participants from 40 countries, 14 Sector Members, 3 Associates and 1 Academia. 7 invited experts.
  - Aug/Sep 2018: 168 participants from 39 countries, 21 Sector Members, 4 Associates and 2 Academia. 8 invited experts.
  - workshops on: blockchain, ITS, 5G security, advanced cybersecurity attacks and Ransomware

- As of Sept 2018, SG17 is responsible for
  - 368 approved Recommendations,
  - 32 agreed Supplements and
  - 3 approved Implementer's Guides in the E, F, X and Z series.

Future Study Group 17 Meetings

For 2019, the Study Group 17 meetings are scheduled for:

- Tuesday 22 - 30 Jan 2019 in Geneva
  - Workshop on **AI/ML Security** on Monday 21.01.2019
- Tuesday 27 August – Thursday 5 September 2019 in Geneva
  - Workshop on **FinTech security** on Monday 26.08.2019

III. SG17 Achievements

Key SG17 standards (1)

- **X.800-series on OSI Security Architecture**
  - X.800|ISO/IEC 7498-2:1989 OSI security architecture
  - X.805 Security architecture for end-to-end communications

- **X.500-series on OSI Directory**
  - X.509 Public-key and attribute certificate frameworks

- X.1051 on information security management for teleco industry

- X.1058 on Code of practice for personally identifiable information protection

- X.1205-1214 on Cybersecurity

- X.1231, 1240-1249 on Countering spam

- **X.1250-1258, 1276 on Identity management/authentication**

- **X.1500-series on Cybersecurity information exchange**

Key SG17 standards (2)

- **X.660-series** on Procedures for the operation of Object Identifier Registration Authorities: General procedures and top arcs of the International Object Identifier tree

- **X.680-series** and **X.890-series** on Abstract Syntax Notation One (ASN.1)

- **X.1040** on Security reference architecture for lifecycle management of e-commerce business data

- **X.1120-series** on Mobile security (including anti-theft)

- **X.1140-series** on web service security

- **X.1360-series** on IoT security

- **X.1373 on Secure software update capability for intelligent transportation system communication devices**

IV. Current hot topics

Current hot topics – 1: ITS

- Q13/17 security aspects of Intelligent Transport Systems

    1) Security guidelines for V2X communication systems
    2) Security requirements for vehicle accessible external devices
    3) Methodologies for intrusion detection system on in-vehicle systems
    4) Security guidelines for vehicular edge computing
    5) Security-related misbehaviour detection mechanism based on big data analysis for connected vehicles
    6) Security requirements for categorized data in V2X communication
    7) Security threats in connected vehicles

Current hot topics – 2: DLT

- ## Q14/17 security aspects of Distributed Ledger Technology (DLT)

  1) Privacy and security considerations for using DLT data in Identity Management

  2) Security assurance for DLT

  3) Security capabilities and threats of DLT

  4) Security architecture for DLT

  5) Security Services based on DLT

  6) Security threats to online voting using DLT

  7) Security threats and requirements for digital payment services based on DLT

  8) Technical framework for secure software programme distribution mechanism based on DLT

  9) Security threats to online voting using DLT

Current hot topics – 3: Big Data

- ## Q8/17 cloud computing security
  1) Data security requirements for the monitoring service of cloud computing
  2) Security guidelines for big data as a service
  3) Security guidelines of lifecycle management for telecom big data
  4) Security guidelines for big data infrastructure and platform
  5) Security requirements for communication as a service application environments
  6) Security requirements of public infrastructure as a service (IaaS) in cloud computing
  7) Security requirements of network as a service (NaaS) in cloud computing
- Security requirements and framework for big data analytics in mobile internet services

Current hot topics – 4: IoT

- ## Q6/17 IoT security

    1) Security requirements and framework of using identity-based cryptography mechanism in IoT environment

    2) Security framework for IoT

    3) Technical framework of PII (Personally Identifiable Information) handling system in IoT environment

    4) Security requirements and framework for narrow band IoT

    5) Secure software update for IoT devices

    6) Security requirements and framework for IoT service platform

- # Identity management for IoT

Current hot topics – 5: Quantum Security

- Two new work items established
    1) Quantum noise random number generator architecture
    2) Technical report on security framework for quantum key distribution in telecom network

V. Collaboration

Coordination with 20+ major SDOs
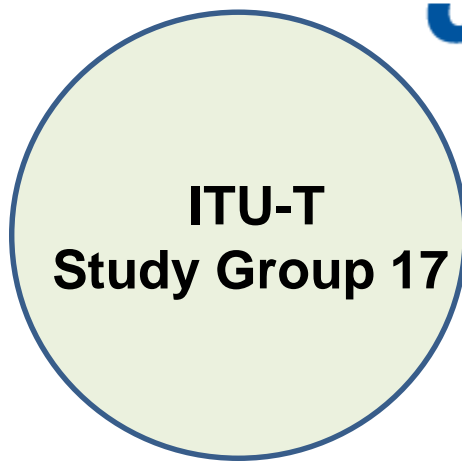
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ITU-T SGx

ITU-D, ITU-R, xyz.

SG17 collaborative work with ISO/IEC JTC 1

Existing relationships having collaborative (joint) projects:

JTC 1	SG 17 Question	Subject
SC 6/WG 7	Q6/17	Ubiquitous networking
SC 6/WG 10	Q11/17	Directory, ASN.1, OIDs, and Registration
SC 7/WG 19	Q11/17	Open Distributed Processing (ODP)
SC 27/WG 1	Q3/17	Information Security Management System (ISMS)
SC 27/WG 2	Q6/17	Security algorithm
SC 27/WG 5	Q3/17	PII protection
SC 27/WG 5	Q9/17	Telebiometrics
SC 27/WG 5	Q10/17	Identity Management (IdM)
SC 37	Q9/17	Telebiometrics

Note – In addition to collaborative work with JTC 1, Q13/17 ITS security has collaboration with ISO TC 204; Q14/17 DLT security has collaboration with ISO TC 307.

SG17 collaborative work with ISO/IEC JTC 1 (cnt'd)

- Relationships of SG17 Questions with JTC 1 SCs that categorizes the nature of relationships as:
  - joint work (e.g., common texts or twin texts)
  - technical collaboration by liaison mechanism
  - informational liaison

- Guide for ITU-T and ISO/IEC JTC 1 Cooperation
  - http://itu.int/rec/T-REC-A.23-201002-I!AnnA

- Listing of common text and technically aligned Recommendations | International Standards (434 total, 210+ of SG17)

- Mapping between ISO/IEC International Standards and ITU-T Recommendations

Thank you

ITU-T SG17 website:

http://itu.int/ITU-T/studygroups/com17