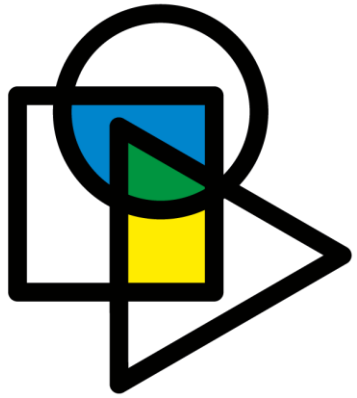
WORLD TELECOMMUNICATION
STANDARDIZATION ASSEMBLY



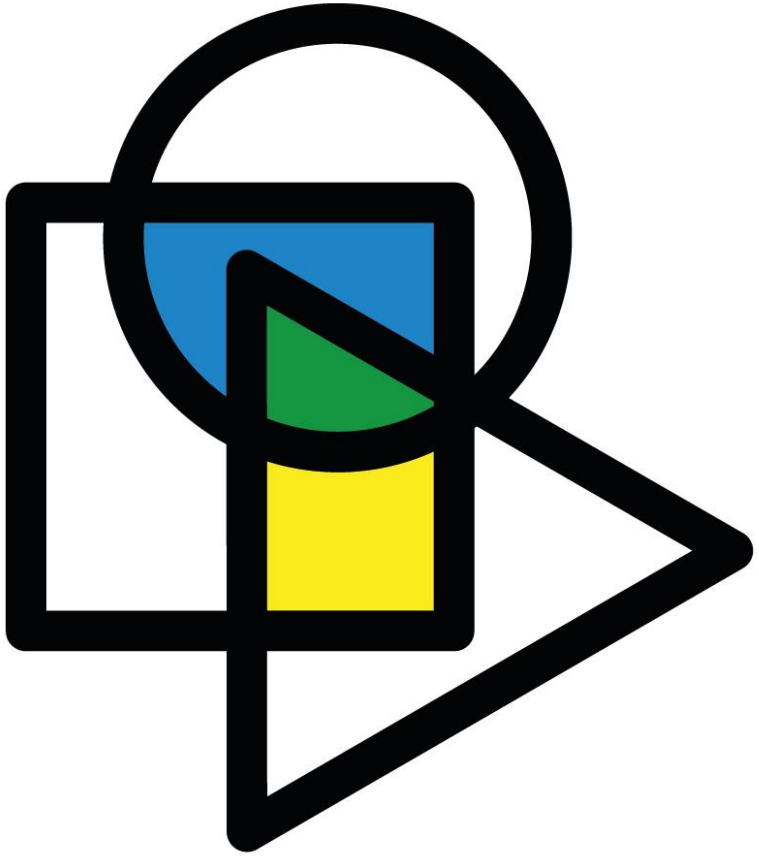
ITUWTSA-20
GENEVA2022

1– 9 March 2022
Geneva, Switzerland

ITU-T
STUDY GROUP 17 : Security
Summary of Results
Study Period 2017-2020

Heung Youl YOUM
Chairman, SG17

March 2022



AGENDA

- Study Group 17 Security
- Future perspective of SG17
- Conclusions
- Acknowledgements
- Additional Slides
  - Terms of reference
  - Management team
  - Structure
  - Other groups (JCAs and Regional Groups)
  - Highlights of achievements / Projects
  - Highlights of Questions
  - Statistics
  - Workshops (with SG17 leadership / participation)

Study Group 17 - Security

Building confidence and security in the use of ICTs

- Cybersecurity
- Countering spam
- Cloud computing security
- IoT security
- ITS security
- SDN/NFV security
- Mobile (5G) security
- Identity management
- Information Security Management
- Application security
- Big Data analytics security
- DLT security
- Smart-grid security
- Quantum Key Distribution
- Fintech security
- Telebiometrics
- PKI, PMI, Directory
- Languages (ASN.1, SDL, MSC, TTCN-3 ...)
- Incubation (emerging technologies)

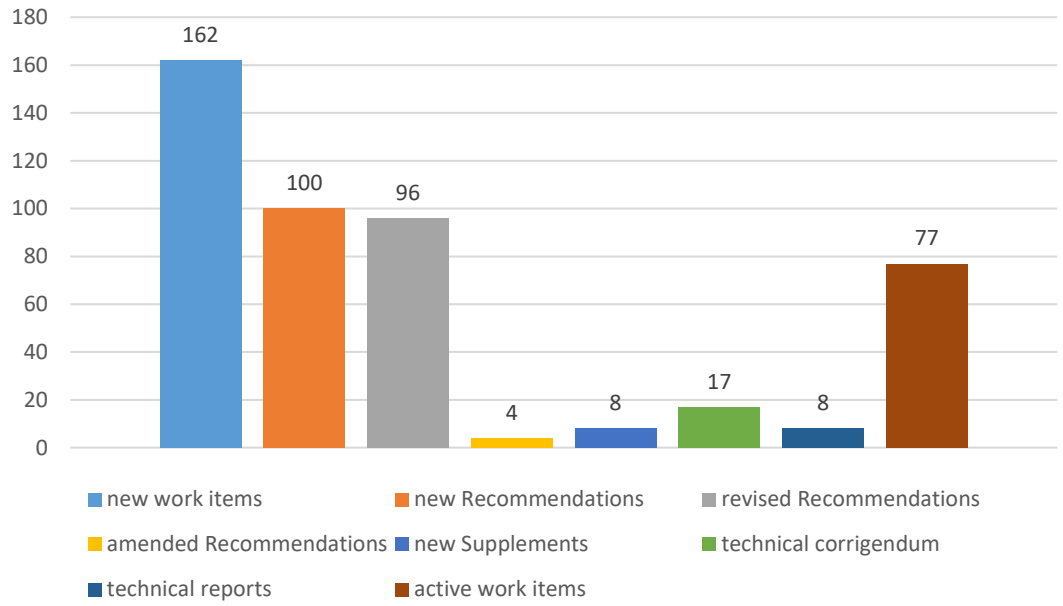
in Q15/17

Security is Absolutely First Everywhere (SAFE)

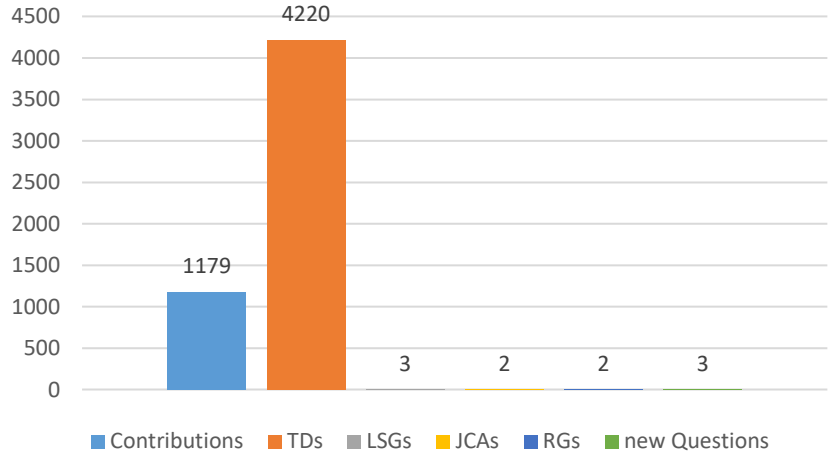
Study Group 17 - Security

Achievements & statistics in this study period

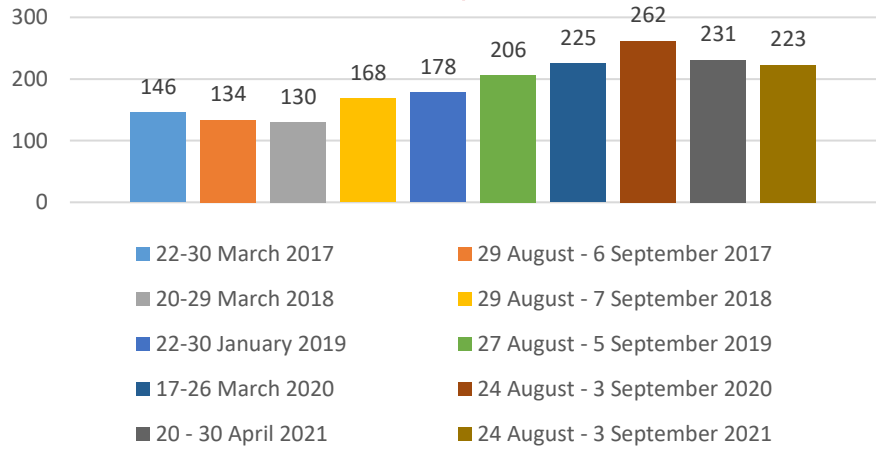
SG17 achievements



SG17 statistics



Participants



Future Perspective of SG17

Visions for security and data protection (I)

Global Security Experts

Centre of security excellence

Addressing existing and emerging threats

Building confidence and security in use of ICTs

New security risk assessment-based approaches and measures

Security for and by emerging technologies

Strengthening the security framework and cybersecurity

Managing new emerging threats in telecommunication and ICTs infrastructure

Addressing PII protection and technical and operational aspects of data protection

Vision for security and data protection (II)

Key Recommendations for security and PII/data protection

Trust for realizing super highly connected Information Society

Separation of security responsibilities within ITU-T

SG17

Collaboration within ITU-T and outside SDOs

SG13

SG20

SC27

TC307

Attractiveness of participation

Key objectives and outcomes

SG17

SG17 as centre of security competence

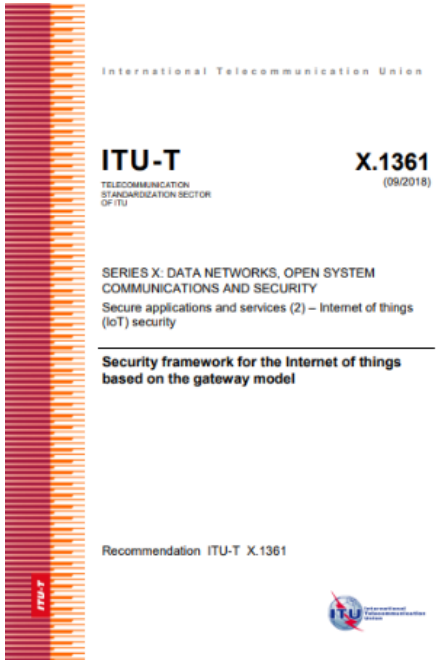
Cybersecurity and key security techniques

Producing high quality implementable ITU-T Recs

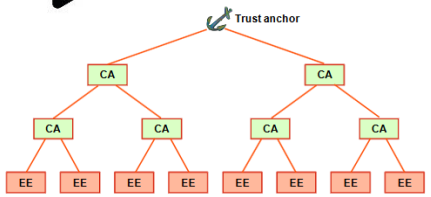
Adoption of security by design approaches

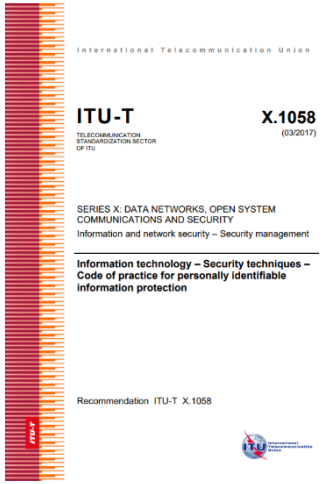
Incubation mechanisms for emerging technologies

Efficient SG17 structure



Major topics to address existing and new threats





Key security techniques

- Public key infrastructure
- Distributed Identity (DiD)
- Protection of Personally Identifiable Information (PII)
- Operational and technical aspects for data protection
- Fintech and OTT security
- Quantum key distribution
- AI/ML security
- DLT security
- Internet of things
- Security for 5G/6G
- Data protection enhancing technologies

SG17

Questions

SG17 proposed 12 Questions for the next study period (2021-2024).

12 Questions	
Security standardization strategy and coordination	Cloud computing and big data infrastructure security
Security architecture and network security	Identity management and telebiometrics architecture and mechanisms
Telecommunication information security management and security services	Generic technologies to support secure applications
Cybersecurity and countering spam	Intelligent transport system security
Security for telecommunication services and Internet of Things	Distributed Ledger Technology (DLT) security
Secure application services	Security for/by emerging technologies including quantum-based security

Incubation

LSG – JCAs – Projects

SG17 should be the lead study group responsible for:

Languages and description techniques

IDENTITY MANAGEMENT

JCA-IdM and JCA-COP need to continue given their roles of coordination and cooperation.

ASN.1 & OID Projects need to continue given their important contributions.

Conclusion

Increased Participation with maximum 262 participants

SG17 has successfully **evolved** to:

- Emerging issues, such as Quantum based security and Distributed ID
- address new security challenges

with security experts in core Questions.

SG17 achieved significantly **build-up** of participation and energy in:

- Identity Management
- Cybersecurity
- Cloud Computing Security
- DLT Security

SG17 has **built strong relationship** with other key bodies working on security and conducted numerous **collaborative** efforts

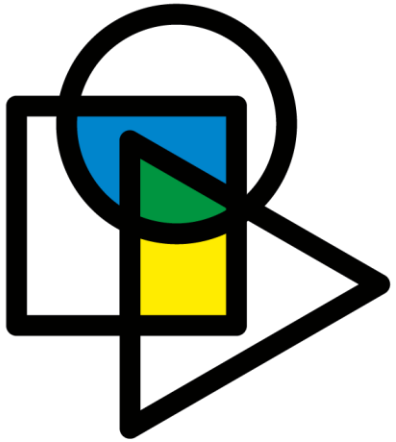
SG17 has **promoted** and **disseminated** ITU-T security work

Acknowledgements

Great thanks are due to the many people who have contributed to the enormous success of SG17 during this study period:

- Delegates with their many contributions
- Editors in drafting texts for Recommendations
- Rapporteurs in leading work efforts
- Liaison officers in coordinating efforts with other bodies
- Project leaders and JCA leaders
- Management team including Working Party chairmen
- TSB support – Counsellors, Assistants and other staff

Best wishes to all for the next study period.



ITU WTSA-20
GENEVA2022

Setting the standard

1 – 9 March 2022
Geneva, Switzerland

Thank you

Additional Slides

Supplemental Slides

- Terms of reference
- Management team
- Structure
- Other groups (JCAs and Regional Groups)
- Highlights of achievements / Projects
- Highlights of Questions
- Statistics
- Workshops (with SG17 leadership / participation)

Terms of Reference

- Original: ITU-T Study Group 17 is responsible for building confidence and security in the use of information and communication technologies (ICT). 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.

  Study Group 17 is also responsible for the application of open system communications, including directory and object identifiers, and for technical languages, the method for their usage and other issues related to the software aspects of telecommunication systems and test specification languages in support of conformance testing to improve the quality of Recommendations.

- Added: Intelligent Transport System security, DLT Security, QKD, and AI/ML.

ITU-T Study Group 17
Security

Management Team

Chairman	YOUM Heung Youl	Korea (Republic of)
Vice-Chairmen	DOLMATOV Vasiliy	Russian Federation
	ISHAG Muataz Elsadig	Sudan
	EVREN Gökhan	Turkey
	GONZALES Juan* (FUREY Inette)	USA
	LATROUS Wala Turki	Tunisia
	LIN Zhaoji	China (P.R.)
	MOLINARI Lia* (MIGUAL Hugo Darío)	Argentina
	MIYAKE Yutaka	Japan
	MBATHAS Eric Anicet* (KETTIN ZANGA Patrick-Kennedy)	Central Africa

* Replaced the previous vice-chairman in () from that member state appointed by WTSA16 during this study period.

ITU-T Study Group 17
Security

Working Parties (2017-2020) (I)

	WP Chairmen	WP vice-chairmen
WP 1/17	MIYAKE Yutaka (Japan)	DOLMATOV Vasiliy (Russian Federation), EVREN Gökhan (Turkey)
WP 2/17	NAKAO Koji (Japan)	GONZALEZ Juan (USA), FUREY Inette* (USA)
WP 3/17	TADDEI Arnaud (Broadcom)	BAI Xiaoyuan (China), LIN Zhaoji* (China)
WP 4/17	NAH Jae Hoon (Korea, Republic of) LIN Zhaoji (China), LI Kepeng* (Alibaba)	

* Replaced by the new leader during this study period.

TSB	YANG Xiaoya	Counsellor
	BILANI Joumana	Administrative assistant

ITU-T Study Group 17
Security

Working Parties (2021-) (II)

	WP Chairmen	WP vice-chairmen
WP 1/17	DOLMATOV Vasily (Russia)	KIM Jonghyun (Korea)
WP 2/17	MIYAKE Yutaka (Japan)	HU Zhiyuan (Nokia Shanghai Bell) MILLS Philip (UK)
WP 3/17	NAKAO Koji (Japan)	MOLINARI Lia (Argentina)
WP 4/17	NAH Jae Hoon (ETRI)	BAI Xiaoyuan (Alibaba)
WP 5/17	LIN Zhaoji (ZTE)	
TSB	YANG Xiaoya BILANI Joumana	Counsellor Administrative assistant

ITU-T Study Group 17
Security

Study Group Structure (2017 – 2020)

- WP 1/17, **Telecommunication/ICT Security**

  Security architectures/frameworks, Telecommunications information security management, Security aspects of telecommunication services, networks and Internet of Things, Security aspects for Intelligent Transport System.

- WP 2/17, **Cyberspace security**

  Cybersecurity, Countering spam, Security aspects for Distributed Ledger Technologies.

- WP 3/17, **Application security**

  Secure application services, Cloud computing security, Formal languages for telecommunication software and testing.

- WP 4/17, **Identity management and authentication**

  Telebiometrics, identity management and architectures, Generic technologies to support secure applications.

- Q1/17, Telecommunication/ICT security coordination

ITU-T Study Group 17
Security

Study Group Structure (2021 –)

- WP 1/17, **Security strategy and coordination**

  Security standardization strategy and coordination, Security for/by emerging technologies including quantum-based security

- WP 2/17, **5G, IoT and ITS Security**

  Security architecture and network security, Security for telecommunication services and Internet of Things, Intelligent transport system security.

- WP 3/17, **Cybersecurity and management**

  Telecommunication information security management and security services, Cybersecurity and countering spam.

- WP 4/17, **Service and application security**

  Secure application services, Cloud computing and Big data infrastructure security, Distributed Ledger Technology (DLT) security.

- WP 5/17, **Fundamental security technologies**

  Identity management and telebiometrics architecture and mechanisms, Generic technologies to support secure applications.

ITU-T Study Group 17
Security

SG 17-related other groups (I)

- JCA-IdM (Identity Management)
  - Established 2007
  - Co-Chairmen: Mr BARBIR Abbie, Aetna,
    Mr TAKECHI Hiroshi, NEC
    Mr PARK Keundug, Korea (Republic of)
    Mr YOUM Heung Youl, Korea (Republic of)
  - Represented: SGs 2, 3, 5, 9, 12, 13, 15, 16, 17, Decentralized Identify Foundation, FIDO Alliance, ISO/IEC JTC 1/SC 27/WG 5, ISO TC 307, Kantara Initiative, Mobile Driving License, NH-ISAC Identity working group, OASIS, OpenIdD Foundation, Soverin Foundation, SSI Open Standards, UPU,…
  - 6 meetings in this study period
- JCA-COP (Child Online Protection)
  - Established April 2012, dormant in this study period

SG 17-related other groups (II)

- SG17 Regional Group for Africa.
  - Created April 2015 in last study period
  - Held 3 meeting (2 physical + 1 virtual) and 2 informal gatherings this study period
- SG17 Regional Group for Arab.
  - Created March 2017
  - Held 3 meetings and one informal gathering this study period

Highlights of achievements (I)

- SG17 successfully transitioned into a core competency center on security attracting 130/190/262 (Min/Average/Max) participants.
- SG17 examined 1,179 contributions and 4,220 TDs.
- 100 new Recommendations, 96 revised Recommendations, 4 amended Recommendations, 8 new Supplements, 17 Technical Corrigenda, and 8 Technical Reports were approved under AAP, TAP or agreement.
- 3 Recommendations under TAP as of 2 February 2022
- 162 new work items established.
- 3 Lead Study Group responsibilities.
- 2 JCAs and 2 Projects.
- Increased collaboration with SDOs (e.g., joint texts).

Highlights of achievements (II)

- Lead study group for Security
  - Close coordination and collaboration with other SGs and SDOs on security and PII protection; particular focus has been placed upon partnerships and avoiding potential conflicts in the work.
  - Joint work with several SCs in ISO/IEC JTC 1.
  - Produced 7th edition of the "Security Manual" that promotes ITU-T's security work.
  - Produced 2nd edition of the Technical Report on successful use of security standards
  - Security Standards Roadmap and Security Compendium kept up-to-date.

Highlights of achievements (III)

- Lead study group for Security
  - Security collaboration arrangements between SG17 and SG13 on cloud computing security and Quantum key distribution, and between SG17 and SG20 on IoT security.
  - 11 workshops held on security.
  - Maintained an on-line listing of SG17 relationships with TCs of ISO and IEC and SCs of ISO/IEC JTC 1 (identifies nature of relation of joint work, common/twin text, cooperation mode, etc) (In response to WTSA-16 Resolution 7).

Highlights of achievements (IV)

- Lead study group for Identity Management
  - Continued collaboration with ISO/TC 307, OASIS and FIDO on IdM.
  - Continuation of Joint Coordination Activity on Identity Management (JCA-IdM).
- Lead study group for Languages and Description Techniques
  - Collaboration with ETSI MTS on TTCN-3.
  - Collaboration with JTC 1/SC 6 on ASN.1, OIDs and registration.
  - Collaboration with SDL Forum Society on SDL.

Question Highlights (I)

- **Telecommunication/ICT security coordination (2017 – 2020) / Security standardization strategy and coordination (2021 -)**
- **Management support**
- **Security coordination**
  - Within SG17, with ITU-T SGs, with ITU-D and externally.
  - Kept TSAG informed on security efforts.
  - Made presentations to workshops/seminars.
  - Maintained reference information on the LSG on security webpage.
- **Compendium of Security Recommendations**
  - Includes catalogs of approved security-related Recommendations and security definitions extracted from approved Recommendations.
- **Security Standards Roadmap**
  - Includes searchable database of approved ICT security standards from ITU-T and others (e.g., ATIS, ENISA, ETSI, IEEE, ISO/IEC JTC 1, IETF, OASIS, 3GPP, 3GPP2).
- **Security manual**
  - 7th edition produced.
- **Successful Use of Security Standards**
  - 2nd edition produced on how approved security-related ITU-T Recommendations can be successfully deployed

Question Highlights (II)

- **Security architecture and framework (2017 – 2020) / Security architecture and network security (2021 -)**
  - Network security architecture, SDN/NFV security, …
  - 6 new Recs, 1 new Supplement.
- **Telecommunication information security management (2017 – 2020) / Telecommunication information security management and security services (2021 -)**
  - ISM framework, risk/asset/incident management, PII code of practice, …
  - 5 new Recs, 1 revised Rec, 2 new Supplements, 1 Corrigendum.
- **Cybersecurity (2017 – 2020) / Cybersecurity and countering spam (2021 -)**
  - In support of WTSA-16 Resolution 50.
  - Cybersecurity information exchange framework.
  - 11 new Recs, 1 revised Rec, 2 new Amendments, 2 new Technical Reports.
- **Countering spam by technical means (2017 – 2020)**
  - In support WTSA-16 Resolution 52
  - Countering spam in voice spam, mobile messaging spam, …
  - 3 new Recs, 2 new Supplements.

Question Highlights (III)

- **Security aspects of telecommunication services, networks and Internet of Things (2017 – 2020) / Security for telecommunication services and Internet of Things (2021 -)**
  - IoT security, SDN security, smart-grid security, 5G security, IPTV security, …
  - 14 new Recs; 1 Amendment; 1 Corrigendum; 1 new Supplement.
- **Secure applications services**
  - Application security, Fintech security, …
  - 8 new Recs.
- **Cloud computing and Big data infrastructure security**
  - Cloud computing security framework, software as a service security, CaaS/IaaS/NaaS security, Big Data as a Service, …
  - 6 new Recs.
- **Telebiometrics (2017 – 2020)**
  - Telebiometrics, e-Health & telemedicines security protocols
  - 3 new Recs, 1 revised Rec, 1 Corrigendum.

Question Highlights (IV)

- **Identity management architecture and mechanisms (2017 – 2020) / Identity management and telebiometrics architecture and mechanisms (2021 -)**
  - entity authentication assurance, FIDO authentications, …
  - 4 new Recs, 2 revised Recs, 1 Supplement.
- **Generic technologies (Directory, public key infrastructure (PKI), privilege management infrastructure (PMI), Abstract Syntax Notation One (ASN.1), object identifiers (OIDs)) to support secure applications (2017 – 2020) / Generic technologies (such as Directory, PKI, Formal languages, Object Identifiers) to support secure applications (2021 -)**
  - X.500-series on Directory including X.509 on PKI, Abstract Syntax Notation One (ASN.1), Object Identifiers (OIDs) and associated registration authorities, certified e-mail.
  - ASN.1 and OID projects (see separate slide)
  - 5 new Recs, 20 revised Recs, 14 technical corrigenda to ASN.1, 1 TR, 1 Supplement.

Question Highlights (V)

- **Formal languages for telecommunication software and testing (2017 – 2020)**
  - SDL-2010, UML, MSC, URN, Testing and Test Control Notation (TTCN-3), …
  - 44 revised Recs, 2 implementation guides.
- **Security aspects for Intelligent Transport System (2017 – 2020) / Intelligent transport system (ITS) security (2021 -)**
  - ITS security
  - 6 new Recs.
- **Security aspects for Distributed Ledger Technologies (2018 - 2020) / Distributed ledger technology (DLT) security (2021 -)**
  - DLT security
  - 7 new Recs.
- **Security for/by emerging technologies including quantum-based security**
  - QKD/Emerging technologies security
  - 1 new Rec.

ASN.1 and OID Projects

- The SG17 ASN.1 project & the OID project continue to assist:
  - Existing users of ASN.1 and object identifiers (OID), within and outside of ITU-T (e.g., ITU-T SG 16, ISO/IEC JTC 1/SC 27, ISO TC 215, 3GPP, etc.).
  - Countries (e.g., Algeria, Andorra, Argentina, Bolivia, Bosnia and Herzegovina, Brazil, Honduras, Lithuania, Malaysia, Mongolia, Nicaragua, Oman, Philippines, Rwanda, and Sri Lanka), and in particular developing countries, in setting a national registration authority for OIDs.
- These projects provided speakers and tutorial material and coordinated the provision of tool support to users and the contents of related websites.
- In cooperation with the TSB, a database is being maintained that contains a machine-processable copy of the current version of all ASN.1 modules that are included in ITU-T Recommendations. Contains modules from over 200 ITU-T Recommendations. ASN.1 module database: https://www.itu.int/ITU-T/recommendations/fl.aspx?lang=1
- The International OID tree has more than 1 643 596 registrations as of 16 November 2021. OID Repository: http://www.oid-info.com.

Statistics (I)

- 77 Rapporteur group meetings held
  (stand-alone, e-meetings, or collaborative with ISO/IEC JTC 1/SC 6, 27)
- 1179 contributions received
  (excluding Rapporteur meetings)
- 10 SG17 meetings, 3 special SG17 e-plenary meetings and 86 RGMs held
- Working Party meetings held in conjunction with the 10 SG17 meetings
- Min/Average/Max SG17 participants: 130/190/262

Statistics (II)

- 12 Questions assigned by WTSA-16.
- 3 Questions generated during study period.
- 2,163 participants
- 162 new work items.
- 4,220 TDs.
- 12 Questions proposed for next study period.

Workshops (I)

SG17 organized nine ITU workshops:

- **Joint ITU/WHO 2nd Digital COVID-19 certificate**
  virtual, 27 November 2021, 13:00-18:00 CEST.
- **Joint ITU/WHO Digital vaccination certificate**
  virtual, 11 August 2021, 13:00-18:00 CEST.
- **Fintech Security**
  Geneva, Switzerland, 26 August 2019.
- **Quantum Information Technology (QIT) for Networks**
  Shanghai, China, 5-7 June 2019.
- **Artificial Intelligence/Machine Learning and Security**
  Geneva, Switzerland, 21 January 2019.
- **Advanced Cybersecurity Attacks and Ransomware**
  Geneva, Switzerland, 28 August 2018.
- **5G Security**
  Geneva, Switzerland, 19 March 2018.
- **Security Aspects of Intelligent Transport System**
  Geneva, Switzerland, 28 August 2017.
- **Security Aspects of Blockchain**
  Geneva, Switzerland, 21 March 2017.

Workshops (II)

SG17 organized two mini workshops and one ITU event:

- **Cybersecurity Challenges in Automated Driving**
  Geneva, 26 August 2019, 14:30-17:30.
- **Secure Quantum Communications**
  Geneva, 24 January 2019, 14:30-17:30.
- **Decentralized identifiers and blockchain**
  BDT Emerging Technology Week 2021, Virtual, 8 July 2021, 14:00-15:00.