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| **Abstract:** | This document contains the Report of the ITU-T SG11 on lead study group activities (January-May 2023). |

1. **Background**

According to Resolution 2 of WTSA-20, ITU-T Study Group 11 is the lead study group on:

* signalling and protocols;
* establishing test specifications, conformance and interoperability testing for all types of networks, technologies and services that are the subject of study and standardization by all ITU-T study groups;
* combating counterfeiting of ICT devices;
* combating the use of stolen ICT devices.
1. **General information**

SG11 conducted its second meeting in Geneva from 10 to 19 May 2023. During this meeting, SG11 consented five draft Recommendations, approved one technical report and started 29 new work items (see [SG11-TD256/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0256) and [SG11-TD257/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0257)).

The next SG11 meeting is planned to be held in Geneva from 10 to 20 October 2023 (TBA).

1. **Report of ITU-T SG11 on lead study group activities (January – May 2023)**
	1. **Signalling and protocols**

The draft Recommendation ITU-T Q.3647 (ex. Q.Sig\_Req\_ETS\_IMS\_roaming) “Signalling requirements for emergency service in IMS roaming environment”, which was consented by WP1/11 and WP3/11 in December 2022, was finally approved in February 2023.

Following decision of WP1/11, WP2/11 and WP3/11, 15 new work items were started. More details are available in executive summary [here](https://www.itu.int/en/ITU-T/studygroups/2022-2024/11/Pages/exec-sum-202212.aspx).

In May 2023, SG11 consented the Corrigendum 1 to ITU-T Q.3063 “Signalling procedures of calling line identification authentication”. Also, SG11 agreed Technical Report TR-NCDP “Session-layer network coding protocol for multicast data transmission”.

Finally, in May 2023, SG11 started seven signalling-related new work items. More details are available in [SG11-TD257/GEN](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0257/en).

**IMT-2020 and managed P2P communications related issues**

With regard to IMT-2020 related aspects, in February 2023, the following draft new Recommendations were approved following AAP procedure:

* ITU-T Q.5004 (ex. Q.LiteIMS-SA) “Signalling architecture of Lite IMS for IMT-2020 network and beyond”;
* ITU-T Q.5005 (ex. Q.IMT2020-SAO) “Requirement, framework and protocols for signalling network analyses and optimization in IMT-2020”.

In May 2023, SG11 consented the following draft Recommendations:

* ITU-T Q.5006 (ex.Q.hns) “Signaling requirements for hierarchical network slicing service”.
* ITU-T Q.5026 (ex Q.DIVS-IMT2020) “Signalling Requirements and Protocol for Providing Network-oriented Data Integrity Verification Service based on Blockchain in IMT-2020 network”
* ITU-T Q.5027 (ex Q.IITSN) “Protocol for IMT-2020 network Integration with Time Sensitive Network”.

Also, in May 2023 SG11 started seven IMT-2020-related new work items and two P2P-related new work items. More details are available in [SG11-TD257/GEN](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0257/en).

**Signalling of Computing Power Networks (CPN)**

In May 2023, SG11 consented the first draft Recommendation ITU-T Q.4140 (ex.Q.CPN) “Signalling requirements for service deployment in computing power network”. In this regard, SG11 closing plenary agreed to open a new Q.sub-series for CPN-related Recommendations which focus on signalling aspects – “Q.4140-Q.4159: Protocols and signalling for Computing Power Network”.

Also, SG11 has made progress on relevant ongoing work items on CPN as follows:

* Q.CPN-TP-SA “Signalling architecture of transaction platform in CPN”.
* Q.CPN-NC-SA “Signalling architecture of network control functions for CPN”.
* Q.CSO “Signalling requirements for cross-domain service orchestration of the computing power network”.
* Q.cpi “Signalling requirements for computing power identification in computing power network”.
* Q.BNG-INC “Requirements and signalling of intelligence control for the border network gateway in computing power network”.
* Q.SASO “Signalling architecture of service orchestration for computing power network”.
* Q.PCNC-FMSC “Protocol for supporting computing and network convergence in fixed, mobile and satellite convergence in IMT-2020 network and beyond”.

**Security issues of SS7 and other protocols**

Since 2016, SG11 continues its studies on implementation of security measures on signalling level in order to cope with different types of attacks on existing ICT infrastructure and services (e.g. OTP intercept, calls intercept, spoofing numbers, robocalls, etc.).

Among the solutions to be used against such attacks is the use of digital signature (digital certificates) in the signalling exchange which may guarantee the trustworthiness of the sender.

In 2020 and further in 2022, ITU-T SG11 developed three key standards which define the way on how digital certificate can be inserted into signalling exchange (ITU-T Q.3057, Q.3062 and Q.3063).

SG11 organized series of Webinars and Workshops to provide overview of existing signalling protocols and their security, as well as the way forward.

In May 2023, SG11 started a new work item Q.TSCA “Procedure for issuing digital certificates for signalling security”. The baseline text is available in [SG11-TD401/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0401).

More details about SG11 results and related events on signalling security are available on dedicated web page at: <https://itu.int/go/SIG-SECURITY>.

**QKDN protocols**

SG11 has made progress on QKDN signalling requirements and protocols, including:

* Q.QKDN\_profr “Quantum key distribution networks – Protocol framework”;
* Q.QKDN\_Ak “Protocols for Ak interface for QKDN”;
* Q.QKDN\_Kx “Protocols for Kx interface for QKDN”;
* Q.QKDN\_Kq-1 “Protocols for Kq-1 interface for QKDN”;
* Q.QKDN\_Ck “Protocols for Ck interface for QKDN”.

Also, in May 2023 SG11 started two more new work items on QKDN. More details are available in [SG11-TD257/GEN](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0257/en).

* 1. **Establishing test specifications, conformance and interoperability testing for all types of networks, technologies and services that are the subject of study and standardization by all ITU‑T study groups**

**ITU-T Recommendations on conformance and interoperability testing**

SG11 consented draft new Recommendation ITU-T Q.4070 (ex Q. vbng-iop-ts) “Test suite for interoperability testing of virtualized broadband network gateway”.

Among the topics of new work items are: the testing of the robotics on the model network, performance monitoring of SRv6 network, methods and metrics for monitoring ML/AI in future networks including IMT-2020, monitoring parameters for protocols and resources of SDN/NFV and SD-WAN, interoperability testing for cloud-based control plane of vBNG, interoperability testing between CSP/CSC for DaaS, interoperability testing of orchestration in NGNe, testing requirements of DPI device.

In total, nine new work items on testing and monitoring aspects were started. More details are available in [SG11-TD257/GEN](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0257/en).

**Implementation of ITU C&I Programme**

In May 2023, based on received contributions, SG11 revised its C&I action plan. Among other changes the updated SG11 C&I action plan defines a new procedure for collecting inputs related to:

* [Reference Table](https://www.itu.int/en/ITU-T/C-I/Pages/CI-reference.aspx) of standards which are used for C&I assessment;
* [Pilot Projects](https://www.itu.int/en/ITU-T/C-I/Pages/CI-projects-table.aspx) for conformity assessment against ITU-T Recommendations.

Also, it was agreed to terminate the [living list](https://www.itu.int/en/ITU-T/C-I/Pages/CI-living-list-table.aspx) of Recommendations and related specifications within key technologies suitable for C&I testing as it is not updated since 2016 and it partially duplicates information contained in the reference table.

As a new procedure, SG11 Action plan defines (see [SG11-TD507/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0507)):

*“ITU C&I TSB secretariat is requested to maintain the reference table and list of pilot projects based on received inputs from respective SGs.*

*The updates can be provided to TSB secretariat either via mailbox* *conformity@itu.int* *or via liaison statements addressed to SG11. TSB can update reference table and list of pilot projects without SG11 consideration and approval.*

*In case TSB receives request for registering ICT products in ITU Product Conformity Database which application refers to the test specifications developed by A.5 qualified SDOs, which are not listed in the current version of the Reference Table, TSB needs to inform respective SG on its plan to add reference to such test specification in the Reference table accordingly. The relevant SG or its management may provide their comments to TSB directly within particular highlighted timeframe.”*

The [ITU C&I Portal](https://www.itu.int/en/ITU-T/C-I/Pages/default.aspx) will be updated accordingly.

**Conformity Assessment Steering Committee (CASC)**

The fifteen meeting of the ITU-T Conformity Assessment Steering Committee (CASC) was held in Geneva on 12 May 2023 during the ITU-T SG11 meeting. TSB gave a comprehensive presentation about status of received applications from Testing Laboratories which seek ITU recognition ([TD385/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-220706-TD-GEN-0123)). The presentation provides information about successfully registered Testing Laboratories and the applications which were rejected due to non-compliance with the criteria defined in ITU-T Guideline. This activity goes in close collaboration with the International Laboratory Accreditation Cooperation (ILAC, <https://ilac.org/>). The [Memorandum of Understanding](https://www.itu.int/en/ITU-T/extcoop/Documents/mou/MoU-ITU-T-IAF-ILAC-20220824.pdf) among ITU-T, the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF) was updated and signed in August 2022.

The description of the procedure and recognition criteria are defined in the [ITU-T Guideline on Testing Laboratory Recognition procedure](https://www.itu.int/en/ITU-T/studygroups/com11/casc/Documents/TL-RP_pub_2022-07-15.pdf) which were updated by ITU-T SG11 in July 2022.

In general, the following results achieved as of April 2023:

* First eight laboratories were successfully registered in the ITU Testing Laboratories Database (<https://itu.int/go/tldb>) in September 2022 (see ITU [newslog](https://www.itu.int/hub/2022/10/labs-gain-official-recognition-for-testing-conformance-with-itu-standards/)).
* As of April 2023, in total, there are 11 registered TLs which were listed in the [ITU Operational Bulletin](https://www.itu.int/pub/T-SP-OB)s ([OB.1253](https://www.itu.int/pub/T-SP-OB.1253-2022), [OB.1256](https://www.itu.int/pub/T-SP-OB.1256-2022), [OB.1263](https://www.itu.int/pub/T-SP/publications.aspx?parent=T-SP-OB.1263-2023) and [OB.1266](https://www.itu.int/pub/T-SP-OB.1266-2023)).

ILAC representative presented an ILAC Report and gave a presentation about ILAC Testing Laboratory Assessment Procedure ([SG11-TD398/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-220706-TD-GEN-0144)). It was noted that the final ILAC Assessment Procedure in the field of Telecommunications is supposed to be approved by ILAC in 2023.

It was noted at the meeting that according to Resolution 76, WTSA, ITU-T SGs are encouraged to provide to CASC a list of ITU-T Recommendations which could be candidates for the certification scheme. TSB was encouraged to collaborate with IAF on this matter.

SG11 noted the need to organize a webinar aimed at promoting awareness and increasing adherence to the ITU test laboratory recognition procedure. The relevant webinar is planned to be organized in 2023.

Also, CASC revised list of ITU-T technical experts who were appointed based on [ITU-T Guideline](https://www.itu.int/en/ITU-T/studygroups/com11/casc/Documents/Guideline_CASC_EXP_RP-10-2019.pdf) “ITU-T CASC procedure to appoint ITU-T technical experts”.

All details are available in CASC report ([SG11-TD302/GEN](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0302/en)).

* 1. **Combating counterfeiting and the use of stolen ICT devices**

SG11 started series of webinars on combating counterfeiting and stolen ICT devices. The [first Episode](https://www.itu.int/en/ITU-T/webinars/cs-ict/20230215/Pages/default.aspx) “Existing challenges and solutions on combating counterfeiting of ICT devices” run virtually on 15 February 2023.

The second Episode is planned to be held during next SG11 meeting in Geneva, particularly on 13 October 2023 (TBC). Among other topics, it will also focus on exploring new opportunities for collaboration with organizations such as WIPO, WTO, WCO and Interpol.

SG11 has made progress on two ongoing new work items and started two new work items. More details are available in [SG11-TD257/GEN](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0257/en).

1. **Preparation for WTSA-24**

The SG11 started preparation for WTSA-24. In May 2023, SG11 reviewed all the proposed revised Question texts and text for the mandate of SG11 according to the received contributions, based on the current list of Questions and SG11 mandate defined in [SG11-TD259/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0259) and [SG11-TD260/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0260) respectively.

The updated Questions texts as well as proposed changes for the SG11 mandate and lead roles are available in [SG11-TD264-R1/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0264) and [SG11-TD263/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0263).

The detailed report of the SG11 NSP-WTSA sessions is available in [SG11-TD524-R1/GEN](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG11-230510-TD-GEN-0524).

1. **ITU-T SG11 Workshops and Webinars**

ITU continues organizing series of events related to SG11 activities. Since January 2023, the following events were organized:

* **Series of webinars on combating counterfeiting and stolen ICT devices.
Episode 1: Existing challenges and solutions on combating counterfeiting of ICT devices** (virtual, 15 February 2023, <https://itu.int/go/WB-CS-01>)

The Webinar provided overview of existing issues and challenges on circulation of counterfeit ICT devices that different stakeholders face for the time being. It shed light on the existing solutions and ongoing standardization activities. The implementations of relevant ITU-T Recommendations were also highlighted at the Webinar.

The presentations, recording as well as Q&A Transcript are available on event’s webpage.

* **ITU Forum “Future networks”** (Tashkent, Uzbekistan, 23-25 May 2023, <https://www.itu.int/en/ITU-D/Regional-Presence/CIS/Pages/EVENTS/2023/Tashkent-FN.aspx>)

The Forum is aimed at discussing trends in Future Networks development, conformance and interoperability testing, use cases and best practices from different countries.

It was collocated with C&I training and ITU-T Study Group 11 Regional Group meeting for Eastern Europe, Central Asia and Transcaucasia (SG11RG-EECAT).

1. **ITU-T Focus Group on Testbeds Federations for IMT-2020 and beyond (FG-TBFxG)**

Since its first meeting in April 2022, FG-TBFxG organized four meetings (April, July, November 2022 and March 2023) and made a good progress. Currently, FG-TBFxG have collected 12 use cases, and there are 11 ongoing work items, four of which are on mature stage and planned to be finalized soon.

Based on the request received from FG-TBFxG, SG11 agreed to extend the FG-TBFxG lifetime until June 2024.

The fifth FG-TBFxG meeting is to be held fully virtually from 3 to 5 July 2023.

All interested parties are encouraged to subscribe to Focus Group mailing list (fgtbf@lists.itu.int) [here](https://www.itu.int/myworkspace#/Mailing) (see instructions [here](https://www.itu.int/en/ITU-T/focusgroups/tbfxg/Documents/Quick_steps-subscribe_to_fgtbf_mailing_list.pdf)).

More details are available on the Focus Group webpage at: <https://itu.int/go/fgtbf>.

In the meantime, in order to attract more stakeholders to focus group activities, FG-TBFxG is organizing a webinar the **Episode #27: Digital transformation of testing: federated testbeds as a service** which will be held on 21 June 2023. It will answer a key question whether testing activities may migrate to virtual environment and whether testing as a service based on federated testbeds can facilitate enabling quicker time-to-market for products and services. It will also examine up-to-date ecosystem of testbeds, including existing use cases and clarify on how federated testbeds framework defined in ITU-T Q.4068 could help with such challenge.

1. **SG11 Regional Groups**

There are two Regional Groups of SG11:

* SG11RG-AFR: Study Group 11 Regional Group for Africa;
* SG11RG-EECAT: Study Group 11 Regional Group for Eastern Europe, Central Asia and Transcaucasia.

**SG11RG-EECAT: Study Group 11 Regional Group for Eastern Europe, Central Asia and Transcaucasia.**

SG11RG-EECAT meeting took place in Tashkent, Uzbekistan from 23 to 25 May 2023. It was collocated with ITU Forum “Future networks” and C&I training which were held at the same venue.

Four draft contributions, which were agreed to be submitted from EECAT members to next SG11 meeting, were prepared during this meeting. All details are available in the SG11RG-EECAT report ([SG11RG-EECAT-TD9](https://www.itu.int/md/T22-SG11RG.EECAT-230523-TD-PLEN-0009/en)).

The next meeting of SG11RG-EECAT is planned to be held in 2024 (TBC).

**SG11RG-AFR: Study Group 11 Regional Group for Africa**

There were no Regional Group meetings in the period from January to May 2023.

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