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|  | INTERNATIONAL TELECOMMUNICATION UNION  **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2022-2024 | | TSAG-TD032 |
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| **TD** | | | |
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| **Title:** | | ITU-T SG9 Lead Study Group report | |
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| **Abstract:** | This document provides a report of SG9 on lead study group activities on integrated broadband cable networks and audiovisual content delivery over cable networks |

1. SG9 in the new study period

The first Study Group 9 meeting in the study period 2022-2024 was held fully virtual, from 6 to 14 September 2022. The SG9 meeting was chaired by Mr Satoshi Miyaji (KDDI, Japan), who was assisted by Mr Stefano Polidori (TSB Counsellor) and was attended by 67 participants from 14 countries. All sessions were held using MyMeetings remote participation tool.

Co-located with SG9, a meeting of the Intersector Rapporteur Group on Audiovisual Accessibility (IRG-AVA) was organized on 7 September and was attended by 21 participants. IRG-AVA serves as a collaborative platform to progress the ongoing draft Recommendation of Question 11/9 “Accessibility to cable systems and services”.

Since the beginning of the previous study period 2017 – 2022, the SG9 management team have been conducted some approaches to increase the SG9 momentum including organising meetings outside Geneva and co-locating a series of workshops on “Future of Television for *regions*”. Throughout the study period 2017 – 2022, the number of attendees, the number of contributions and the number of deliverables approved increased as compared to the study period 2013 – 2016. Since 2021 there wasn’t another 1st meetings of SG9 in any Study Period with such a high number of participants.

At the first meeting, SG9 confirmed its mandate and lead study group roles as follows:

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| **ITU‑T Study Group 9 is responsible for studies relating to:**  • *use of telecommunication systems for contribution, primary distribution and secondary distribution of audiovisual content, e.g. television programmes and related data services, including interactive services and applications, providing advanced capabilities, e.g. ultra-high definition and high-dynamic range, 3D, virtual reality, augmented reality and multiview;*  *• use of cable networks, e.g. coaxial cable, optical fibre, hybrid fibre coaxial (HFC), etc., to also provide integrated broadband services. The cable network, primarily designed for audiovisual content delivery to the home, also carries time‑critical services like voice, gaming, video-on-demand, interactive and multiscreen services, etc. to customer premises equipment (CPE) in the home or enterprise;*  *• use of cloud computing, artificial intelligence (AI) and other advanced technologies to enhance audiovisual content contribution and distribution as well as integrated broadband services over the cable networks;*  *• use of accessibility services (like captioning, audio caption) and new interaction technologies (like haptic, gesture, eye tracking and so on) to enhance accessibility of audiovisual content and related data services for people with different ranges of abilities.*  **Lead study group roles:**   1. *Lead study group on integrated broadband cable network* 2. *Lead study group on audiovisual content delivery over cable networks* |
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SG9 also confirmed the composition of the management of ITU-T Study Group 9 as follows:

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| Role | Name |
| Chairman | Mr Satoshi MIYAJI (KDDI, Japan) |
| Vice-chairman | Mr Blaise Corsaire MAMADOU (Central African Rep.) |
| Vice-chairman | Mr TaeKyoon KIM (ETRI, Korea Rep. of) |
| Vice-chairman | Mr Zhifan SHENG (ABS, China) |
| Vice-chairman | Mr Pradipta BISWAS (Indian Administration / Indian Institute of Science) |
| Counsellor | Mr Stefano POLIDORI (TSB, ITU) |
| Administrative assistant | Ms Hiba Tahawi (TSB, ITU) |

The Working Party structure and its leadership were approved by the SG9 opening plenary as contained in [SG9-TD3-R1](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0003/en), see below:

* **WP1** *“****Cable transport and terminals, including video and data****”* (Q1, 2, 4, 6 & 7), and
* **WP2** *“****Cable-related platforms and applications****”* (Q3, 5, 8, 9 & 11).

WP1 is more related to the first lead SG role (#1) and WP2 is more related to the second lead SG role (#2). In addition, Q10 and IRG-AVA, will report to the SG9 Plenary.

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|  | SG9 Structure | Q/IRG | Titles |
| PLEN | PLENARY of SG9   * Satoshi MIYAJI *(SG9 Chair) (KDDI, Japan)* | Q10 | Work programme, coordination and planning |
| IRG-AVA | Audiovisual Media Accessibility |
| WP1 | WP1/9: Cable transport and terminals, including video and data   * Zhifan SHENG *(WP1/9 Chair) (ABS, China)* * Tatsuo SHIBATA *(WP1/9 Vice-chair) (Japan\*)* * Vacant *(WP1/9 Vice-chair)* | Q1 | Transmission and delivery control of television and sound programme signal for contribution, primary distribution and secondary distribution |
| Q2 | Methods and practices for conditional access and content protection |
| Q4 | Guidelines for implementations and deployment of transmission of multichannel digital television signals over optical access networks and Hybrid Fibre-Coaxial (HFC) |
| Q6 | Functional requirements for terminal devices of the integrated broadband cable network |
| Q7 | Transmission control and interfaces (MAC layer) for IP and/or packet-based data over integrated broadband cable networks |
| WP2 | WP2/9: Cable-related platforms and applications   * Taekyoon KIM *(WP2/9 Chair) (ETRI, Korea)* * Eric WANG *(WP2/9 Vice-chair) (Huawei, China)* * Pradipta BISWAS *(WP2/9 Vice-chair) (Indian Institute of Science, India)* | Q3 | AI-enabled enhanced functions over integrated broadband cable network |
| Q5 | Software components application programming interfaces (APIs), frameworks and overall software architecture for advanced content distribution services within the scope of Study Group 9 |
| Q8 | The Internet protocol (IP) enabled multimedia applications and services for cable television networks enabled by converged platforms |
| Q9 | Requirements, methods, and interfaces of the advanced service platforms to enhance the delivery of audiovisual content, and other multimedia interactive services over integrated broadband cable networks |
| Q11 | Accessibility to cable systems and services |

\*Note: Mr Tatsuo SHIBATA (Japan Cable Laboratories) will act as WP1 vice-chair on behalf of the Government of Japan.

In addition, SG9 has agreed to the List of SG9 Rapporteurs and Associate Rapporteurs for the Study Period 2022-2024 as found in [SG9-TD5-R6](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0005/en), and also agreed on the list of liaison officers as found in [SG9-TD6-R3](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0006/en).

1. Summary of activities

2.1 Overview

The SG9 meeting in September 2022 received forty-two (42) contributions, and a total of four (4) revised draft Recommendations were finalized and agreed for AAP Consent as follows.

| **Question** | **AAP/TAP** | **Rec** | **Status** | **Title** | **Final TD** | **A.5  justification** |
| --- | --- | --- | --- | --- | --- | --- |
| Q1/9, Q7/9 | AAP | **ITU-T J.224** (ex. J.224-rev) | Revised | Fifth-generation transmission systems for interactive cable television services – IP cable modems | [TD181](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0181/en) | [TD189](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0189/en) |
| Q1/9, Q7/9 | AAP | **ITU-T J.225** (ex. J.225-rev) | Revised | Fourth-generation transmission systems for interactive cable television services – IP cable modems | [TD182](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0182/en) | [TD190](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0190/en) |
| Q6/9 | AAP | **ITU-T J.1611** (ex. J.1611-rev) | Revised | Functional requirements for Smart Home Gateway | [TD155](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0155/en) | [TD176](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0176/en) |
| Q10 | AAP | **ITU-T J.1** (ex. J.1-rev) | Revised | Terms, definitions and acronyms for television and sound transmission and integrated broadband cable networks | [TD192](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0192) | N/A |

In addition, the following Supplement was Agreed for publication by SG9 at this meeting.

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| Question | Approval | Document | Kind of document | Title | Final TD |
| Q1/9, Q7/9 | Agreement | J Supplement 10 (ex. J.sup10-rev) | Supplement | Correspondence between CableLabs DOCSIS Specifications and ITU-T J-series Recommendations | [TD183-R1](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0183/en) |

At this SG9 meeting, a total of fifteen (15) new work items were approved to initiate their works as below:

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| **#** | **Q.** | **Acronym** | **kind of publication** | **Status** | **Title** | **TD** | **A.1 /A.13 Justification template** |
| 1 | 1/9 4/9 | J.cable-5G | Draft Rec. | New | Functional requirements for cable television services to use 5G radio system | [TD179](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0179/en) | [ANNEX C](#Annex_C) of TD131 (A.1) |
| 2 | 1/9 | J.cable-rf-to-ip | Draft Rec. | New | Requirements of cable television system for migration from RF to IP | N/A | [ANNEX D](#Annex_D) of TD131 (A.1) |
| 3 | 1/9 7/9 | J.HiNoC3-PHY | Draft Rec. | New | Physical layer specification for third-generation HiNoC | [TD177](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0177/en) | [ANNEX E](#Annex_E) of TD131 (A.1) |
| 4 | 1/9 | J.TR.WiFiTV | Technical Report | New | Secondary distribution of digital television and audiovisual content to portable devices using Wi-Fi | [TD180](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0180/en) | [ANNEX G](#Annex_G) (A.13) |
| 5 | 2/9 | J.FSR-REQ | Draft Rec. | New | Factual subscriber-base reporting and protected content delivery in conditional access system - Requirements | [TD152](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0152/en) | [ANNEX C](#Annex_C) of TD132 (A.1) |
| 6 | 2/9 | TR-FSR | Technical Report | New | Technical report on factual subscriber-base reporting and protected content delivery in conditional access system | N/A | [ANNEX D](#Annex_D) of TD132 (A.13) |
| 7 | 4/9 | J.Sup11 (Rev) | Supplement | Revised | Guidelines for installing a digital television service for cable networks based on ITU-T Recommendations | N/A | [ANNEX](#Annex_C) C of  TD134 (A.13) |
| 8 | 6/9 | J.1612 (Rev) | Draft Rec. | Revised | The Architecture for Smart Home Gateway” | N/A | [ANNEX C](#Annex_C) of TD136 (A.1) |
| 9 | 7/9 | J.FSPEC-DVCS | Draft Rec. | New | Functional Specification for IP-based Digital Video Convergence Service | [TD173](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0173/en) | [ANNEX C](#Annex_C) of TD137 (A.1) |
| 10 | 7/9 1/9 | J.HiNoC3-MAC | Draft Rec. | New | MAC layer specification for third-generation HiNoC | [TD178](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0178/en) | [ANNEX E](#Annex_E) of TD137 (A.1) |
| 11 | 7/9 | JSTR.STBN | Technical Report | New | The analysis of standards trends for scalable transmission in broadband network | N/A | [ANNEX F](#Annex_F) of TD137 (A.13) |
| 12 | 8/9 | J.mma-req | Draft Rec. | New | Requirements of microservice architecture for audio-visual media in the converged media cloud | [TD163](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG09-220906-TD-GEN-0163) | [ANNEX C](#Annex_C) of TD138 (A.1) |
| 13 | 8/9 | J.mma-spec | Draft Rec. | New | Specification of microservice architecture for audio-visual media in the converged media cloud | [TD164](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG09-220906-TD-GEN-0164) | [ANNEX D](#Annex_D) of TD138 (A.1) |
| 14 | 10/9 | J.1 (Rev) | Draft Rec. | Revised | Terms, definitions and acronyms for television and sound transmission and integrated broadband cable networks | [TD192](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG09-220906-TD-GEN-0192) | [Annex C](#Annex_C) of TD140 (A.1) |
| 15 | 11/9 | JSTR.LCAP | Technical Report | New | Technical advances, challenges, and best practices in live captioning | [TD159](https://www.itu.int/md/T22-SG09-220906-TD-GEN-0159/en) | [ANNEX C](#Annex_C) of TD141 (A.13) |

2.2 Highlight related to Lead Study Group Role #1 “Lead study group on integrated broadband cable network”

SG9 received Contributions proposing that cable television network interconnects with wireless access networks for the last mile connectivity. Japan Cable Laboratory proposed interconnection with a local 5G wireless network (draft Recommendation J.cable-5G) and Indian administration proposed a technical report on Wi-Fi network utilization (draft Technical Report J.TR.WiFiTV). The concept of these two proposals are very similar, but the type of the wireless network is different.

In addition, SG9 started a new work item on requirement of cable television system that plans to migrate from RF-based to IP-based (draft Recommendation J.cable-rf-ip).

With regard to high-speed network over coaxial (HiNoC), SG9 initiated new work items on physical layer specification and MAC layer specification of the third generation HiNoC, which are following the requirement Recommendation J.198.1 approved in January 2022.

* 1. Highlight related to Lead Study Group Role #2 “Lead study group on audiovisual content delivery over cable networks”

Indian administration proposed new work items related to conditional access system that is equipped with factual subscriber-base reporting functionality as well as protected content delivery capability. There initiated two work items, i.e., draft Recommendation J.FSR-REQ and draft Technical Report J.TR-FSR.

SG9 agreed to start new work items on content delivery architecture in the converged media cloud that has microservice implementation capabilities. Requirements (draft Recommendation J.mma-req) and specification (draft Recommendation J.mma-spec) were initiated as new work items.

SG9 also started the certification process of Recommendation A.5 for Khronos, which is a SDO responsible for the area of computer graphics, virtual reality, and so on.

3 Next meeting

Next SG9 meeting is currently scheduled to be held in March or April 2023 (TBC). More information will be provided on the SG9 website when available. A co-located workshop on “The Future of TV in the regions” may be organized in collaboration with ITU-R, ITU-D and ITU regional offices (TBC).

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