

ITU-T

The leader in Multimedia Recommendations

ITU-T Study Group 16 is responsible for ITU-T Recommendations on multimedia service definition and multimedia systems, including the associated terminals, modems, protocols and signal processing. Study Group 16 is also lead ITU-T Study Group for multimedia services, systems and terminals.

ITU-T SG16 is active in all aspects of multimedia standardization including:

- Multimedia terminals
- Multimedia systems and protocols
- Multimedia architecture
- Conferencing
- Multimedia Quality of Service
- Interworking
- Mobility
- Security
- Speech and audio coding
- Video coding
- PSTN Modems and interfaces
- Data protocols
- Facsimile terminals
- Accessibility

More information on the work of Study Group 16 please check the ITU-T website at: <http://www.itu.int/ITU-T/studygroups/com16>

Examples of key technologies standardized in ITU-T Study Group 16

Multimedia over IP

H.323 – is the international standard and the market leader for IP telephony. H.323 networks in operation today are carrying hundreds of millions of minutes of voice traffic per month. H.323 has proven to be an extremely scalable solution that meets the needs of both service providers and enterprises.

H.248 – has been developed in close cooperation with the IETF and defines the protocols used by Media Gateways, a vital component in VoIP networks.

Speech Coding

G.729 – is the standard for speech coding at 8 kbit/s with toll quality. It is now widely used in many multimedia applications. Annexes to the Recommendation exist to specify a low complexity version, floating point versions, and silence suppression techniques.

Video Coding

Building on the success of H.262 and H.263, Study Group 16 has worked in conjunction with the MPEG committee of ISO/IEC to define the next generation of video coding technology in a new Joint Video Team (JVT). The standard – H.264 (also known as MPEG-4/Part 10) – was adopted in May 2003. Due to its excellent performance and compression gains when compared to legacy video codecs (e.g. H.262/MPEG-2), it has been widely adopted by the industry, in technologies such as high definition DVDs and IP-based videoconferencing systems.

PSTN Modems

V.90 – Study Group 16 is also responsible for the development of Recommendations for voiceband PSTN modems. In 1998 the Recommendation V.90 was approved and has become the ubiquitous technology for Internet access, with annual sales of over 100 million products. In 2000 further enhancements to V.90 were agreed in V.92.



Multimedia communications

voice
video
data
music
image

ITU-T Multimedia Recommendations

Multimedia Terminals and Systems

- H.310 – Broadband audiovisual communication systems and terminals
- H.320 – Narrow-band visual telephone systems and terminal equipment
- H.321 – Adaptation of H.320 visual telephone terminals to B-ISDN environments
- H.322 – Visual telephone systems and terminal equipment; LANs which provide a guaranteed QoS
- H.323 – Packet-based multimedia communications systems
- H.324 – Terminal for low bit-rate multimedia communication
- H.360 – An architecture for end-to-end QoS control and signalling
- H.450 series
 - Supplementary services for H.323 systems
- H.460 series
 - H.323 Generic Extensible Framework

Accessibility

- T.140 – Protocol for multimedia application text conversation
- V.18 – Text telephony

Image and Video Coding

- H.261 – Video codec for audiovisual services at p x 64 kbit/s
- H.262 – Generic coding of moving pictures and associated audio information: Video
- H.263 – Video coding for low bit rate communication
- H.264 – Advanced video coding for generic audiovisual services
- T.80 series
 - JPEG image compression
- T.800 series
 - JPEG 2000 image compression

Protocols & Interworking

- H.245 – Control protocol for multimedia communication
- H.246 – Interworking of H-Series multimedia terminals
- H.248 series
 - Gateway control protocol

Audio Coding

Video Coding

Data Coding

System Control

Call Control

Multimedia Multiplexing Synchronization

Network Interface

General Functional Model for a Multimedia Terminal

Speech and Audio Coding

- G.711 – Pulse code modulation (PCM) of voice frequencies
- G.722 – 7 kHz audio-coding within 64 kbit/s
- G.722.1 – Coding at 24 and 32 kbit/s for hands-free operation in systems with low frame loss
- G.722.2 – Wideband coding of speech at around 16 kbit/s using adaptive multi-rate wideband (AMR-WB)
- G.723.1 – Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s
- G.726 – 40, 32, 24, 16 kbit/s ADPCM
- G.728 – Coding of speech at 16 kbit/s using low-delay CELP
- G.729 – Coding of speech at 8 kbit/s using CS-ACELP

System Control and Multiplexing

- H.222.0 – Generic coding of moving pictures and associated audio information: Systems
- H.223 – Multiplexing protocol for low bit rate multimedia communication
- H.225.0 – Call signalling protocols and media stream packetization (for packet-based multimedia communication systems)

Directory

- H.350 series
 - Directory services architecture for MIM conferencing (H.350, H350.1,.... .6)

Data Conferencing

- T.120 – Data protocols for multimedia conferencing
- T.121 – Generic application template
- T.122 – Multipoint communication service: Service definition
- T.123 – Network-specific data protocol stacks
- T.124 – Generic Conference Control
- T.125 – Multipoint communication service protocol specification
- T.126 – Multipoint still image and annotation protocol
- T.127 – Multipoint binary file transfer protocol
- T.128 – Multipoint application sharing

Multimedia Security

- H.233 – Confidentiality system for audiovisual services
- H.234 – Encryption key management and authentication system for audiovisual services
- H.235 – Security and encryption for H-Series multimedia terminals
- H.323 Annex J
 - Packet based multimedia communications systems - Security for simple endpoint types