



Radiocommunication Bureau
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Administrative Circular
CAR/268

18 December 2008

To Administrations of Member States of the ITU

Subject: Radiocommunication Study Group 6

- **Proposed approval of 2 draft new ITU-R Questions and 5 draft revised ITU-R Questions**
- **Proposed suppression of 14 ITU-R Questions**

At the meeting of Radiocommunication Study Group 6 held on 3 and 4 November 2008, 2 draft new ITU-R Questions and 5 draft revised ITU-R Questions were adopted and it was agreed to apply the procedure of Resolution ITU-R 1-5 (see § 3.4) for approval of Questions in the interval between Radiocommunication Assemblies. Furthermore, the Study Group proposed the suppression of 14 ITU-R Questions, 10 of which are subject to the eventual approval of the draft ITU-R Questions contained in Annexes 2 to 5.

Having regard to the provisions of § 3.4 of Resolution ITU-R 1-5, you are requested to inform the Secretariat (brsgd@itu.int) by 18 March 2009, whether your Administration approves or does not approve the proposals above.

After the above-mentioned deadline, the results of this consultation will be notified in an Administrative Circular. If the Questions are approved, they will have the same status as Questions approved at a Radiocommunication Assembly and will become official texts attributed to Radiocommunication Study Group 6 (see: <http://www.itu.int/pub/R-QUE-SG06/en>).

Valery Timofeev
Director, Radiocommunication Bureau

Annexes: 8

- **2 draft new ITU-R Questions, 5 draft revised ITU-R Questions and proposed suppression of 14 ITU-R Questions**

Distribution:

- Administrations of Member States of the ITU
- Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 6
- ITU-R Associates participating in the work of Radiocommunication Study Group 6

Annex 1

(Source: Document 6/112)

DRAFT NEW QUESTION ITU-R [YYY]/6

Impact of audio signal processing and compression techniques on terrestrial FM sound broadcasting emissions at VHF

The ITU Radiocommunication Assembly,

considering

- a) that Recommendation ITU-R BS.412 specifies planning standards for terrestrial FM sound broadcasting at VHF, including the conditions for average multiplex signal levels and peak deviation;
- b) that audio signal processing techniques have rapidly developed in the last few years, based on advances of digital signal compression techniques, and are widely used in sound broadcasting to increase the subjective sound level/programme loudness;
- c) that listeners desire audio programmes to be uniform in subjective sound level/programme loudness;
- d) that careful guidance on system alignment is required, as the average power of the complete multiplex signal of FM sound broadcasting stations may exceed the limit specified in Recommendation ITU-R BS.412;
- e) that the application of such audio signal processing and compression techniques which result in an increase of the average power of the complete multiplex signal may lead to an increase in interference to sound broadcasting stations which do not use such techniques,

decides that the following Questions should be studied

- 1** What is the impact of audio signal processing and compression techniques on the average power of the complete multiplex signal and the maximum deviation of the emission?
- 2** What techniques are available to ensure that the emission complies with the planning parameters given in Recommendation ITU-R BS.412 when audio signal processing and compression techniques are used?

further decides

- 1** that the results of the above studies should be included in either a new Report(s) and/or Recommendation(s) or incorporated in Recommendation ITU-R BS.412;
- 2** that the above studies should be completed by 2011.

Category: S2

Annex 2

(Source: Document 6/103)

DRAFT NEW QUESTION ITU-R [INTERFACE]/6

Digital interfaces for production and post-production applications in broadcasting systems

The ITU Radiocommunication Assembly,

considering

- a) that the practical implementation of television and sound production requires definition of the details of various studio interfaces and the data streams traversing them;
- b) that ITU-R has established Recommendations on digital interfaces for SDTV and HDTV, in parallel and serial forms, for electrical and optical cables;
- c) that ITU-R has also established Recommendations on digital audio interfaces;
- d) that ITU-R has been studying video formats with higher definition than HDTV and multichannel sound systems, which require higher data rate interfaces;
- e) that programme content and related data can be transferred either as a continuous stream or in the form of packets;
- f) that increased performance of IP networks has made it possible for broadcasters to introduce networked broadcasting systems for production and post-production inside and between broadcasting stations;
- g) that networked production and post-production systems should be constructed from interoperable pieces of equipment having standardized common interfaces and control protocols;
- h) that the transport mechanism should operate independently of the type of payload;
- j) that specifications should cover the possibility of conveying sound or any other ancillary signals through the interface, taking into account the original source timing;
- k) that for operational and economic reasons it is desirable to investigate whether the specification should also cover the possibility to use the same interface to transport the various image formats given in ITU-R Recommendations;
- l) that digital television and sound signals produced by these interfaces may be a potential source of interference to other services and due notice must be taken of No. 4.22 of the Radio Regulations,

decides that the following Questions should be studied

- 1** What parameters are necessary to define specified digital interfaces for the signal sets covered by ITU-R Recommendations?
- 2** What parameters are necessary to define compatible optical fibre digital interfaces?
- 3** What transport and control protocols are necessary to define interfaces for networked production and post-production systems?

- 4 What ancillary signals are required to be carried across the interfaces with the video signals, and what are the parameters necessary to define specifications for these signals?
- 5 What provisions are required for the associated digital sound channels?
- 6 What are the parameters that should be specified to use the same interface to also transport the various payloads given in ITU-R Recommendations?

NOTE 1 – See Recommendations ITU-R BT.709, ITU-R BT.601, ITU-R BT.656, ITU-R BT.799, ITU-R BT.1120 and Report ITU-R BT.2003,

further decides

- 1 that the results of the above studies should be included in (a) Report(s) and/or Recommendation(s);
- 2 that the above studies should be completed by 2011.

Category: S2

Annex 3

(Source: Document 6/98)

DRAFT REVISION OF QUESTION ITU-R 19/6

Low-bit-rate reduction coding of audio signals for broadcasting applications coding standards

(1993-1995-2002)

The ITU Radiocommunication Assembly,

considering

- a) that a number of different ~~low-bit-rate~~ reduction coding systems have been developed ~~are currently being proposed~~ for digital audio applications;
- b) that requirements on bit-rate reduction coding systems for broadcasting are specified in Recommendations ITU-R BS.1548;
- ~~c~~b) that recent progress in digital audio coding techniques allows for a very considerable degree of bit-rate reduction to be achieved while maintaining high quality;
- ~~d~~e) that applications exist for ~~low-audio~~ bit-rate reduction audio-coding systems for digital audio broadcasting, television sound (~~especially accompanying HDTV and EDTV~~) and for storage of signals;
- ~~e~~d) that the requirements for the various broadcasting applications mentioned in § c) might be very different and should be carefully defined in view of the planned services;
- ~~f~~e) that the performance of the whole broadcasting chain should be considered, and multiple transcoding between ~~low-bit-rate~~ reduction coding standards used for production, transmission links and broadcasting should be avoided as far as possible,

decides that the following Question should be studied

- 1 What are the sound quality and other requirements needed for production including recording, for transmission links and for various broadcasting applications from terrestrial transmitters and for satellite, including multichannel audio formats ~~as contained in Recommendation ITU-R BS.775?~~
- 2 What are the bit-rate reduction techniques that would satisfy the quality level and other requirements for each of the applications listed in § 1 while making efficient use of storage or transmission media?
- 3 What are the techniques which would maximize interoperability between the various parts of the broadcasting chain?
- 4 What is the nature of signal impairments due to ~~low-bit-rate~~ reduction coding techniques, in particular after a number of cascaded codecs?
- 5 What are the lossless bit-rate reduction techniques which could be applied to audio coding, especially for studio and storage application?
- 6 What methods could be used to minimize the incompatibilities between the various ~~low~~ bit-rate reduction coding techniques and what interface for ~~low-compressed~~ bit-rate audio can be recommended to avoid transcoding digital signals in linear format?

7 What methods of transcoding between low bit-rate coding techniques adopted by ITU-R can be recommended, if unavoidable?

8 What audio coding schemes are appropriate for application where remote interaction is important ?

~~NOTE 1—Telecommunication Standardization Study Group 9 is studying transmission of sound programmes for contribution, primary distribution and over television cable. There should be close cooperation between both Study Groups.~~

~~NOTE 2—See Recommendation ITU R BS.1196,~~

further decides

1 that the results of the above studies should be included in (a) Report(s) and/or Recommendation(s);

~~**2** that further studies on low bit rate coding systems at bit rates below or equal to 192 kbit/s per stereo channel for emission application, and below or equal to 60 kbit/s per mono channel for commentary links should be completed by 2005;~~

32 that the above ~~further studies on low bit rate coding for multichannel audio systems~~ should be completed by 2011~~05~~.

Category: S2

Annex 4

(Source: Document 6/99)

DRAFT REVISION OF QUESTION ITU-R 45-1/6*

Broadcasting of multimedia and data applications for mobile reception

(2003-2005)

The ITU Radiocommunication Assembly,

considering

- a) that digital television and sound broadcasting systems have been implemented in some many countries and will be introduced in many more in the coming years;
- b) that multimedia and data broadcasting services have been introduced in many countries or are planned to be introduced using the inherent capability of digital broadcasting systems;
- c) that mobile radiotelecommunication systems with advanced information technologies have been are planned to be implemented in many some countries, and will be implemented in many more other countries in the near future;
- d) that reception of digital broadcasting services is possible are expected to be received both inside and outside the home with fixed receivers such as TV sets in the living room, as well as handheld/mobile and portable/vehicular receivers such as versatile handheld devices and with vehicular receivers;
- e) that the characteristics of mobile reception and stationary reception are quite different from the fixed reception cases;
- f) that the display sizes and receiver capabilities of portable and vehicular receivers may be different between handheld/portable/vehicular receivers and from fixed receivers cases;
- g) that the format of the transmitted information should be such that the content can be displayed intelligibly on as many types of terminals as possible;
- h) the need for interoperability between the ~~mobile~~ telecommunication services and interactive digital broadcasting services;
- j) ~~the need for harmonizing the application content formats and environments for inter-media programme exchange, e.g. between broadcasting and webcasting;~~
- k) ~~the need for harmonizing the application content formats and environments for international programme exchange;~~
- l) the need ~~for to~~ harmonizing the technical methods, implications used to implement content protection, security and conditional access; ;
- k) that audiovisual informational systems for presentation of various kinds of multimedia information applicable to programmes such as dramas, plays, sporting events, concerts, cultural events, etc. are widespread, and those systems are being installed for collected viewing.

* This Question should be brought to the attention of ITU-R Study Group 58 and ITU-T Study Group 169.

m) ~~that mobile reception of multimedia and data broadcasting applications in the near future may be different in the rate of growth and coverage areas from the usage of mobile telecommunication systems such as IMT 2000 networks,~~

decides that the following Question should be studied

1 What are the ~~specific~~ user requirements ~~in terms of~~ for broadcasting of multimedia and data applications

– _____ for mobile reception ~~in comparison to~~ and

– _____ for stationary reception and

– _____ for digital multimedia video informational systems on the basis of High Definition Television (HDTV), Large Scale Digital Imagery (LSDI) and Extremely High Resolution Imagery (EHRI).

and

What is necessary to implement these requirements?

2 What system characteristics are required for broadcasting of multimedia and data applications for mobile reception and for stationary reception?

3 What data ~~transmission-transport mechanism~~ protocol(s) is (are) most suited to ~~convey deliver~~ broadcast multimedia and data contents to handheld, portable and vehicular receivers and to fixed receivers?

4 ~~What content formats are most suited for broadcasting of multimedia and data applications for mobile reception?~~

45 What solutions can be adopted to ensure the interoperability between the ~~mobile~~ telecommunication services and interactive digital broadcasting services?

further decides

1 that the results of the above studies should be included in (a) Report(s) and/or Recommendation(s);

2 that ~~in view of the increasing application of digital TV and radio programming for mobile reception in many countries for both broadcast and non-broadcast uses,~~ the above studies should be completed by 201106.

Category: S21

Annex 5

(Source: Document 6/102)

DRAFT REVISION OF QUESTION ITU-R 12-1/6*

Generic bit-rate reduction coding of digital TV video signals (~~SDTV, EDTV and HDTV~~) for production, for contribution, for primary and secondary distribution, for emission and for related applications

(1993-1997-2001-2002)

The ITU Radiocommunication Assembly,

considering

- a) that rapid progress ~~has been~~ is being made in bit-rate reduction coding techniques;
- b) that bit-rate reduction coding of digital video signals (eg LDTV, SDTV, EDTV, HDTV LSDI and UHDTV**) ~~signals~~ finds wide applications for production, for emission by terrestrial means and by satellite, for contribution, for both primary and secondary distribution by telecommunication and by CATV networks;
- d) ~~that in terrestrial narrow band channels, digital emission systems offer advantages in terms of service quality and spectrum efficiency;~~
- ce) that the ~~very~~ large channel capacity required for the digital transmission and recording of UHDTV video signals may introduces problems that are both technical and economic, and it is desirable to reduce the bit-rate required by these signals to a minimum consistent with the necessary performance objectives;
- ed) that the encoding methods adopted for digital SDTV, EDTV and HDTV video should have as many common characteristics as possible so as to simplify conversion between standards and also permit operating economies;
- e) that lossless¹ or perceptually lossless² bit-rate reduction coding may be desired particularly for studio applications;

* This Question should be brought to the attention of the ~~International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the Telecommunication Standardization Sector~~ relevant ITU-T Study Groups (9 and 16).

** LDTV: Limited definition television
SDTV: Standard definition television
EDTV: Extended definition television
HDTV: High definition television
LSDI: Large scale digital imagery
UHDTV: Ultra-high definition television

¹ The ITU terminology database defines “lossless bit-rate reduction” as “a bit-rate reduction process that fully preserves the information content of the original bit stream, which can be reconstructed with bit-to-bit accuracy (e.g. exploiting the bit-stream statistics)”.

² Perceptually lossless as used in the context of this Question means a lossy compression scheme with compression artefacts that are not subjectively visible during the production process.

~~f) — that programmes will be displayed on receivers of various resolutions, and this will require a certain amount of compatibility between SDTV, EDTV and HDTV digitally encoded signals;~~

~~fg) that there are advantages in having a generic bit-rate reduction coding in the various applications;~~

~~h) — that a number of Radiocommunication Study Groups are studying or are considering the use of bit-rate reduction techniques for a variety of related applications;~~

~~j) — that commonality with bit-rate reduction techniques used in broadcast and non-broadcast applications (such as equipment for home use) may offer further advantages;~~

gk) that a number of compression families have been used for various television applications,
decides that the following Question should be studied

1 What are the appropriate bit-rate reduction methods for use in production, in contribution, in emission, both terrestrial and by satellite, for distribution, both primary and secondary by telecommunication networks ~~and CATV networks~~, for the recording media and for related applications such as ENG/SNG?

2 ~~What rationalization can be made of algorithms under consideration within the ITU-R or elsewhere for the noted applications or further similar use?~~

3 ~~What methods should be employed to characterize and evaluate such bit-rate reduction algorithms and rationalization, noting the interest of the public, broadcasters, network providers and manufacturing industries in common equipment and receivers?~~

further decides

1 that the results of the above studies should be included in (a) Report(s) and/or Recommendation(s);

2 that the above studies should be completed by 201105.

Category: S2

Annex 6

(Source: Document 6/100)

DRAFT REVISION OF QUESTION ITU-R 16-1/6

Digital interactive broadcasting systems

(2002-2003)

The ITU Radiocommunication Assembly,

considering

- a) the progress in information processing and communication technologies;
- b) the rapid progress towards ~~enhanced and~~ digital broadcast delivery systems;
- c) the potential for such systems to support interactivity for a variety of purposes;
- d) the development of radiocommunication methods over various delivery media suitable for use in receiving, from users, return communication related to the programme material (vision, sound, multimedia and data);
- e) that the large number of domestic broadcast receivers and multimedia systems which could incorporate be impacted by the implementation of interactive services are available for consumer use;
- f) ~~the large number of domestic multimedia systems which could be impacted by the implementation of interactive services;~~
- f) that a number of ITU Recommendations already exist which are related to provision for a return channel, for instance Recommendations ITU-R BT.1667 and ITU-R BT.1832;
- g) that return information from viewers can be also provided in a deferred way (users have to store and then take care of the delivery of the information);
- h) the availability of mass storage media in receivers permitting local interaction without the need of a return channel;
- j) the existence of Recommendation ITU-R BT.1369 “Basic principles for a worldwide common family of systems for the provision of interactive television services”, many of which apply equally to sound, multimedia and data broadcasting;
- k) the necessity of the development of interactive broadcasting in order to accelerate bridging the digital divide;
- l) the possible role of interactive broadcasting in the broadcasting audience monitoring (e.g. mediametry) and Internet audience monitoring,

decides that the following Question should be studied

1 What are the opportunities for commonality among systems specified for return data from the receiver to the broadcaster, and to other users of such data, for different reception media (e.g. terrestrial, satellite, common antenna, cable, the Internet etc.)?

- 2 What interactive services (including deferred and local interactive services*) are likely to be needed and what are their performance requirements for the return channel?
- 3 Which protocols ~~and modulation/transmission techniques~~, preferably selected among those already standardized for such purposes, should be recommended as being suitable for the various transmission media used to carry the return channel?
- 4 What are the appropriate protocols, APIs and storage media suitable to collect “various versions of forward broadcast data requiring user activity” or “interactive data resulting from the user activity”?
- 5 What possibilities exist for the harmonious use of multimedia systems, in storing in an appropriate way, the “various versions of forward broadcast data” or the “interactive data created by the user”?
- 6 How can anonymous reception of broadcast without explicit signalling for privacy opt-out, be maintained in the framework of interactive broadcasts?

further decides

- 1 that the results of the above studies should be included in (a) Report(s) and/or Recommendation(s);
- 2 that this work should be coordinated with the relevant Study Groups in the Radiocommunication and Telecommunication Standardization Sectors;
- 3 that the above studies should be completed by 200511.

Category: S2

* The level of interaction provided by broadcasting a range of alternative content to a local mass storage device for access and selection by the user.

Annex 7

(Source: Document 6/101)

DRAFT REVISION OF QUESTION ITU-R 34-1/6*

File formats and transport for the exchange of audio, video, data and metadata materials in the professional television and large screen digital imagery (LSDI) environments

(2002-2007)

The ITU Radiocommunication Assembly,

considering

- a) that storage systems based on information technology, including data disks and data tapes have already started to penetrate all areas of the professional television environment; production, non-linear editing, play-out, post-production, distributed production, archiving, contribution and distribution;
- b) that future TV production environments will increasingly incorporate ~~more and more~~ systems from the Information Technology (IT) world such as networks, and server systems;
- c) that applications for professional TV and LSDI are being increasingly based ~~more and more~~ on software which generally handle content in file form;
- d) that file exchange does not introduce additional picture and sound quality degradation if, for example, the compressed audio and video accommodated in the file body is transferred in its ~~native~~original, compressed form;
- e) that file exchange can be adapted easily to the available channel bandwidth so that user can trade-off transfer-bandwidth versus transfer-time;
- f) that metadata, audio, video, data essence and ancillary data can be transferred in a common file;
- g) that metadata, audio, video, data essence and ancillary data can be stored and transferred as independent files with provision for later synchronization;
- ~~h) that systems can be built using generic computer equipment which adds economic benefits to the overall system;~~
- jh) that the technology of file formats and file exchange offers significant advantages in terms of operating flexibility, production flow, station automation, economy;
- kj) that the interoperability within and between content management systems is an essential user requirement and demands interoperable file formats and transport mechanisms for the exchange of Content and Assets;
- lk) that the application of metadata exchange (i.e. in TV production) requires support of existing standards-specifications on metadata (~~for example, the SMPTE Metadata Dictionary~~);

* This Question should be brought to the attention of ITU-T Study Group 9 and the ISO/IEC JTC1 SC29 Working Group 11.

- m) that compatibility with both binary and XML metadata transport protocols needs to be considered;
- n) that the adoption of a small number of interoperable file formats for signal exchange would greatly simplify the design and operation of equipment and remote studios;
- o) that interoperability and conformance testing are simplified when a single coding construct is specified for each compression standard;
- p) that many world broadcasters have already deployed systems based on file formats ~~now standardized as SMPTE 268M, SMPTE 360M and other standardized file formats;~~
- q) that Recommendation ITU-R BT.1775 —“File format with editing capability, for the exchange of metadata, audio, video, data essence and ancillary data for use in broadcasting” defines the editable file format and the generic container has been approved;
- r) ~~that interchange between broadcasters, and between broadcasters and their suppliers or agencies, relies on these existing file formats;~~
- s) that many applications from multiple manufacturers rely on file exchange which are in an interoperable format;
- t) that some file formats may not meet all future user requirements and for that reason new development may be required to meet specific users needs;
- u) ~~that efficient implementation of future developments requires greater interoperability with existing standards based deployments;~~

decides that the following Question should be studied

- 1 What are the user requirements and potential category of requirements for carrying programme and programme genres for the exchange of audio, video, data and metadata encapsulated in a file format in the professional television and LSDI environments?
- 2 What structure of file formats will best serve the future needs of users, while desirably maintaining interoperability with existing deployments?
- 3 What degree of extensibility can be achieved while maintaining level of backward compatibility is required in the framework of file exchange standards to be developed for the interchange of metadata, audio, video, data essence and ancillary data?
- 4 What will be the design of the encoders and decoders which would be utilized for interchange of metadata, audio, video, data essence and ancillary data?
- 5 What digital interfaces should be specified for interchange transport of the file format(s) for interchange of metadata, audio, video, data essence and ancillary data?
- ~~6 What image and sampling source signal and material formats should be utilized in the file format(s) for interchange of audio, video, data essence and ancillary data?~~
- ~~67~~ What independent video/audio search capability will be required to assist asset management during and following interchange of the file?
- ~~78~~ What operational considerations will be required by broadcasting organizations for the interchange of audio, video, data essence and ancillary data?

further decides

- 1 that ITU-R Study Group 6 should continue to monitor the standardization work of other organizations with regard to file formats and transport mechanisms, and that appropriate existing and future file formats should be proposed for adoption by the ITU-R;

- 2 that the study should also include a consideration of integration and migration strategies for legacy, established and future file formats;
- 3 that the results of the above studies should be included in Report(s) and/or Recommendation(s);
- 4 that the above studies should be completed by 20110.

Category: S2

Annex 8

Questions proposed for suppression

Question ITU-R	Title	Document proposing suppression
<u>5-1/6</u> *	Serial data transport mechanism for packetized data within a television production studio based on, and compatible with, Recommendations ITU-R BT.656 and ITU-R BT.1120	6/103
<u>6-1/6</u> *	Standards for digital high-definition television coding	6/102
<u>7/6</u> *	Interface to webcasting and its supporting data services	6/99
<u>17/6</u> *	Data broadcasting in the digital broadcasting environment	6/99
<u>20/6</u> *	Digital HDTV studio interfaces	6/103
<u>33/6</u> *	Standards for digital audio coding and interfaces	6/103
<u>41/6</u>	Auxiliary signals for digital television codecs to assist editing and cascading	6/104
<u>42/6</u> *	Interfaces for digital video signals	6/103
<u>43/6</u> *	Digital coding for multi-programme television in contribution and distribution circuits	6/102
<u>66/6</u> *	Audio coding schemes for sound broadcast programme inserts	6/98
<u>87/6</u>	Acquisition and recovery times in digital television encoding	6/104
<u>101/6</u>	Broadcasting of copy protection signalling for television	6/104
<u>103/6</u>	Reference signals for the component digital studio	6/104
<u>119/6</u> *	Use of lossless/perceptually lossless bit-rate reduction to transport HDTV signals over HD-SDI	6/102

* Suppression subject to approval of Draft Questions contained in Annexes 2-5.