



## *Radiocommunication Bureau*

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Administrative Circular  
CACE/434

9 October 2007

### **To Administrations of Member States of the ITU and Radiocommunication Sector Members participating in the work of the Radiocommunication Study Groups and the Special Committee on Regulatory/Procedural Matters**

**Subject: Radiocommunication Study Group 6**

- **Approval of 2 new ITU-R Questions and 4 revised ITU-R Questions**
- **Suppression of 13 ITU-R Questions**

By Administrative Circular CAR/243 of 6 June 2007, 2 draft new and 4 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with Resolution ITU-R 1-4 (§ 3.4). In addition, the Study Group proposed the suppression of 13 ITU-R Questions.

The conditions governing these procedures were met on 6 September 2007.

The texts of the approved Questions are attached for your reference (Annexes 1 to 6) and will be published in Addendum 8 to Document 6/1 which contains the ITU-R Questions approved by the 2003 Radiocommunication Assembly and assigned to Radiocommunication Study Group 6. The suppressed ITU-R Questions are indicated in Annex 7.

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**Annexes: 7**

Distribution:

- Administrations of Member States and Radiocommunication Sector Members
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups and Special Committee on Regulatory/Procedural Matters
- Chairman and Vice-Chairmen of the Conference Preparatory Meeting
- Members of the Radio Regulations Board
- ITU-R Associates in the work of Radiocommunication Study Group 6
- Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

## Annex 1

### QUESTION ITU-R 126/6

#### **Recommended operating practices to tailor<sup>1</sup> television programme material to broadcasting applications at various image quality levels and sizings**

(2007)

The ITU Radiocommunication Assembly,

*considering*

- a) that an increasing number of broadcasters now need to tailor their television programme material to a variety of broadcasting applications at a variety of image quality levels and sizings;
- b) that the treatment to be applied to the original programme signal in order to adapt it to a variety of broadcasting applications at a variety of image quality levels and sizings depends on the image resolution that those applications are able to provide to the end user, and on their viewing environment,

*decides* that the following Question should be studied

- 1** What are the constraints related to television broadcasting applications at various image quality levels and sizing, e.g. in terms of the displayable image quality and of the presentation environment?
- 2** Which measures can be recommended to broadcasters, to tailor their television productions to broadcasting applications at various image quality levels and sizings within the identified constraints, in order to maximize the image quality of the delivered programmes?

*further decides*

- 1** that the results of the above studies should be included in Recommendation(s) and/or Report(s), to cover those various broadcasting applications;
- 2** that the above studies should be completed by 2011.

Proposed category: S2

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<sup>1</sup> The verb “to tailor” is used in this text to indicate the post-processing operations required to adapt programme material for its presentation in broadcasting applications different from the one for which it had been originally produced, e.g. in terms of image size resolution, viewing conditions, etc.

## Annex 2

### QUESTION ITU-R 127/6

#### **Mitigation techniques required for the use of digital modulation in the “26 MHz” broadcasting band for local coverage**

(2007)

The ITU Radiocommunication Assembly,

*considering*

- a) that the band 25 670-26 100 kHz (herein called the “26 MHz band”), is exclusively allocated to the broadcasting service;
- b) that this 26 MHz band comes under the provisions of RR Article 12 which includes an informal coordination procedure;
- c) that this 26 MHz band is not heavily utilised for transmissions using analogue modulation as:
  - availability of suitable receivers capable of receiving this band is limited;
  - periods of propagation that support reliable long distance transmission in this band may be limited (sunspot cycle, seasonal, diurnal);
- d) that the system described in Annex 1 of Recommendation ITU-R BS.1514-1 is recommended for use in the 26 MHz band;
- e) that recent experimental broadcasting for digitally modulated transmissions using the system described in Annex 1 of Recommendation ITU-R BS.1514-1 have been demonstrated to provide local coverage similar to that achieved at Band II (VHF FM);
- f) that relevant protection ratios are contained in Recommendation ITU-R BS.1615;
- g) that the signals require RF bandwidths of 10 kHz for parametric stereo, and 20 kHz for full stereo;
- h) that transmit antennas have been designed that support local coverage;
- j) that, nevertheless, there is concern that unwanted skywave emissions may cause harmful interference to other stations on the same frequency using the “26 MHz band” for local coverage,

*decides* that the following Question should be studied

- 1 What are the appropriate mitigation techniques, such as average power and antenna radiation characteristics applicable for the use of digitally modulated emissions in the “26 MHz band” for local broadcasting, recognizing the possibility of long distance harmful interference to other stations?
- 2 What are the coordination requirements in order to provide a reliable local service for each station?

*further decides*

- 1 that the results of the above studies should be included in a Recommendation and/or Report;
- 2 that the above studies should be completed by 2010.

Category: S2

## Annex 3

### QUESTION ITU-R 34-1/6\*

#### **File formats 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 incorporate more and more systems from the IT world such as networks, and server systems;
- c) that applications for professional TV and LSDI are being 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, 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;
- j) that the technology of file formats and file exchange offers significant advantages in terms of operating flexibility, production flow, station automation, economy;
- k) that the interoperability within and between content management systems is an essential user requirement and demands interoperable file formats for the exchange of Content and Assets;

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

- l) that the application of metadata exchange (i.e. in TV production) requires support of existing standards on metadata (for example, the SMPTE Metadata Dictionary);
- 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 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 maintaining interoperability with existing deployments?
- 3** What 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 of the file format(s) for interchange of metadata, audio, video, data essence and ancillary data?
- 6** What image and sampling formats should be utilized in the file format(s) for interchange of audio, video, data essence and ancillary data?

**7** What independent video/audio search capability will be required to assist asset management during and following interchange of the file?

**8** 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 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 2010.

Category: S2

## Annex 4

### QUESTION ITU-R 49-1/6\*

#### Conditional-access broadcasting systems

(1990-1993-2003-2007)

The ITU Radiocommunication Assembly,

*considering*

- a) that access to broadcast programmes intended for the public may be conditional upon the viewer meeting some requirements set by the programme originator or service distributor resulting in a need in the receiver and in the recorder of an additional signal processing circuit, which can be controlled by a “key”;
- b) that for this purpose the signal has to be processed before transmission;
- c) that the specific processing of the signal for transmission for this purpose becomes part of the signal characteristics to be taken into account for broadcasting planning;
- d) that there may be a need to keep the signal in a scrambled format to allow secure transfer from the receiver to a recorder or any other equipment so that programme access can be controlled at any time to allow integral implementation of rights management through the programme presentation chain;
- e) that there would be clear advantages for broadcasters and users in having common conditional-access systems;
- f) that proponents of new broadcast signal formats should take into account conditional-access technology;
- g) that the conditional-access process comprises scrambling/descrambling and control functions, and that there is a need for a clear interface between the access control and descrambling functions in the receiver;
- h) that there are different ways to implement the conditional access control functions (i.e. within the equipment, through a smart card, etc.) but this should not impact integral implementation of rights management through the programme presentation chain;
- j) that conditional-access systems may influence the quality and performance of the various broadcasting services in a number of ways,

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\* This Question should be brought to the attention of Telecommunication Standardization Study Group 9 and the ISO/IEC.



*decides* that the following Question should be studied

- 1** What conditional-access control systems should be employed to provide security for picture, sound and data broadcast services against unauthorized access?
- 2** What particular scrambling methods should be used for vision, sound and data signals to meet the security requirements, appropriate to the broadcasters and to minimize the complexity of the home equipment?
- 3** What optimum configuration for a physical interface between the conditional-access control function and the descrambling function in the receiver or any other presentation equipment should be recommended?
- 4** What is the most effective way to implement the conditional access scrambling and control functions such that the implementation of rights management through the programme presentation chain is not impacted?
- 5** What are the effects of the scrambling and descrambling processes on the quality of the reconstituted picture, sound and data signals?
- 6** What is the susceptibility of scrambled signals and encrypted data to impairments in signal processing, distribution and broadcasting?
- 7** What methods of scrambling and addition of encrypted data to the broadcast signal multiplex are compatible with existing protection ratios?

*further decides*

- 1** that the results of the above studies should be included in (a) Recommendation(s);
- 2** that the above studies should be completed by 2010.

Category: S2

## Annex 5

### QUESTION ITU-R 15-2/6<sup>1</sup>

#### Large screen digital imagery (LSDI)<sup>2</sup>

(2002-2003-2007)

The ITU Radiocommunications Assembly,

*considering*

- a) that new very high resolution, LSDI are being introduced in some countries, whereby dramas, plays, sporting events, concerts, cultural events, etc., photographed electronically or on film, can be delivered, and exhibited in high resolution quality in theatres, halls, and other venues equipped with digital imaging capabilities;
- b) that such practice has the potential to produce excellent picture quality, equal or superior to that available heretofore, and opens the possibility for program delivery in various digital forms for exhibition to large audiences;
- c) that such practice is reported to also offer significant benefits in terms of a faster, lower cost production/postproduction and distribution, including to smaller, less-developed markets;
- d) that high resolution, bright, large screen projection equipment is available from several international manufacturers;
- e) that it may be beneficial to develop a uniform or compatible hierarchy of technical standards for program recording, mastering<sup>3</sup>, exchange, delivery and exhibition, harmonized with those established for the recording and mastering, exchange and delivery of programs for other applications, since this can ease international program exchange;
- f) that the ITU-R has been studying extremely high resolution imagery under Question ITU-R 40/6 based on the concept of a tiered or hierarchical approach;
- g) that the introduction of digital technologies results in the converging of broadcast and telecommunication data channels, so that the secondary distribution of digital programs now also foresees the possible distribution of digital packetized data, in real-time and non-real-time, program-related and non-program-related, to the general public as well as to individual recipients or groups of recipients;

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<sup>1</sup> This Question should be brought to the attention of Working Parties 6B, 6E, 6M, 6Q and 6S.

<sup>2</sup> Large Screen Digital Imagery is a family of digital imagery systems applicable to programs such as dramas, plays, sporting events, concerts, cultural events, etc., from capture to large screen presentation in high resolution quality in appropriately equipped theatres, halls, and other venues.

<sup>3</sup> The term "mastering" indicates the set of those technical activities that lead to the finished edited master of a program, which normally materializes the creative intent of its authors (see for instance Rec. ITU-R BR.1292).

- h) that the definition of broadcasting included in the ITU Constitution (CS/A.1010)<sup>4</sup> from the regulatory point of view, makes no distinction between real-time and non-real-time service delivery, nor between interactive and non-interactive programming, nor among sound, television or other types of content, nor among analog, digital or digital packetized delivery;
- j) that various aspects of LSDI are within the scope of Study Group 6 as defined in Resolution ITU-R 4-4<sup>5</sup>, e.g.:
- acquisition, production, postproduction and mastering;
  - storage and transfer to and from film for international exchange;
  - encoding, encryption and assembling with control and metadata;
  - delivery by terrestrial or satellite means;
  - quality assessments of the proposed technical solutions;
- k) that some other aspects of LSDI are in the scope of ITU-T Study Group 9; the IEC and ISO; other international or regional standardizing bodies as well as other relevant fora;
- l) that, in view of its scope, Study Group 6 is well placed to act as a focal point to coordinate relevant studies among the various concerned ITU and non-ITU bodies;
- m) that studies on LSDI are important both for the theatre and for broadcasting, and the opening of some LSDI operational services makes it urgent for the ITU-R to initiate those studies;
- n) that although studies are currently being carried out in various countries on all aspects of LSDI, those specifically related to motion pictures<sup>6</sup> are not yet fully completed,

*decides* that the following Question should be studied

- 1** What are the picture and sound performance goals, in subjective and objective terms, of the LSDI applications that require the use of the higher members of the expanded LSDI hierarchy of image systems?
- 2** What methods are appropriate for the subjective and objective assessment of the sound and image quality of LSDI systems including those intended for applications that require the use of the higher members of the expanded LSDI hierarchy of image systems?

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<sup>4</sup> The definition of broadcasting given in the ITU Constitution (CS/A.1010) is broadcasting service: A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission.

This definition appears also as 1.38 in Art. 1 of the ITU Radio Regulations, and the scope of ITU-R Study Group 6 in Resolution ITU-R 4-4 provides details on it.

<sup>5</sup> Resolution ITU-R 4-4 – Structure of Radiocommunication Study Groups.

<sup>6</sup> The term “motion pictures” (also called movies, features, etc.), is used to indicate content that is intended for first release in a cinema theatre setting.

- 3** Which digital formats, standards and operating practices for program production, storage and international exchange should be recommended in order to reliably meet the performance goals of LSDI applications, including those intended for applications that require the use of the higher members of the expanded LSDI hierarchy of image systems?
- 4** Which information related to LSDI programs should be included as metadata through the mastering and carried through the digital distribution chain, and in which form?
- 5** Which methods can be recommended for the bit-rate-reduction encoding and for the encryption of LSDI programs?
- 6** Which methods can be recommended for conditional access and copy protection of LSDI programs?
- 7** Which methods can be recommended to adapt LSDI programs for delivery by terrestrial emission?
- 8** Which methods can be recommended to adapt LSDI programs for delivery by satellite emission?
- 9** Which methods can be recommended for archiving of LSDI material?

*further decides*

- 1** that co-operation between ITU-T Study Group 9 and ITU-R Study Group 6 is desirable in the selection of methods for the delivery of LSDI programs to their end users by television cable, fiber networks and telecommunications networks;
- 2** that co-operation with the ISO/IEC JTC1/SC29/WG11 (MPEG) is desirable in the selection of compression tools for the delivery of LSDI programs to their end users;
- 3** that co-operation with ISO, IEC and the other international and regional standardizing bodies and fora (see examples in Annex 1) is desirable in the study of the LSDI's presentation environment objectives and the related methods and devices;
- 4** that co-operation with other bodies such as those given as examples in Annex 1 is desirable in the selection of methods compatible with the end-to-end LSDI specifications currently being developed;
- 5** that the bodies selected for liaison should be chosen on a case-by-case basis depending on their relevance to the particular topic;
- 6** that SG 6 studies of the methods for the production, delivery and presentation of LSDI programs should rely, where appropriate, on the use of existing tools and toolkits;
- 7** that the LSDI studies should result in a set of Recommendations based on a hierarchy of levels of system performance that harmonize where possible with existing systems for digital imagery;

8 That while studies of LSDI may include characteristics<sup>7</sup> that are common to motion pictures<sup>8</sup> and in the purview of Study Group 6, Study Group 6 recognizes that aspects<sup>9</sup> specifically relating to motion pictures should be based on standards developed by the motion picture expert groups;

9 that the LSDI studies should be completed by the year 2010.

Category: S2

## **Annex 1**

### **Some bodies within and outside the ITU that could provide cooperation on LSDI studies**

The list below provides an indication of some entities within and outside the ITU that possess an expertise relevant to LSDI and could co-operate to LSDI studies within ITU-R Study Group 6.

#### **ITU bodies**

ITU-T Study Group 9

ITU-T Study Group 16

#### **Some other international or regional standardizing bodies and fora**

ARIB – Association of Radio Industries and Businesses

ATSC – Advanced Television Systems Committee

DVB – Digital Video Broadcasting

EDCF – European Digital Cinema Forum

IEC – International Electrotechnical Commission

ISO – International Standards Organisation

ISO/IEC JTC1/SC29/WG11 (MPEG) –Moving Picture Experts Group

SMPTE – Society of Motion Picture and Television Engineers

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<sup>7</sup> Such as frame rates, colorimetry, resolution, and aspect ratios.

<sup>8</sup> The term “motion pictures” (also called movies, features, etc.), is used to indicate content that, which is intended for first release in a cinema theatre setting.

<sup>9</sup> Such as production, post-production, distribution, exhibition, trailers, etc.

**International or regional Unions and Associations of broadcasters**

WBU-TC – Technical Committee of the World Broadcasting Unions

Regional Unions and Associations of Broadcasters (ABU, ASBU, CBU, EBU, IAB, NABA, OTI, URTNA)

**Other bodies**

Associations of manufacturers

Associations of program distributors

Associations of theatre owners and operators (e.g., U. S. National Association of Theatre Owners (NATO), International Union of Cinemas (UNIC) and Motion Picture Theatre Owners Association of Canada (MPTAC), etc.).

## **Annex 6**

### QUESTION ITU-R 112-1/6

#### **Guidelines on functionalities of facilities based on the use of digital servers in broadcast programme recording, archiving and playout**

(2004-2007)

The ITU Radiocommunication Assembly,

*considering*

- a) that in the past, television broadcasting has used specialized recording equipment, such as broadcast-quality video tape recorders or digital video disc recorders for programme recording, editing, archiving and playout;
- b) that general-purpose digital servers originally designed for Information Technology (IT) applications are now also being used in broadcasting facilities for programme recording, editing, archiving and playout applications;
- c) that important operating benefits are expected from the use of facilities based on digital servers for broadcast programme production and transmission including recording, post production, archiving and playout, such as faster programme creation, exchange and repurposing, exchange of multi-version content, ability to immediately search, browse and retrieve essence data, simultaneous access to essence on the part of multiple users, etc.;
- d) that the functionalities of digital servers to be used in television programme production and broadcasting transmission facilities are often different and sometimes more demanding than those required for their general-purpose IT use;
- e) that various television production and broadcasting organizations have undertaken studies on the functionalities required in facilities based on the use of digital servers in order that they may be used to best advantage in facilities for broadcast applications;
- f) that broadcasters would benefit from guidelines on the functionalities that general-purpose digital servers should desirably provide in broadcast facilities for recording, editing, archiving, and playout of television programmes, and if possible in their harmonization,

*decides* that the following Question should be studied

**1** what guidelines should be provided to television broadcasters on the preferred technical requirements of digital television facilities based on the use of digital servers, e.g. in terms of:

- file types and formats;
- picture and sound quality levels (e.g. full quality, browse quality, etc.);
- metadata;
- data capacity (e.g. for short-term archiving, medium-term archiving, etc.);
- multichannel access and throughput;
- latency (e.g. in terms of the time needed to read out programme segments after their recording);
- interoperability and scalability;
- reliability, availability and maintainability?

**2** What guidelines should be provided to broadcasters on the basic operating requirements of such digital television facilities, e.g. in terms of:

- key operating functions (e.g. ingesting, indexing, archiving, retrieving, browsing, etc.);
- automatic data management;
- data transfer (e.g. streaming through SDI/SDTI or file transfer, etc);
- interfaces, including interfacing to telecommunication channels;
- flexibility (e.g. capability to simultaneously feed several users and several video format platforms)?

*further decides*

**1** that studies on guidelines for digital television facilities based on the use of digital servers should be performed in close cooperation among the Working Parties concerned within Study Group 6;

**2** that those studies should, as far as possible, take account of existing operating models and formats for the storage and transfer for audio, video and data files;

**3** that the results of the studies should be reflected in a Report and/or one or more ITU-R Recommendations;

**4** that the studies should be completed by the year 2011.

Category: S2



## Annex 7

### List of suppressed ITU-R Questions

<b>Question ITU-R</b>	<b>Date of completion</b>	<b>Title</b>
10/6	2005	Enhanced television (transferred from WP 6P)
24-1/6	2007	Recording of television programmes on removable magnetic, optical or magneto-optical disks for international exchange
25-1/6	2007	Unified identification data for international exchange and archival of sound-programme and television recordings and of films for television
28/6	2005	Short-distance broadcasting in band 7 (HF) in the Tropical Zone
35/6	2005	Tolerable round-trip time delay for sound programme and television broadcast programme inserts
38/6	2006	Standards for the digital encoding of colour television signals
50/6	2005	Evaluating fields from terrestrial broadcasting transmitting systems operating in any frequency band for assessing exposure to non-ionizing radiation
54/6	2006	Sound systems for the hearing impaired
68/6	2005	Synchronization necessary for the satisfactory reception of sound and picture signals
91/6	2006	Recording of television programmes for international exchange
92/6	2006	Use of cinematographic film in television
97-2/6	2006	Optimization of quality of colour reproduction in television
98-2/6	2006	Adaptive image quality control in future TV systems