INTERNATIONAL TELECOMMUNICATION UNION

Radiocommunication Bureau
(Direct Fax N°. +41 22 730 57 85)

Administrative Circular
CACE/368

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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 3 new ITU-R Questions and 5 revised ITU-R Questions

By Administrative Circular CAR/192 of 31 May 2005, 3 draft new ITU-R Questions and 5 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with Resolution ITU-R 1-4 (§ 3.4).

The conditions governing these procedures were met on 31 August 2005 and therefore the Questions are considered approved.

The texts of these Questions are attached for your reference and will be published in Addendum 4 to Document 6/1 which contains the ITU-R Questions approved by the 2003 Radiocommunication Assembly and assigned to Radiocommunication Study Group 6.

Valery Timofeev
Director, Radiocommunication Bureau

Annexes: 8

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 44-2/6

Objective picture quality parameters and associated measurement and monitoring methods for digital television images

(1990-1993-1996-1997-2002-2003-2005)

The ITU Radiocommunication Assembly,

considering

a) that considerable progress in digital television standards has been achieved;

b) that the Radiocommunication Study Group is responsible for setting the overall quality performance of broadcasting chains;

c) that for television systems, ranging from SDTV to HDTV and including specific applications such as multiprogramming, it is essential to identify objective picture quality parameters as well as associated performance measurement and monitoring methods, for the studio environment and in broadcasting;

d) that display technology, including fixed pixel displays, have digital pre-processing which may introduce unexpected artifacts, such as pixel rescaling, contrast ratio compensation, colorimetry correction, etc.;

e) that it would be an advantage if measurement methods used for such tasks were unified for HDTV and SDTV; f) that impairments to television pictures can be shown to correlate with measurable features of the signals;

g) that overall picture quality is related to the combination of all impairments;

h) that developments in the statistical characterization of television images and modelling of the human visual system may lead to the replacement of subjective assessment by objective measurement in certain applications;

j) that in the case of digital TV it is necessary in particular to assess the performance of bit rate reduction methods both in terms of subjective and objective parameters;

k) that the measurement of performance requires agreed standard test materials and methods based on moving and static images;

l) that the scrambling process used in conditional access broadcasting may require special steps to be taken where bit-rate reduction is to be employed; and

m) that continuous evaluation and monitoring of quality (including dynamic resolution) is needed,

decides that the following Question should be studied

1 What are the objective performance parameters for each application identified, and for each digital TV standard?

2 What are the necessary test materials and test signals required for the objective picture quality measurement of these applications and for each digital TV standard?

3 What methods should be used for measuring and monitoring the parameters defined in § 1 and 2 to cover all motion artifacts and impairments including those introduced by the display pre-processor?

4 What characteristics should be recommended for a cost-effective quality meter which gives a direct displayed indication of picture quality?

5 Where conditional access is employed, what steps are necessary to coordinate the scrambling and bit-rate reduction processes so as to maintain the desired subjective and objective quality?

6 What characteristics should be recommended for a high quality electronic evaluation method for testing the quality of digital television pictures?

further decides

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

2 that the above studies should be completed by 2007.

Category: S3

ANNEX 2

QUESTION ITU-R 24-1/6

Recording of television programmes on removable magnetic, optical or magneto-optical disks[1] for international exchange

(1990-1993-1996-1999-2002-2005)

The ITU Radiocommunication Assembly,

considering

a) that broadcasters are increasingly using removable and transportable magnetic media for the international exchange of television programmes;

b) that optical and magneto-optical disks offer a possibility of higher packing densities, by means of digital techniques;

c) that the access time to parts of a recording made by optical or magneto-optical disks is conveniently short;

d) that a system based on optical disks could permit video and audio as data to be randomly accessed;

e) that storage and processing technology may permit similar functionality provided by linear television recording systems;

f) that optical disk increases the compact size of television field production equipment;

g) that television broadcasters are migrating to IT-based technologies used for production, playout and storage of sound and television programmes;

h) that the interchange of programme material may be in either standard definition or high definition format,

decides that the following Question should be studied

1 What standards relating to the international exchange of television programmes when recorded on removable magnetic, optical or magneto-optical disks should be recommended?

2 What information technology operating systems should be referenced to ensure interoperability and functionality in television systems which employ IT-based technologies used for production, playout and storage of sound and television programmes?

3 What removable magnetic, optical or magneto-optical disks should be recommended for international exchange of television programmes?

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[1] Removable magnetic, optical or magneto-optical disks are those which can be extracted and replaced into broadcasting equipment for the purpose of transporting data; for example CD-ROM, DVD.

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 2007.

Category: S3/AP

ANNEX 3

QUESTION ITU-R 117/6

User requirements for Metadata related to digital recording and archiving of sound and television programmes

(2005)

The Radiocommunications Assembly,

considering

a) that the need to provide essential information on recorded and archived sound and television programmes has been recognized since the introduction of sound and television recording;

b) that this need has become particularly acute with the introduction of digital technology that allows to record and archive all sorts of intellectual products on computer-type supports, which are indifferent to the intellectual product content;

c) that such need is particularly felt in the case of digital programme archives, which are one of the main assets of broadcasters and often also represent the permanent memory of a nation, its culture and its lifestyle;

d) that the use of Metadata is clearly the key to providing adequate information on the content of programme recordings, and would be most useful for this purpose, and notably for the purpose of the international exchange of recorded sound and television programmes, if it were universally used and harmonized, e.g. through appropriate ITU Recommendations based on carefully researched user requirements,

decides that the following Question should be studied

1 What information should be provided in the form of Metadata accompanying digital recordings of sound and television programmes?

2 Should such information be supplemented with further information in the form of Metadata when those programmes are digitally archived?

3 Is it possible to recommend a subset of information that should always be delivered in the form of Metadata when digitally recorded sound and television programmes are exchanged internationally?

further decides

1 that the results of the above studies should be addressed to prepare a new Recommendation;

2 that the above studies should be completed by 2007.

Category: S1

ANNEX 4

QUESTION ITU-R 25-1/6

Unified identification data for international exchange and archival of sound-programme and television recordings and of films for television

(1994-1999-2000-2005)

The ITU Radiocommunication Assembly,

considering

a) that various ITU-R Recommendations specify minimum programme information to be provided with recorded audio, television and film programme material for use in television;

b) that the minimum information specified for those different recordings is not always homogeneous, either in its content or in its presentation;

c) that modern methods used in the production, broadcasting and storage of sound-programme and television and film programme material increasingly rely on automatic equipment and machine-readable identification of recording content;

d) that at present most broadcasters operate with their own identification data for recording content, and most manufacturers of automatic broadcast equipment implement their own machine-readable identification data;

e) that the specification of a unified identification data and method for recording content would ease international programme exchange and archival, and it could potentially be exported to existing in-house identification data by means of computer software;

f) that standards that have been, and that are being developed to specify programme-related metadata that will accompany recorded programmes, notably for easier archival and retrieval purposes,

decides that the following Question should be studied

1 What is the essential information on programme material to be provided with recorded sound-programme, television and film programme material intended for international programme exchange and for their archival?

2 How should that information be provided (e.g. by means of:

– a programme sheet;

– a label fixed;

– a bar code;–metadata stored on the same media that carries the programme;

– metadata stored on a different media from the one that carries the programme;

– other methods)?

NOTE 1 – Studies on the characteristics and specifications for metadata for recording and archival are covered in Questions ITU-R 59/6 and ITU-R 90/6.

3 How could the essential programme information provided with internationally exchanged tapes and films, be correlated to similar information currently used by broadcasters for in-house automated operation and archives?

4 How could the programme labelling information/identification data assist with the passage of the package through transportation systems while in transit?

5 How should identification data be specified to ensure interoperability with present and future programme identification systems?

6 How should the data identification system be developed to ensure compatibility with IT-based technologies under development for production, playout and storage of sound and television programmes?

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 2007.

Category: S1/AP

ANNEX 5

QUESTION ITU-R 78-1/6

Digital recording of high-definition television for programme production and international exchange

(1990-1993-1999-2005)

The ITU Radiocommunication Assembly,

considering

a) that Question ITU-R 36/6 addresses the standards to be recommended for high-definition television (HDTV) broadcasting;

b) that Recommendation ITU-R BT.709 recommends the parameter values for the HDTV standards for production and international programme exchange;

c) that Recommendation ITU-R BR.714 recommends the international exchange of programmes produced by means of high-definition television live or on videotape;

d) that the production of HDTV programmes requires digital recorders;

e) that, to facilitate the international exchange of HDTV recordings, it is highly desirable that a single standard and a single recording format be adopted for digital recording of high-definition television programmes;

f) that Recommendation ITU-R BR.1375 provides a specification for high-definition television (HDTV) recording taking into account that the two HDTV recording formats generally known as HDCAM and HD-D5 are the ones in most widespread use;

g) that Recommendation ITU-R BR.1442 provides user requirements for digital HDTV tape cassette recorders;

h) that Recommendation ITU-R BR.779 specifies operating practices for digital television recording;

j) that Recommendation ITU-R BR.1515 specifies the requirements for international exchange of digital electronic news gathering recordings, including HDTV;

k) that Recommendation ITU-R BR.779 recommends operating practices for digital television recording;

l) that television broadcasters and other users of high-definition television recording systems are migrating to IT-based technologies used for production, playout and storage of sound and television programmes,

decides that the following Question should be studied

1 What operating requirements must be satisfied for production, post-production and distribution of HDTV recordings?

2 What digital recording format should be recommended for the international exchange of HDTV recordings in the following situations:

a) for programme production/post-production; or

b) distribution of finished programme material?

3 What technical requirements should be met by the recording format to ensure interchangeability of such recordings?

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 2007.

Category: S3/AP

ANNEX 6

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 countries and will be introduced in many more in the coming years;

b) that multimedia and data broadcasting services have been introduced or are planned to be introduced using the inherent capability of digital broadcasting systems;

c) that mobile telecommunication systems with advanced information technologies are planned to be implemented in some countries, and will be implemented in other countries in the near future;

d) that digital broadcasting services are expected to be received both inside and outside the home with fixed receivers such as TV sets in the living room, portable receivers such as versatile handheld devices and with vehicular receivers;

e) that the characteristics of mobile 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 from fixed receiver 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 harmonizing the technical implications used to implement content security and conditional access;

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* This Question should be brought to the attention of ITU-R Study Group 8 and ITU-T Study Group 19.

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 broadcasting of multimedia and data applications for mobile reception in comparison to stationary reception and what is necessary to implement these requirements?

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

3 What data transmission mechanism(s) is (are) most suited to convey broadcast multimedia and data contents to portable and vehicular receivers?

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

5 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) 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 2006.

Category: S1

ANNEX 7

QUESTION ITU-R 118/6

Broadcasting means for public warning and disaster relief

(2005)

The ITU Radiocommunication Assembly,

considering

a) the natural tragedies due to earthquakes and their consequences, alongside the possible role of radiocommunications in disaster relief;

b) the initiative of the Secretary-General of ITU to contribute to global efforts in order to reduce the effects of possible future disasters;

c) the general aspects of telecommunications associated with such disasters including, *inter alia*, prediction, detection, alerting and the organization of relief efforts;

d) the existence of numerous radiocommunication systems and the availability of a large equipment base at the present time;

e) the necessity to establish work programmes in ITU-R Study Group 6 in developing Reports and Recommendations on this matter,

decides that the following Question should be studied

1 What radiocommunication systems are used to detect potential disasters and to alert and support relief efforts?

2 What broadcasting systems are available for disseminating information and advising small or large populations and, potentially, across national borders?

3 What frequency bands, assigned to the broadcasting service and the satellite broadcasting service, may be used for disseminating information and advising small or large populations and, potentially, across national borders?

4 What broadcasting and satellite broadcasting equipment is currently available for use in the event of a major disaster?

5 What procedures currently exist to coordinate the efforts of the broadcasting and the satellite broadcasting sectors at an international level?

6 What actions do broadcasters around the world currently take in response to major disasters?

further decides

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

2 that the above studies should be completed by 2007.

NOTE 1 – This activity should be coordinated with other Study Groups in particular with ITU-T Study Group 2 and ITU-D Study Group 2

Category: S1

ANNEX 8

QUESTION ITU-R 119/6

Use of lossless[1]/perceptually lossless[2] bit-rate reduction to transport HDTV signals over HD-SDI

(2005)

The Radiocommunications Assembly,

considering

a) that most broadcasters have cabled their studios to distribute SDTV uncompressed signals through SDI coaxial interfaces, since they prefer to use uncompressed video signals for complex image processing in postproduction;

b) that this preference applies to HDTV production as well as applying to SDTV production;

c) that the higher members in the family of HDTV systems specified in Recommendation ITU-R BT.709 require a bit rate higher than the one that HD-SDI transport can provide as per Recommendation ITU-R BT.1120;

d) that some broadcasters will likely prefer to use their existing SDI coaxial infrastructure to also transport HDTV signals, when they transition from SDTV to HDTV operation, particularly for the higher data bit rate members of the family of HDTV systems specified in Recommendation ITU-R BT.709;

e) that this goal could probably be achieved by using a standardized algorithm for lossless bit rate reduction of the digital signals carried over HD-SDI interfaces;

f) that the use of the same algorithm may also likely allow transporting uncompressed 4:4:4 SDTV video signals over the existing SDTV SDI coaxial infrastructure for sophisticated image processing;

g) that in some applications a perceptually lossless bit-rate reduction may be required, in particular when picture processing requirements are minimal,

decides that the following Question should be studied

1 Which single and open compression algorithm can be recommended for lossless bit rate reduction of digital HDTV signals, particularly of the higher members of the HDTV family of systems specified in Recommendation BT.709, in order to transport them on a single HD-SDI interface?

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[1] The ITU terminology database defines “lossless bit-rate reduction” as “A BRR 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.

2 Which single and open compression algorithm can be recommended for perceptually lossless bit-rate reduction of digital HDTV signals, particularly of the higher members of the HDTV family of systems specified in Recommendation ITU-R BT.709, in order to transport them on a single HD-SDI interface?

further decides

1 that the results of the above studies should be addressed to prepare new Recommendations;

2 that the above studies should be completed by 2007.

Category: S1