

Technical standards and regulations for broadcasting – Rôle of the international organizations

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1. Introduction

The world of broadcasting is in a state of turmoil, with organizations and structures being continually created or modified, and the EBU is having to adapt its structure and methods to meet the challenges which the ever-changing environment presents.

The reasons for this situation are bound up with the worldwide political upheavals and the rapid technological developments which are breaking down the barriers between broadcasting, telecommunications, computing, recording and so on, as well as providing new opportunities for commercial ventures which may overlap with the traditional field of broadcasting.

One of the consequences is that it is increasingly difficult to understand the rôles of the long-established international organizations and even less of those which have recently been created. It is perhaps somewhat curious that the greater the degree of deregulation and freedom of action, the greater becomes the need to set up structures for cooperation in various specific fields. Telecommunications (including broadcasting) is a striking example of this because, by its very nature, there must be a considerable degree of international agreement and harmonization of standards, protocols and methods. If this does not exist in some form, telecommunications cannot function.

In the new era of deregulation in telecommunications, it may be seen as ironic that several new regulatory and standardization bodies should have been created in Europe in recent years. In the meantime, in an attempt to respond more effectively to the rapid technological changes affecting all branches of the telecommunications industry, the international organizations – the ITU in particular – are having to adapt their working structures and devise new ways of reaching consensus.

As an association of broadcasting organizations, and also in its capacity as network manager for the world's largest and most-complex point-to-point television transmission network, the EBU has an important rôle to play in both the worldwide and regional (European) standards arena.

The article explains how the various standardization and regulatory organizations work together, and the EBU's relationships with them.

It is therefore not surprising that there is an increasing number of such international bodies, and it is important to understand their functions and to participate in their activities wherever this will be productive. On the other hand, taking account of the need for the EBU, as any other organization, to avoid unnecessary waste of its resources in man-



power and money, it may be necessary to restrict participation in bodies which may have a reduced influence for broadcasting.

The purpose of this article is to explain in broad terms the functions of the international bodies which are believed by the author to be relevant to the technical aspects of broadcasting and which therefore imply the need for some interaction with the EBU. The term “international” is considered as comprising two “levels”, namely, the worldwide level and the regional level. In particular, the regional level is taken here as implying Europe. It would be too complicated, in an article of this nature, to take account of the structures and procedures in other regions of the world. Moreover, the article does not deal with the aspects of policies, programming, administration and law. These matters are very important, but it would be impracticable to attempt to deal with them all in a single article.

One difficulty in following any discussion on this subject is to interpret the initials and acronyms of the many organizations and documents involved. A list of those relating to the organizations is given in *Table 1* and those relating to the documents (standards etc.) are given in *Table 2*. They will be used without further definition in the text of the article.

2. Categories of functions

An international organization may have various functions, which may be broadly considered as coming within one or more of the following categories:

2.1. Regulation

Regulation implies that the objectives are to establish rules and methods which effectively have the force of law. However, it is not the purpose of this article to discuss the niceties of the exact legal status or meaning of “regulation”. The ISO and IEC, in a proposed Code of Good Practice for standardization, define “technical regulation” as:

Document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method.

ACTE	Approvals Committee for Telecommunications Equipment
AES	Audio Engineering Society
CCIR	International Radio Consultative Committee
CCITT	International Telegraph and Telephone Consultative Committee
CEC	Commission of the European Communities
CENELEC	European Committee for Electrotechnical Standardization
CEPT	European Conference of Postal and Telecommunications Administrations
EACEM	European Association of Consumer Electronics Manufacturers
ECMA	European Computer Manufacturers' Association
ECTRA	European Committee for Telecommunications Regulatory Affairs (of the CEPT)
ERC	European Radiocommunications Commission (of the CEPT)
ERO	European Radiocommunications Office (of the CEPT)
ETNO	Association of European Public Telecommunications Network Operators
EURESCOM	European Institute for Research and Strategic Studies in Telecommunications
INTUG	International Telecommunications Users Group
ISO	International Organization for Standardization
ITSC	Interregional Telecommunications Standards Conference
ITSTC	Information Technology Steering Committee
JPG	Joint Presidents Group (of ETSI and CENELEC)
JTC	Joint Technical Committee (ETSI/EBU)
MPEG	Moving Pictures Experts Group
NSO	National Standards Organization
SMPTE	Society of Motion Picture and Television Engineers
TRAC	Technical Recommendations Application Committee

2.2. Standardization

The standardization function is to create technical standards which are agreed and widely applied internationally. The standards may not automatically be legally enforceable. Nevertheless, the members of an international organization may agree, as a condition of belonging to the organization, not to apply any standards which are not created or approved by the organization. Moreover, a national or international regulation must usually be based on an accepted technical standard. The practical effect is thus to treat the standard almost as if it had the force of a regulation, and the function of standardization overlaps with the function of regulation. The ISO/IEC definition of a “standard” is given in the proposed Code of Good Practice as:

Document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or re-

NET	European Telecommunications Standard (before the creation of ETSI)
CTR	Common Technical Regulation
EN	European Standard (of CENELEC)
ETS	European Telecommunication Standard
PrETS	Provisional ETS
I-ETS	Interim ETS
TBR	Technical Basis for Recommendation (produced by ETSI)
HD	Harmonisation Document (of CENELEC)

Table 1
Identification of international organizations relevant to the standardization activities of the EBU.

Table 2
Identification of standards and regulations.

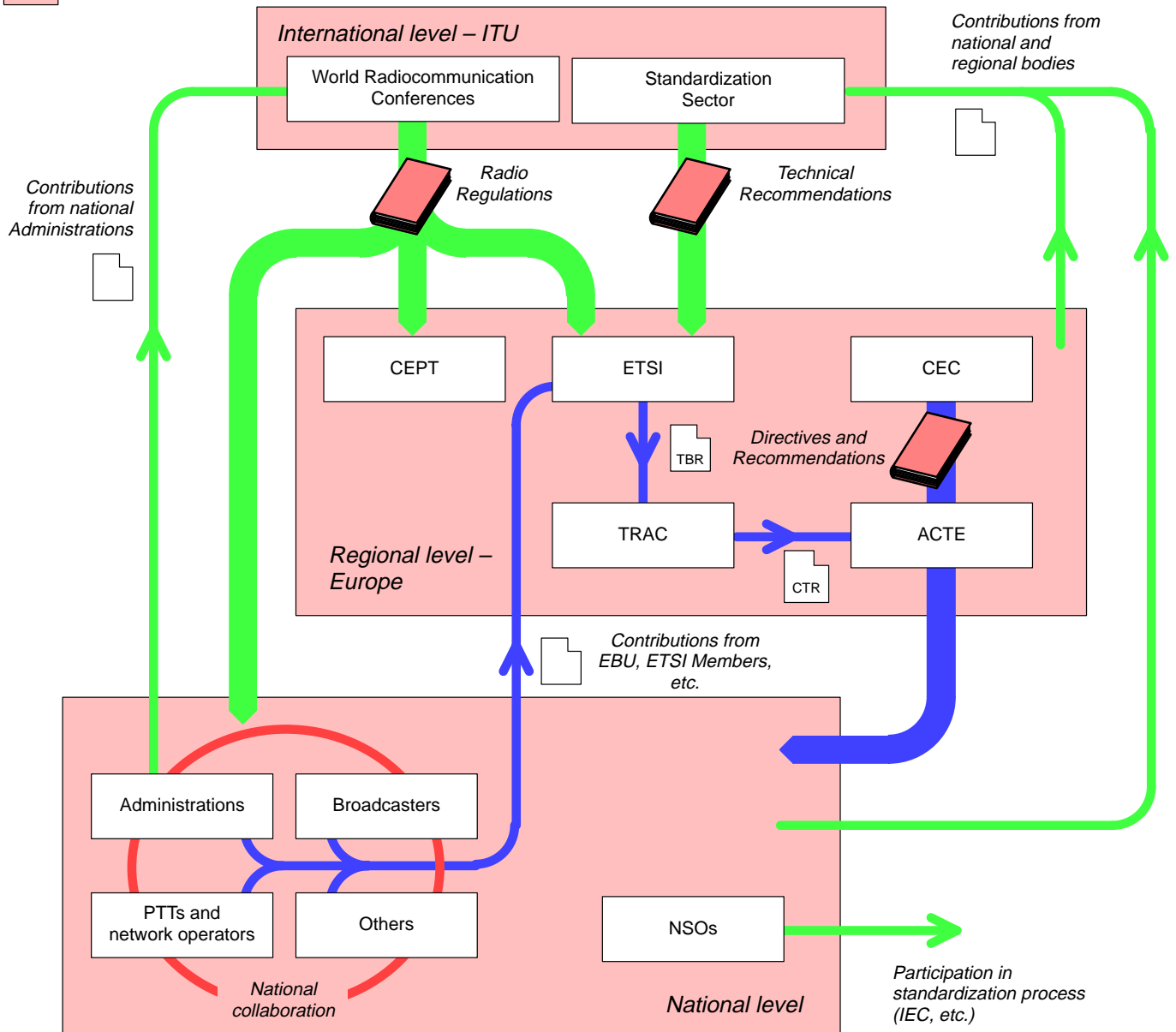
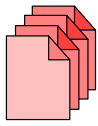


Figure 1
Simplified diagram of the radio and telecommunications regulatory structure.

lated processes and production methods, with which compliance is not mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method.

2.3. Cooperation

The objective of organizations embarking in programmes of cooperation is to encourage sharing of ideas in certain fields, without necessarily implying any wish for standardization or regulation. In particular cases, however, the cooperation may be in the form of a common action to achieve some

standard or regulation. The EBU itself could be considered as coming within this category.

An attempt will be made to look at these three categories separately, in the following Sections.

3. Regulatory organizations

Referring to Fig. 1, the world authority for broadcast transmissions and for other radio applications is the Radio Regulations, produced by the ITU. These Regulations have hitherto been based on the work of the CCIR, in association with the IFRB. In the future, the work will be dealt with by World Radiocommunication Conferences, to be held every two years.



At the regional (European) level, the regulatory aspects are handled by the CEPT (in particular, its committees ERC and ECTRA).

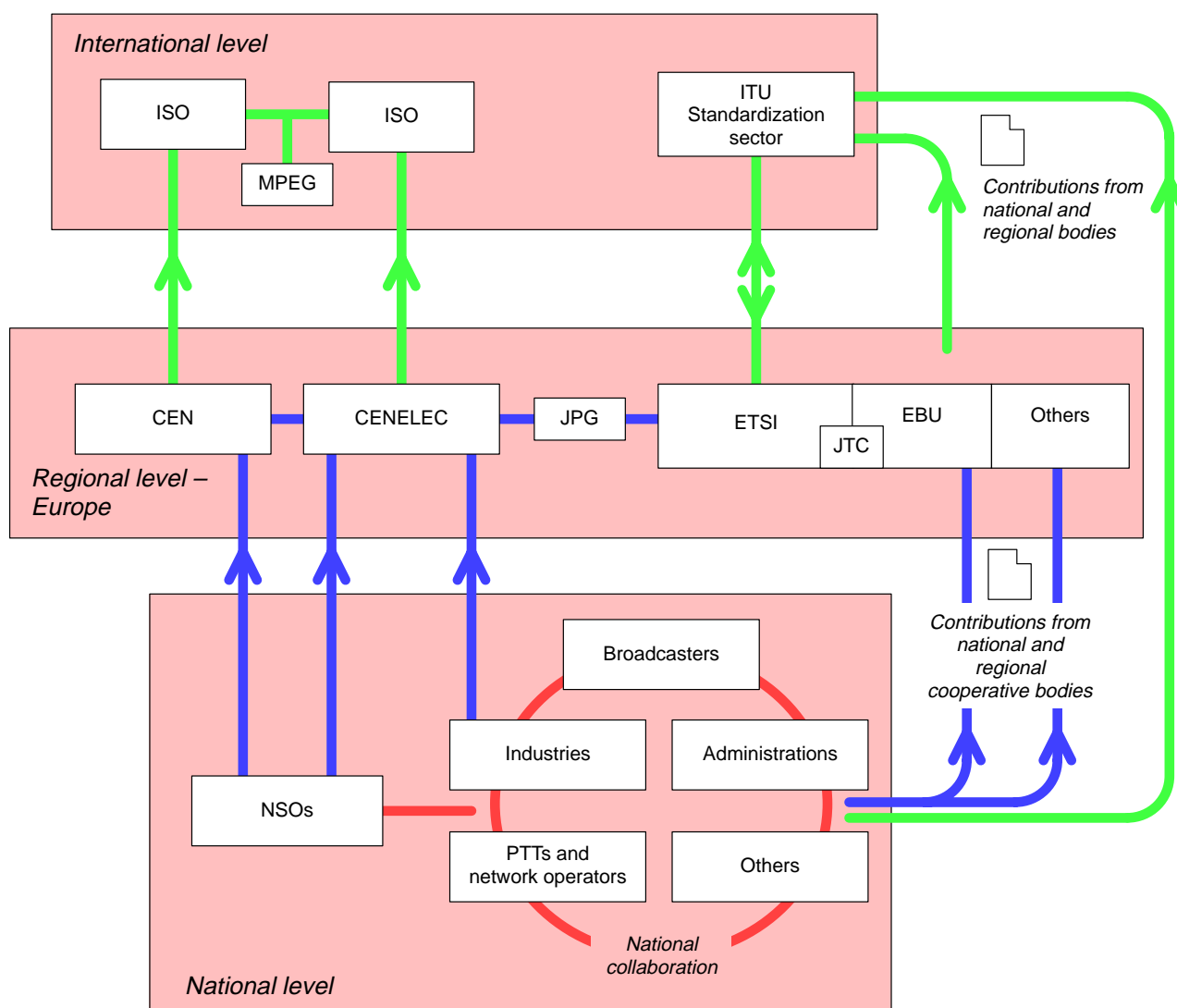
For the non-radio applications, there is no worldwide regulatory body in the strict sense, but in practice the CCITT Recommendations have had virtually the function of regulation. In the new arrangements of the ITU bodies, the Telecommunications Standardization Sector will presumably have the same authority.

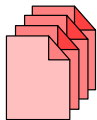
At the regional European level, the CEPT was at one time the effective non-radio telecommunications regulatory body, and a committee called TRAC agreed on Recommendations to ensure a necessary minimum of compatibility between terminals used in the different countries corresponding to the Members of the CEPT. These standards were called NETs. Unfortunately, there was confusion here with the French term (also NET) corresponding to the English term for a normal ETS,

which is not necessarily regulatory. The name of the regulatory standard was changed to the present CTR. The CTR contains, not only the technical aspects which were originally covered by the NET, but also the administrative and political aspects. Following the setting up of ETSI, a new TRAC was created, to decide on the conversion of existing NETs into CTRs.

General telecommunication policies for countries within the European Community are coordinated by the CEC. In particular, the telecommunications (including broadcasting) issues are handled by General Directorate XIII (Telecommunications, information industries and innovation). This issues directives, regulations and recommendations to its Member countries, and in this sense can be considered as the regulatory body. It has created the ACTE, which is a consultative committee responsible for the application of CEC directive 91/263/EEC, dealing with the mutual recognition of type approval of telecommunication terminals.

Figure 2
Simplified diagram of radio and telecommunications standardization structure.





The ACTE bases its decisions on the CTR texts prepared by TRAC, which comprises administrations from not only the EC countries, but also those from EFTA countries. The TRAC takes the technical content of its texts from the TBRs produced by ETSI, so that the final CTRs are influenced by industry and users as well as Administrations.

■ 4. **Standardization**

The situation regarding standardization is shown schematically in *Fig. 2*.

At the world level, the ITU, which is a specialized agency of the United Nations, is the primary authority for telecommunication standardization. Previously, it comprised two main parts – the CCIR, dealing with radio matters including broadcasting, and the CCITT, dealing with non-radio matters. The CMTT provided a link between the two bodies. In the future, there will be a Radiocommunication Sector (including responsibility for the Radio Regulations) and a Standardization Sector.

In addition, the ISO and IEC are the international groupings of all the national standardization bodies. The ISO is primarily concerned with non-electrical matters, so does not normally impinge directly on the activities of the broadcasters. The IEC, however, is concerned with electrical equipment. Originally, the IEC was primarily concerned with the standardization of hardware aspects and its activity was complementary to that of the ITU. During recent years, however, there has been a greater involvement of the IEC in software and systems aspects. One example of this has been the considerable work done by the MPEG on digital coding for video and audio. In this respect, there has been an increasing overlap with the activities of the ITU, and although efforts have been made to minimize duplication of effort, it seems that the problem has not yet been completely resolved. This situation may be a consequence of the increasing mutual dependence of the hardware and the systems aspects, with the use of large-scale integrated circuits.

It would not be appropriate here to enter into a debate on the more political aspects of this problem, but it is clear that there is a certain difficulty for a body such as the EBU to participate in all the relevant bodies.

There is potentially a similar situation at the European regional level, where the ETSI is responsible for producing the telecommunications (including broadcasting) standards, either for application

only within the region or, as is more usual, for interacting with the ITU Standardization Sector with a view to producing a standard at the world level. However, CEN/CENELEC, the European counterpart of the ISO/IEC, also has a rôle to play. Fortunately, at an early stage of the formation of ETSI, an effort has been made to agree on the respective contributions of ETSI and CEN/CENELEC, and there is a memorandum of understanding about this. Broadly speaking, ETSI deals with the software and overall systems standards, while CENELEC deals with the hardware standardization.

In some cases, a particular standard may involve contributions from both organizations. There is a Joint Presidents' Group (JPG) which monitors the situation and, where necessary, agrees on a suitable sharing of effort. This group works in close association with the ITSTC, which is responsible for matters dealing with information techniques. The latter often overlap with the techniques used in telecommunications.

ETSI also collaborates with other organizations which have a legitimate interest and are active in promoting standardization in particular fields. One example of this collaboration was the setting up of the Joint ETSI/EBU JTC, which deals with all matters related to broadcasting. In this way, the EBU has a direct input to the standards-making process at the European level. CENELEC is also represented on the JTC, so there is an effective means of ensuring the participation of CENELEC in those matters which are its proper concern.

ETSI and other regional standardization organizations have considered it desirable to arrange a degree of collaboration, and several Interregional Telecommunications Standards Conferences (ITSC) have been held. There is some potential overlap with the functions of the ITU, but the danger has been recognized and senior representatives of the latter have in fact participated in the conferences.

■ 5. **General collaboration**

The EBU was originally set up, and still functions, as a forum for general collaboration in the field of broadcasting. It has never been a standards-making body in the strict sense, but in practice it has been very influential in assisting the creation of standards in such bodies as the ITU. At the same time, it has often produced Recommendations which have effectively become standards, at least among its Member organizations. It is therefore important to be aware of the activities of collaborative groups, even when their function is not directly concerned with standardization.



Because of the nature of general collaboration, it is not meaningful to try to define a structure for them or to categorize the bodies as “national”, “regional” or “world-wide”. The EBU itself, while nominally “European”, has interests, influence and participants which go well beyond the nominal European borders. In general, however, relations will be closest between bodies which are primarily regional, e.g. European, in their groupings and interests.

Some examples of collaborative organizations are:

SMPTE, which is a society which is normally considered as American, and therefore regional, but in practice it has participants from all over the world. Like the EBU, it is not a standardization body, but it has been, and continues to be influential in proposing and promoting standards.

AES is also an organization with worldwide membership, and it is very active in proposing and promoting standards in the specific field of audio engineering.

CEPT Telecom is a European body responsible for determining the telecommunications policy within the Member administrations and operators. It no longer produces standards, this function having been taken over by ETSI.

ETNO is an association of the European network operators. It is concerned with the general evolution of network strategies and technologies, and the interconnection of networks.

EUTELSAT establishes operational European satellite systems, including those for telecommunications and broadcasting.

EURESCOM does the research and technical studies to support the European public telecommunications network operators

ECTEL is an Association of the European Telecommunications and Professional Electronics Industry: its role is to represent the interests of industry in this field.

ECMA represents the European industrial interests in the field of computer manufacturing, while *EACEM* deals with the interests of the consumer products manufacturers.

ECTUA and *INTUG* are associations of European telecommunications users.

There are other associations, but it would be invidious to try to include them all in the present article. The important point is that a wide range of activities and interests are covered, and all of them can have some bearing on the process of standardization.

6. Definition of the European region

So far in this article, reference has been made to the “European” region. It would be useful if a map could be given, showing the specific geographic area defining this concept. Unfortunately, however, it is not possible to do this. For the geographer, it is the land mass bounded on the south by the Mediterranean and on the east by the Ural mountains. For the ITU (and the EBU), the European Broadcasting Area contains part of North Africa. The Europe of ETSI originally corresponded to the western part of the old CEPT, but its membership is now being enlarged to include countries in the eastern part. However, it still does not include members from North Africa.

In the case of CENELEC, a smaller number of countries is represented.

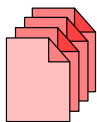
However, it is perhaps not useful to make comparisons based only on the number of countries or the geographic area. Other important factors are the status and importance of the participants and the relationship each organization may have with other regions, in terms of mutual assistance and even joint action. The EBU itself is an example of a body which exerts an influence on, and is influenced by, every region of the world.

7. Conclusions

The regulatory and standardization structure is complex, and is still evolving. The situations depicted in *Figs. 1* and *2* are very simplified, and for

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any particular subject or aspect it is often not possible clearly to identify the respective rôle and authority of a given body. This is especially the case when technical issues are closely interlinked with commercial and political issues. For an organization such as the EBU, two extreme strategies might be envisaged:

- a) attempt to collaborate with and influence all of the organizations mentioned in this article;
- b) concentrate all the available effort to maximise the EBU influence at one critical point.

Strategy *a*) would in principle be an ideal situation, but it would no doubt be impracticable because of the heavy demands on manpower, time, and expense for both the Members and the Permanent Services.

Strategy *b*) is a tempting idea, but it would not be sufficiently effective, in view of the complexity of the total situation.

In practice, the EBU must adopt a flexible approach and be ready to exert its influence at the point or points which may be most critical at the given time and for the given subject, taking ac-

count at the same time of the effort and expense involved.

As a general guideline, however, it is suggested that the first priority should be given to working at the regional level, with ETSI, because this body is now widely accepted as the most important European organization in the field of telecommunications and broadcasting standardization. Moreover, it is having an increasing influence at the worldwide level. For frequency-management matters, however, the appropriate collaboration will be with the CEPT's European Radiocommunications Commission.

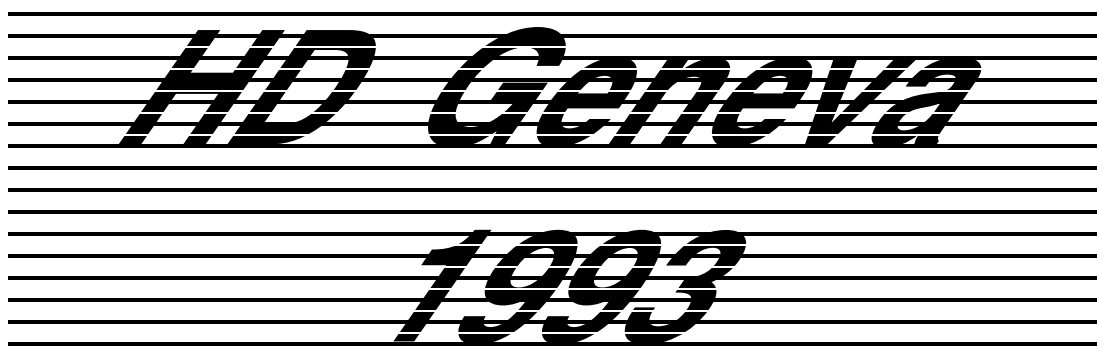
Giving priority to working with the regional European organizations implies that there may be less direct influence at the worldwide level, but this does not necessarily mean that the total influence is reduced. On the contrary, by ensuring effective action at the regional level, the worldwide influence will be increased.

This strategy does not, of course, preclude close worldwide collaboration on matters specifically concerned with broadcasting matters with, for example, the other broadcasting unions.



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