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PROTECTION OF BROADCASTING ORGANIZATIONS

Technical background paper prepared by the Secretariat

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I. INTRODUCTION

1. The sixth session of the Standing Committee on Copyright and Related Rights which took place from November 26 to 30, 2001, decided that, for the seventh session of the Committee, the WIPO Secretariat should prepare a technical background paper dealing with the issues raised by broadcasters' rights protection.
2. The aim of the present background paper is to provide technical background information on developments that have taken place in the broadcasting sectors since the adoption in 1961 of the International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (the Rome Convention), with particular focus on a description of the technological changes that have affected the activities of broadcasting organizations. It clarifies and explains certain concepts and activities of broadcasting organizations related to their transmissions of programs. The issues taken up in the background paper have been selected on the basis of the discussions on the protection of broadcasting organizations which have taken place in the Standing Committee on Copyright and Related Rights at its previous sessions.
3. An issue that has been discussed by the Standing Committee is the object of the protection, that is, what should be protected. A number of technological developments have taken place, and they need to be analyzed both in terms of their relation to existing definitions and in terms of their possible assimilation to broadcasts.
4. Another issue that has been discussed by the Standing Committee is the subject of protection, that is, who should enjoy the protection. In general, that subject has been referred to as broadcasting organizations. In this respect, following technological developments new program transmitting entities have emerged, and the question has been raised whether every entity distributing signals and involved in the distribution of programs would qualify as a broadcasting organization and benefit from the protection. A related issue is whether broadcasting organizations that undertake other activities in addition to their traditional broadcasting would also enjoy protection for such other activities.
5. Further issues which are not discussed in depth in the present background paper are the rationale for protection, that is, why protection should be granted, and the scope of protection, that is, what kind of protection should be granted. As regards the former issue, it is recalled that broadcasting organizations have in the past been granted protection for the result of their investment, their entrepreneurial efforts and their contribution to the diffusion of culture and their public information service. As regards the scope of protection, reference is made to the proposals submitted by Governments to the Standing Committee, and which are compiled in comparative tables by the WIPO Secretariat.

II. BROADCASTING ORGANIZATIONS AND THE ROME CONVENTION

(a) Broadcasting and Technology

6. Since broadcasting emerged as radio broadcasting in the first decade of the 20th century and television broadcasting became widespread in the 1950s and 1960s, it underwent important changes as regards the production, dissemination and consumption of programs. Still, in the 1960s broadcasting was technically limited to analog radio and television services provided over the air from terrestrial transmitters, and due to spectrum constraints, the number of channels was limited.

7. What might be considered the main features of broadcasting have since then to some extent remained unchanged. The main operation that is performed by a broadcasting service consists in sending a stream of signals containing images and/or sounds for reception by the public at large. Broadcasting is not confronted with any inherent limitation as to the number of receivers within a given geographical area covered by the radio waves concerned. One transmitter can reach an audience of 2,000 or 2,000,000 for almost the same technical costs (point to multipoint; see Annex I). The marginal cost to the broadcasting organization of extra listeners or viewers is effectively zero. A description of the point to multipoint technology is contained in Annex I.

(b) Economic Features of Broadcasting Organizations

8. The broadcasting market is today essentially composed of two main categories of operators. The first one consists of broadcasting organizations that finance their activities through advertising or license fees. Their broadcasting is usually non-encrypted. The other model consists of television by subscription, essentially pay television companies.

9. The two main features of pay-TV relate to the controlled access to the program and the payment of the subscriber. The success of the major pay-TV channels has been founded on their exclusive licensing, on a geographical basis and for a limited period of time, of the rights in certain programs. The major part of these programs is made of films, news, and sports coverage which provide high audience figures. Sports, in particular, is a sector where there is often only one exclusive license for each country. (While the term "sports rights" is often used, such transmissions are in certain countries subject to contract protection, rather than copyright.)

(c) The Legal Framework Applicable to Broadcasting

10. The general legal framework applicable to radio and television broadcasting reflected the technological environment and more specifically the facts that broadcasting was expensive and, due to the shortage of Hertzian frequencies, limited to few players. Therefore, in general, a small number of generalized channels developed in each country. Until the advent of broadcasting by satellite, television broadcasting was essentially limited by national boundaries. Programs served mainly the general public interest, especially in providing useful information and discussion of issues in a public forum, and much broadcasting is still today operated as a public service. Due to the restrictions in available frequencies used for over-the-air broadcasting and cable access, the possibility for broadcasting organizations to

offers specialized targeted channels (known as niche channel programs) was for many years almost non-existent.

11. The legal framework applicable to broadcasting was normally specific and well defined. In most countries the broadcasting sector was, and it remains today, extensively regulated. The rules to which broadcasting organizations are subject range from the license required for the activity as such, procedures for the allocation of frequencies, rules relating to the public mandate, regulation of the content itself like language quotas, local cultural content, or rules for the protection of young people.

12. Rights granted to broadcasting organizations were also limited. Until 1961, such rights were essentially granted at the national level, and not all countries provided for such protection. At the international level, the main rights granted to broadcasting organizations were laid down in the International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (the Rome Convention), which was adopted on October 26, 1961. It came into force on May 18, 1964, and as of March 27, 2002, 68 countries were party to it.

13. The Rome Convention reflects the technological development of the time when it was negotiated. It defines broadcasting as “the transmission by wireless means for public reception of sounds, or of images and sounds” (Article 3(f)) and thereby confines broadcasting to over the air transmissions, excluding coverage for cable transmissions. Protection for cable transmissions has, however, in a number of countries been granted at the national level. Articles 13 and 14 of the Rome Convention lay down the minimum rights for broadcasting organizations and ensure the exclusive right to authorize or prohibit a number of activities in the realm of broadcasting.

14. The minimum rights granted to broadcasting organizations under the Rome Convention are the rights to authorize or prohibit: (a) the re-broadcasting of their broadcasts; (b) the fixation of their broadcasts; (c) the reproduction of fixations of their broadcasts; and (d) the communication to the public of television broadcasts if such communication is made in places accessible to the public against payment of an entrance fee. The right of reproduction, however, applies only to reproduction of fixations that are either made without their consent, or made in accordance with the provisions of Article 15 (that is, the exceptions and limitations permitted under the Convention). In the latter case, however, the reproduction must be made for purposes different from those referred to in those provisions. As regards the right of communication to the public, the Article 13(d) states that it shall be a matter for the domestic law of the State where protection of that right is claimed to determine the conditions under which it may be exercised. Article 16(1)(b) further allows a Contracting State to declare that it will not apply Article 13(d) at all. In that case, the other Contracting States are not obliged to grant that right to broadcasting organizations whose headquarters are in that State. Article 14 states that the term of protection shall last at least until the end of a period of twenty years computed from the end of the year in which the broadcast took place.

15. The Rome Convention allows for exceptions and limitations in respect of: (a) private use; (b) use of short excerpts in connection with the reporting of current events; (c) ephemeral fixation by a broadcasting organization by means of its own facilities and for its own broadcasts; and (d) uses solely for the purposes of teaching or scientific research. In addition, Contracting States may apply the same kind of limitations as they provide for in connection with the protection of copyright in literary and artistic works, however with the

reservation that compulsory licenses may be provided for only to the extent to which they are compatible with the Convention (Article 15).

16. Which type of organization is protected as a broadcasting organization under the 1961 Rome Convention is not expressly clarified. Although there is no definition in that Convention of “broadcasting organization,” it was and is generally accepted that these are organizations which provide their broadcasting services to the general public over Hertzian (wireless) waves.

(d) Signal, Content and Program

17. The object of the protection under Article 13 of the Rome Convention, “broadcasts” is not defined in the Convention but from the definition of “broadcasting” in Article 3(f), it appears that it is the signals constituting the wireless transmission of images and/or sounds. Accordingly, the object of the protection is the signals themselves and not to the content of what they transmit.

18. Broadcasting is sometimes referred to as a “point to multipoint” technology which means it is a process in which the same signal flows, or is transferred, from a single origin to multiple consumers. That signal should arrive at all the endpoints at roughly the same time. In this case the network links always send data to a number of different points. This process is different from “point to point” transmissions which are delivered to consumers individually (see Annex I).

19. During the discussions in the Standing Committee, it has generally been indicated that protection should be granted to broadcasting organizations for their signals independently of the copyright and related rights protection of the content. Theoretically it is possible to separate the signals from the content, which they carry. However, in practice, that distinction is almost impossible. Pirates are mainly interested in the content which is carried by the signals, but it should be recalled that copyright law does not protect all content and pirates can also be interested in signals carrying unprotected content.

III. BROADCASTING ORGANIZATIONS AND NEW TECHNOLOGIES

20. Since the adoption of the Rome Convention, broadcasting has evolved considerably as a result of the development of transmission technology and receiving equipment. New ways of distributing services have been created as well as new types of programs and services, including some with a more or less developed interactive element. New copying techniques and equipment have also been developed allowing for a significantly better quality of copies, both for private use and commercial purposes. This has affected the nature of broadcasting, in particular as regards those broadcasting services that include an interactive component. Also, new types of providers offering services or programs have emerged. Questions regarding the possible inclusion of such organizations under the protection of broadcasting organizations have been raised in the Standing Committee.

(a) Development of New Delivery Techniques

21. The main innovation in the field of traditional broadcasting has been a large increase in channel capacity, and thereby the opportunity for broadcasting organizations to offer the general public a much larger choice of scheduled program content, of both general and specialized appeal, over a multiple number of broadcast channels. In today's technological environment, a broadcast signal may still originate from a terrestrial transmitter, but it is as likely to come from a satellite and/or to be delivered *via* cable. The development of cable networks and of broadcasting satellites has offered broadcasting organizations more signal transport options, and satellite technology has increased the global dimension of broadcasting.

(i) Cabledistribution

22. The legal issues raised by cabledistribution were not addressed by the Rome Convention, as coaxial cable distribution only became generally used in the 1960s and 1970s. It developed rapidly in the United States of America and more slowly in other parts of the world where it was at first mainly seen as a technical means to facilitate the carriage of broadcast signals, to avoid the large number of individual antennas on buildings and to ensure coverage in areas where buildings or mountains prevented direct reception. Today, the main advantages of cable systems are seen as their ability to provide viewers with large amounts of programs, received from terrestrial broadcasts, from satellites and sometimes produced specifically for cabledistribution, with a technically very high quality.

23. Cable operators have been acting in two capacities, either as carriers where the cable network is a physical transmission facility, used as a conduit for third party material (cable retransmission); or as content providers transmitting content which the cable operator has selected or produced (cable-originated programs).

24. The Rome Convention does not grant rights for cable or wire distribution. A certain number of national copyright laws grant providers of cable-originated programs rights, similar to those granted to broadcasting organizations, insofar as they are considered organizations which are analogous to broadcasting organizations (offering program services for reception by the public at large).

25. Cable retransmission of broadcast signals is a commercial practice which has developed considerably. In certain countries cable operators are obliged to follow so-called "must -carry rules" obliging them to retransmit some public service programs. It varies from country to country whether such rules also entail a lower level of protection of such programs against their obligatory retransmission.

26. Until few years ago, cable systems were designed to transmit signals in just one direction—from the operator to the consumers' homes. To the extent interactivity was introduced, a phone line was used for feedback. Today, in very modern systems, a cable modem is used for up- and downloading of Internet transmissions.

(ii) Satellite broadcasting

27. Satellite broadcasting of signals started in the 1970s. Many different systems of distribution were proposed or built, including the early satellite-based, high definition television (HDTV) system in Japan, direct satellite broadcasting for remote areas such as Australia, Alaska or the African continent, and the more recent Direct Broadcasting Satellite (DBS) consumer satellite broadcasts system.

28. The definition of “broadcasting” in Article 3(f) of the Rome Convention refers to “transmission by wireless means... to the public,” and thus the wording does not exclude satellite broadcasting from the definition.

29. Article 1(1) of the International Telecommunications Union (ITU) Satellite Convention clarifies that the “transmission of works and other contributions by direct broadcasting satellite is broadcasting.” The ITU Satellite Convention makes a distinction between, first, fixed service satellites, which were originally used as communications satellites for dispatch and reception by broadcasting organizations of point-to-point transmissions of signals, and, second, direct broadcasting satellites, which allow for the direct reception of the signals by the general public (point-to-multipoint; see Annex I). Due to the development of powerful reception equipment, however, signals from fixed service satellites can now also be received directly by consumers and therefore they are in many cases treated as those from direct broadcasting satellites. The distinction which was originally made between fixed service satellites and direct broadcasting satellites is thus not generally applied anymore.

30. The concept of broadcasting has to some extent been updated by the WIPO Performances and Phonograms Treaty (WPPT) adopted in 1996, in particular as regards satellite broadcasting. The WPPT still confines broadcasting only to wireless broadcasting, but clarifies that transmission by satellite and certain encrypted broadcasting is also included in the notion (see Annex II).

(b) Digital Transmission Technologies and Services

31. The impact of digital technology on broadcasting is threefold: First, digital technology is used to carry both broadcasting and telecommunications services on the same network. Digitization is the basis for what is sometimes referred to as convergence, that is, the merging and integration of two or more technologies and their related services. The combination of digital television, computers and telecommunications is an example of convergence, first of different technologies, and secondly of the services offered. In that way, digital technology has brought about new transmission techniques, new forms of presenting and distributing television and radio broadcasts. At the same time, the capacity of transmission has vastly increased and the quality of sounds and images has improved dramatically.

32. Second, digital technology has allowed for the creation and distribution of new kinds of services. This is for instance the case of multi-channel TV, which implies a greater choice of programs, such as “near video-on-demand” services (explained in paragraph 44, below). Some of the new services simply a combination of interactive and broadcast elements. In any case, the user has a greater degree of choice and decision, for example regarding the timing and the language of the program, as well as of the program itself.

33. Third, the Internet, or others similar digital networks such as those based on wireless applications, are becoming another way of distributing copyright or related right protected content, for example through webcasting or streaming (see paragraphs 47 to 56, below). Different views have been expressed as to whether such news services should be assimilated to traditional broadcasting.

(i) Interactive Services in Broadcasting

34. Digital technology refers to a particular way of storing, converting, and transmitting data in binary numbers (0 and 1). Terrestrial transmitters may transmit those digital signals over the air, or they can be sent by satellite or wire through a cable network for direct reception by the public. A digital signal is superior to an analog because of its greater accuracy, versatility, efficiency, economy and interoperability with other electronic media, and it is also much more efficient in its use of the frequency spectrum. Digital transmission uses broadband networks which are very fast content delivery networks capable of delivering large amounts of information, for example, large numbers of television signals, in a given time.

35. A digital standard can “squeeze” several television channels into the space currently used to carry a single analog channel. Furthermore, digital signals can be compressed when they are retransmitted. This creates opportunities for many more new channels and program services, such as subscription television programming, computer software distribution, teletext, interactive services, and separate audio signals, among others. It also allows for the carriage of high definition television (HDTV), multiple program streams (multi-channeling) and enhancements (multi-view).

36. Broadcasting seems to be on its way to a massive conversion to digital transmission of program and content. It is difficult to predict which programming and revenue models broadcasting organizations will choose to develop as they expand the use of digital transmission. Much will depend on the competitive opportunities that broadcasting organizations identify as promising, emerging market conditions, and the regulatory measures. The common feature of all these services is that most of them have interactive elements, albeit in varying degrees. In the area of radio broadcasting, digital radio will provide additional opportunities as well as noticeable enhancements similar, mutatis mutandis, to digital television.

37. “Interactive services” refer to a particular kind of television or radio services which include an interactive element, that can be distributed either on digital or analog networks. “Interactive” normally means that there is a return path between the viewer and the broadcasting organization. In other words, the program is broadcast to the public at large, and the viewer will have the possibility to make an individual request to the broadcasting organization over the return path (backchannel), for example, over the telephone (whether vocally or by pressing a pre-set number/dialing code) or through an Internet link. That latter operation over the backchannel is not broadcasting, but point-to-point transmission. This means that there is a connection only between one person or entity and another.

38. Described in very general terms, interactive television is television with added content and enhancements which can be selected by the viewer. The use of interactive digital television is still relatively new, but some examples of new digital television services, where the public exercises some choices, can be mentioned:

- multi-channeling where the general public is offered a much larger choice of scheduled programs content over a number of broadcast channels;
- program enhancements—these are separate “channels” of video or audio, which are related to the program being transmitted. For example, the viewer may be able to choose the camera angle he or she wants to watch during a sporting broadcast, or read a recipe on-screen during a cooking show. A “window” on the television screen may provide an on-screen program guide and extra information while the main program is also displayed on screen (multi-view);
- datacasting—a data-casting service can be broadly described as a service that delivers content in the form of text, speech, music or other sounds or images (data) to persons with appropriate reception equipment. Datacasting is most often used for distribution with restricted access: it allows mass transmission of data by using a conventional TV signal of any TV commercial program. It includes the delivery of radio and television, enhanced information services, such as, interactive home shopping, banking, education programs, interactive games, in addition to regular program channels;
- Electronic Program Guides (EPGs)—in the context of digital broadcasts, the use of EPGs and teletext navigators assist viewers in finding and selecting the programs they want to watch among the (potentially hundreds of) program services available. Teletext has normally been considered as included within the broadcast service, but EPG makes it possible to provide the viewer with a fully-detailed description of the program: title, synopsis, casting, director, production year, etc., and presented in multiple languages. In digital television, EPGs are becoming a portal to broadcasting services, a gateway to a set of interactive applications, and even an access point to the Internet;
- Personal TV—PTV is the viewing of live television programming in a manner that gives the viewer options such as:
 - pausing but being able to continue the program from the point one had reached (this includes being able to do instant replays in sports)
 - automatic programmed recording of shows
 - ability to skip commercials in the program.

39. The broadcasting organization may provide an answer to the viewer's request over the point-to-point link, in which case one may refer to a bi-directional interactive return channel. For example, during a panel discussion program, viewers may wish to telephone the broadcasting organization in order to suggest a particular question to the program producer. If the question is an interesting topic, it may be put to the panel, in which case the answers would be broadcast. If not, an answer may be telephoned subsequently to the individual concerned. Another example: a broadcasting organization may use the left-hand part of the TV screen to list clips (music videos featuring a particular performance of a song). Viewers may indicate, by pressing a certain dialing code on the telephone, which clip they wish to watch subsequently. If a viewer wishes to propose a clip which is not on the screen list, he would have to speak to the operator. If many viewers choose the same clip, they would not need to be informed individually by the broadcasting organization of the result of the poll, since this would be shown on the broadcast channel.

40. Some services involve a lower degree of interactivity. This is the case of so-called local interactivity where the choice is within the options available in the television set itself. For example, the broadcast of a football match may provide a choice of various viewing possibilities simultaneously from different camera angles, or a viewer may choose which one of several possible different parallel scenarios of a drama thriller to watch. In these cases of (enhanced) broadcasting the broadcasting organization is using parallel broadcast channels to offer different variations of the scheduled broadcast programs simultaneously to the public at large (multi-channeling).

41. On the other hand, if the broadcasting organization expects that a reasonably large number of viewers may wish to have additional programming information or to see the broadcast program or extracts from it again, the organization may already have set up a carousel automatically and continuously re-emitting content, as in the case of teletexts. In these circumstances of "enhanced" broadcasting, there is no interactive connection between the viewer and the broadcaster, even though it may superficially seem like an interactive operation. The broadcasting organization is merely using one of its broadcast channels to repeat programs or information on a continuous basis for the public at large. This is also what happens in the case of so-called near video on-demand, where films are repeated continuously, so that the viewer just has to wait until the next scheduled "showing" starts.

42. Another method for creating interactive television is to offer a series of web pages which are viewed on a television with a digital cable set-top box and navigated with a remote control. The cable system presents a menu similar to a program guide from which the user selects content designed for TV viewing and not linked to the larger Internet. Such content is referred to as a "walled garden".

43. What happens in practice is that the broadcasting organization pre-selects from the Internet a limited amount of content for example because it is relevant to a particular broadcast program. That information is then put on a broadcast carousel, and is thus continuously repeated on that broadcast channel for the public at large (whether free-to-air or to subscribers) at scheduled intervals. Thus, there is no limit to the number of viewers who can tune in simultaneously.

44. Still another interactive service is the case where a broadcasting organization may make its TV or radio programs available to individual members of the public on a non-demand basis, so that a particular program may be accessed, from its starting point to its end, from a place and at a time individually chosen by the particular person. Even if such services are offered by broadcasting organizations, there is no transmission intended for reception by the public at large.

45. Video on Demand (VOD) services produced by broadcasting organizations enable users to select a video program, typically a film, and have it sent to them via a cable or satellite connection, either for direct viewing or the film may be stored in the users' hard disks in the television sets and watched later. In the latter case, the viewer can pause, fast forward, fast rewind, slowdown, etc., as if the film were running on a video cassette recorder. Other interactive features may include the ability to avoid or select advertisements or to investigate additional details about new events. This is also known as interactive VOD. Another type of VOD is the delivery of content over a network in real time to a set-top box.

46. In near-Video On Demand services a particular film is advertised to start every 15 minutes or so over a particular channel. The viewer pays electronically and selects when

to start watching the film. At the time of the screening, the user is given access to the signal, and, in principle, the viewing takes place as the film is transmitted. Certain systems allow viewing between screenings, using the viewer's hard disk in the television set to record an earlier screening and later replay the film.

(ii) Webcasting/Streaming

47. Webcasting is a new model of content delivery on the Internet providing automated and, possibly, personalized delivery of services. Webcasting normally refers to on-demand uses as well as real-time streaming. Access to the Internet is mainly based on telecommunications networks (wire communications), but it is also possible to have wireless access to the Internet. In case of streaming of audio and video (and, less commonly, of text and animation) the user receives the content when it is transmitted, but without retaining a copy of it. Streaming services function on the basis of "pull technology," which means that the content is delivered to the user upon request.

48. Internet services may be accessible *via* different kinds of receiving equipment. Both television sets or computers may be set up as receivers for different kinds of services. Indeed, in the future a person at home may have merely a display screen, for which modules will provide the various connections necessary for the different services required whether from broadcasting organizations or webcasters. The content originates from one or more servers that make it accessible *via* the Internet. Each recipient requests the program from the initial server and is issued a separate stream from the source to his or her address.

49. Another scenario that might develop in the future is the involvement of a multitude of servers in order to reduce the distance between the source and the recipient. This may either be managed by the sender or by the network infrastructure through a process called "multicasting," where Internet routers receive single streams and then serve them individually to one or more recipients. Though the signal has to be sent from the initial source to the multitude of intermediate servers or routers it will not generally be present, but be issued from a source only upon individual demand. Once demanded, the transmission occurs in a one-to-one communication channel to the specific IP address, but from an intermediary source rather than the originator. As the user terminates his demand, the provider (or intermediate server) stops the transmission.

50. In this respect, webcasting is a "point to point" technical process. Even though the same program is transmitted to multiple recipients, it is transmitted *via* a point to point bi-directional communication, instigated by the user. In other words, there is an individual virtual connection per user, over which parallel point to point streaming goes to each of the individual subscribers take place.

51. In contrast to broadcasting services, there is less cost benefit for webcasters in a greater number of consumers, because, in principle, the transmission costs increase proportionately to the number of consumers. If a website becomes successful, the webcaster has to pay for more servers and greater bandwidth. However, in some cases, webcasters rely on advertising the payment for which is often based on the number of hits, or in other words the use of the service. Typical audio servers can support only 100-500 simultaneous listeners. The largest servers can now handle up to only 10,000 simultaneous "streams" (live transmissions or on-demand services): one for each customer. Although video delivery is at present at an early stage, films are already available on the Internet. Networks can become congested by

large numbers of simultaneous streams, and when demand exceeds capacity it is impossible for consumers to get a connection at all. That problem may be alleviated in the future by "multicasting," but the means of delivery to each individual user remains a point-to-point transmission.

52. At least one national copyright law distinguishes traditional broadcasting from webcasting, based on whether or not the consumer needs access to a server. In the case of broadcasting, people can simply access the broadcast by switching on the receiver as the signal transmitted by the broadcasting station is direct and present, whereas, in webcasting, people must access a server and incite its facilities to transmit back the information.

53. Unless specific technological restrictions are applied, webcasts can be accessed globally from any point that has Internet access. This is the major difference in terms of geographical coverage from broadcasts, be it via satellite, cable or over the air which have an inherent limitation in their reach.

54. On the Internet, there are no restrictions on the number of programs offered. The Internet offers an abundance of bandwidth, protocols and domains, which are constantly augmented to adapt to growing demand. Capacity can be obtained at relatively short notice and allows for a flexible adaptation to the level of demand. Consequently, the initiators of streams face no significant initial barrier to entering the market. Webcasting activities can be initiated with modest investments, albeit with a limited capacity of simultaneous listeners or viewers.

55. Streaming services can be adapted to the consumers' preferences, for example, distributing niche programs for groups of consumers or basing the contents, arrangement and presentation of the service on intelligence gathered during earlier visits by the consumers.

56. Finally, one of the main characteristics of streaming is that the transmission is always interactive at the machine level. The transmitting server is in active contact with the receiving machine, verifying the success of the transmission, exchanging status reports. This is not the case with broadcasting, where the main transmission is only one way.

(iii) Simulcasting

57. Simulcasting refers to the process of disseminating the same broadcast over two different transmission systems, for example, when the sound of a TV program is also played over a radio station. The term is also used for the simultaneous broadcasting and streaming over the Internet of a broadcast. Broadcasting organizations often simulcast their broadcast programs services via both analog and digital systems.

(c) Tools for Protecting Content in Broadcasting

58. Content owners are increasingly seeking technological answers to their concerns relating to the dissemination of protected content. There are generally two categories of measures: measures for the identification of content, and technological protection measures.

59. Such measures are usually the result of cross-industry agreements, involving for example film producers, consumer electronics companies and information technology

companies. Such measures are also developed in standards bodies. The broadcasting industry is working actively in the development of such measures in cooperation with the consumer electronic telecommunications industries.

(i) Identification Systems

60. In the broadcasting area identifiers are already being used. In the digital field, the most widely used ones are digital markers such as watermarking and fingerprinting. Several techniques are able to identify and mark content. The objectives of the techniques are varied. The principle is to have visible or invisible means for inserting information relating to the work, whether it be the title of the work, the identity of its creator and the right owner, or conditions of use. Broadcasting organizations are attempting to use these techniques. Those measures are efficient in the detection of pirated signals but should be supported by adequate legislative measures.

(ii) Technological Protection Measures

61. These are mechanisms that protect the content by making it impossible to access or use that content without the authorization of the right owner. In broadcasting, two tools can be used to protect the signal, encryption and access control.

62. One of the major challenges posed by digital networks is to make access to information and to protected content secure, both in order to ensure payment of a fee and to protect the copyright and related rights in the content which has been locked in this way. Many systems have therefore been designed to make access secure, whether it is to the content itself or to a service which includes protected content.

63. Conditional access is an encryption/decryption management method where the broadcaster controls the subscriber's access to digital and interactive television. It offers security in purchase and other transactions. The end-users (subscribers) have a receiver/set-top box allowing them access to the services available through that service. The system is primarily made up of three parts: (1) signal encryption; (2) encryption of electronic "keys" which the viewer's set-top-box will need to decrypt the signal; and (3) the subscriber management system ensuring that those who have bought the scrambled programming, are enabled to receive and watch it.

64. Encryption is one of the most widely used tools in the broadcasting field for limiting access to transmissions and content and in particular for pay-TV broadcasts. Its main applications can be found in the cable and broadcasting sector. The encryption and decryption of the signal requires a license of the relevant encryption technology. For example, the widely used Digital Video Broadcast (DVB) Common Scrambling Algorithm (CSA) which includes the Common Descrambling System and Scrambling Technology. The specification for each is distributed and licensed separately under arrangements with the European Telecommunications Standards Institute (ETSI), which acts on behalf of the four companies that developed the CSA. These are the arrangements contemplated for descrambling of digital television signals pursuant to the relevant EC Directives. The Common Descrambled System is licensed to manufacturers of decoders and their components, and to providers, designers and other entities engaged in conditional access. The

Scrambling Technology is licensed to manufacturers of scramblers, which in turn sublicense the purchasers of scramblers.

65. Encryption of television signal has developed in particular for conditional access channels and channels intended for a free, but geographically limited, distribution. Encryption was developed for such broadcast to help ensure that only those users, who are authorized, basically those who pay for their subscriptions or live in the relevant territory, are able to decrypt the broadcasts and view the programming. As currently applied by satellite and cable companies, the encryption technology protects the programming only until it reaches the authorized user's set-top-box. Once the signal is decrypted, the content is available to the user with no further technological protection against unauthorized copying or re-distribution. However, further technologies are being developed to protect against the latter threats.

66. Most viewers who wish to receive digital television broadcasts currently use their existing (analog) television sets; thus it is technically necessary for them to acquire the set-top-box in order to receive the signals in the digital domain, decrypt them, and transform them to the analog format. However, such technical "converters" will become redundant as new digital televisions replace the old analog sets. Likewise, the use of set-top-boxes is currently necessary to enable the operation of conditional access control, but TV sets increasingly have a built-in mechanism or a slot for incorporating a common interface into which a conditional access module may be plugged.

67. Copy protection is another means used for protection of the content. Some copy protection initiatives exist in the field of digital transmission, designed to protect content during transmissions from one user device to another, such as the "DTCP initiative" (Digital Transmission Copy Protection) and the DVBCPCM (Content Protection and Copy Management). The former is aiming at preventing user copying of digitally broadcast content onto physical media. DVB refers to an industry-led consortium committed to designing global standards for the delivery of digital television. The DVBCPCM system aims to provide a common framework for the protection and management of content beyond the traditional boundary points of conditional access systems. The news scope particularly encompasses the in-home digital networks and personal video recorder technologies where content is moved and recorded on devices that have heretofore not been a focus of the DVB Project.

68. Another well-known system is the Serial Copy Management System (SCMS), a system primarily used in the United States of America on digital audiotapes and mini-disks. The system allows first generation digital copies to be made from the original, but does not permit any further copying of copies. The system also works in this way if the content is copied from a digital broadcast.

IV. LEGAL ISSUES TO BE CONSIDERED

(a) Broadcasting and Piracy

69. As a result of the huge investments and costs involved in broadcasting and the enormous marketing revenues generated because of the massive appeal of television programs, not to mention the rise of new recording and transmission technology, broadcasting piracy has become a main problem (as illustrated in Annex II). In the digital environment, piracy is a severe threat since a digital signal, once received, can be perfectly cloned and reproduced (pirates are able to obtain perfect digital copies of broadcast programs from which multiple copies and Internet downloadable copies can be made and redistributed). Transmission of broadcasts over the Internet are also vulnerable to piracy because of the ease with which contents can be accessed and copied. Large segments of the public have access to broadcasting services, and at the same time copying devices have become cheap and commonplace.

70. Piracy also affects the market for encrypted transmissions. Broadcasting organizations make use of encryption systems so that only the viewer they authorize can access the programming. Audiovisual pirates analyze ("crack") the encryption systems and manufacture and distribute unauthorized decoders, black boxes and smart cards. This practice is widespread both in developed and developing countries, and the use and illegal distribution of decoding devices have proliferated.

(b) Program-Carrying Signals

71. The notion of "program-carrying signal" relates to the issue of "signal theft." The pre-broadcast program-carrying signal can be described as the electronic signal carrying program material which is sent via a telecommunications link to a broadcasting organization for use in its broadcasts. Such signals are intended not for reception by the public, but for use by broadcasting organizations in their broadcasts. Therefore, they are not broadcasting, but a point-to-point transmission (see Annex II) by telecommunications links from the site of an event (sports, news or cultural) to one or more national and/or foreign broadcasting organizations for the purpose of enabling the latter's broadcasting of the event. A broadcasting network (or program syndicator) also sends such signals, for example, to its affiliated broadcast stations.

72. Pirates can intercept the signals, with their content, either at the stage of the pre-broadcast transmission, for example, off a satellite (see Annex II), or at the stage of the actual broadcast. Since pre-broadcast signals are often digital, pirates are able to obtain perfect digital clones of the program-carrying signals and content from which multiple streams, copies, downloads or rebroadcasting can be made. There are also cases where pirates have disseminated the pre-broadcast signals and related contents simultaneously, before the time when the receiving broadcasting organization had scheduled its, delayed, broadcast. For example, instances have been reported where programming has been taken off a United States of America network East Coast feed and streamed over the Internet before it was broadcast on the West Coast.

73. The 1974 Brussels Satellites Convention addresses the question of protection of pre-broadcast program-carrying satellite signals by obliging Contracting States to undertake adequate measures against their unauthorized distribution, but leaving it open whether it

should be under public or private law. Among the possible measures is a specific right for broadcasting organizations to take direct action, particularly by means of exclusive rights under copyright or related rights legislation. Another possible means is telecommunications law, in which case normally a telecommunications authority will take action to protect the secrecy of the signals.

(c) The Object of Protection

74. Some of the developments described above have already been dealt with in other contexts, such as for instance, satellite broadcasting and certain use of encrypted signals, which are included in the definition of “broadcasting” in Article 2(f) of the WIPO Performances and Phonograms Treaty (WPPT). Questions remain, however, whether that definition of broadcasting, which refers only to wireless transmission, remains sufficient in the light of the present technological realities, or whether certain forms of wire transmissions should be included in the definition of broadcasting or be defined or described separately and assimilated to broadcasting. In this connection, depending on the outcome of the discussions in the Standing Committee it might also be considered whether certain cases of transmissions which in general should not be considered or assimilated to broadcasting still might be assimilated such as for example, simulcasting. Such questions have been raised regarding programs which are not transmitted over the air, but directly through cables systems over the Internet. Conclusions to be reached in this respect may influence both the definitions in a possible international instrument, and the protection granted by it.

75. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) does not contain any definitions relating to broadcasting, but it vests in broadcasting organizations rights to prohibit certain acts relating to their broadcasts. These acts are: the fixation; the reproduction of fixations; and the rebroadcasting by wireless means of broadcasts; as well as the communication to the public of television broadcasts of the same. Where Members do not grant such rights to broadcasting organizations, they shall provide owners of copyright in the subject matter of broadcasts with the possibility of preventing the above acts, subject to the provisions of the Berne Convention.

76. Elements, which might be useful in the definition and determination of the object of protection, could be, apart from whether the signal is delivered with or without wire:

- whether the transmission is a process initiated by the receiving person or whether it is sent according to a schedule determined by the broadcasting or transmitting organization;
 - whether access to the transmission, even if it is sent according to such a schedule, need to be made specifically by the receiving person through a server or similar intermediary device (as in Internet streaming); and
 - whether the transmission is made “point to point” (as in an Internet transmission) or “point to multipoint” as in “traditional” broadcasting.
- Whether a given transmission is to be regarded in the context of the current discussions as restricted to “signals” or to “program-carrying signals.”

77. It might also be considered whether the limitation of the definition of “broadcasting” in the Rome Convention and the WPPT to cover only transmission of “sounds or of images and sounds [or of their representations thereof]” is still adequate.

78. In connection with the object of protection it may also be recalled that in a memorandum prepared by the WIPO Secretariat for the first session of the Standing Committee “Existing International, Regional and National Legislation concerning the Protection of the Rights of Broadcasting Organizations” (document SCCR/1/3 of September 7, 1998) it was pointed out that a number of countries do not grant related rights for broadcasting organizations, but include broadcasts as a category of works, protected under copyright (paragraph 36). Among those countries, some appear to protect the program content rather than the emitted signal, while others appear to protect the signal, rather than the content (paragraph 39). The proposals submitted by Governments to the Standing Committee all appear to be based on a related rights protection linked to the broadcast signal, rather than the protection of the program contents under copyright.

79. Another issue which has been raised in the Standing Committee is the possible protection of pre-broadcast signals, that is, signal transporting program to broadcasters for simultaneous or deferred use. The questions are whether such signals should be protected and, if so, how such signals should be defined, particularly in the case where the broadcast is not simultaneous. Presently, such “program carrying signals” are protected under the 1974 Brussels Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite (the Brussels Convention) which, among others, contains the following definitions:

“For the purposes of this Convention:

- (i) ‘signal’ is an electronically-generated carrier capable of transmitting programmes;
- (ii) ‘programme’ is a body of live or recorded material consisting of images, sounds or both, embodied in a signal emitted for the purpose of ultimate distribution;
- (iii) ‘satellite’ is any device in extraterrestrial space capable of transmitting signals;
- (iv) ‘emitted signal’ or ‘signal emitted’ is any programme-carrying signal that goes to or passes through a satellite;

...

- (vii) ‘distributor’ is the person or legal entity that decides that the transmission of the derived signal to the general public or any section thereof should take place;
- (viii) ‘distribution’ is the operation by which a distributor transmits derived signals to the general public or any section thereof.”

Under Article 2 of the Convention:

“[e]ach Contracting State undertake to take adequate measures to prevent the distribution of any programme-carrying signal by any distributor for whom the signal emitted to or passing through the satellite is not intended....”

(d) The Subject of Protection

80. As traditional broadcasting has developed a number of other services, a number of new players have become involved in the transmission of both traditional broadcasts and, in particular, of new types of services and programs. In terms of size and character the traditional and new are very different, spanning from large national broadcasting corporations operating under well-defined rules to private individuals operating in the absence of rules.

81. Both the Rome Convention and the WPPT define the term “broadcasting,” which in its turn is part of the concept “broadcasting organization” used by those Treaties.

82. The Brussels Convention contains, among others, the following definition:

“For the purposes of this Convention:

- (i) ‘signal’ is an electronically-generated carrier capable of transmitting programmes;
- (ii) ‘programme’ is a body of live or recorded material consisting of images, sounds or both, embodied in a signal emitted for the purpose of ultimate distribution;
- ...
- (iv) ‘emitted signal’ or ‘signal emitted’ is any programme-carrying signal that goes to or passes through a satellite;
- ...
- (vi) ‘originating organization’ is the person or legal entity that decides what programme the emitted signals will carry;

- (vii) ‘distributor’ is the person or legal entity that decides that the transmission of the derived signal to the general public or any section thereof should take place;

- (viii) ‘distribution’ is the operation by which a distributor transmits derived signals to the general public or any section thereof.”

83. Under the ITU Radio Regulations a “broadcasting service” is defined as a service in which the transmissions *via* Hertzian waves (i.e., electromagnetic waves of frequencies propagated in space without artificial guide) are intended for direct reception by the general public. The Radio Regulations apply to both sound radio and television.

84. Under international copyright and related rights treaties the word “broadcasting” generally has been understood as a transmission *via* Hertzian waves. A certain number of national copyright laws give providers of cable-originated programs, who do not merely distribute broadcast signals simultaneously and unchanged, rights similar to those granted to broadcasting organizations, insofar as they are considered organizations which are analogous to broadcasting organizations, that is, offering program services for reception by the public at large.

85. It does not appear that any national copyright law gives express recognition of, or protection to, webcasters as broadcasting organizations. Webcasting is described above, but there is no established legal definition of webcasting or of a webcaster, and the term may be understood as applying to any type of a number of different kinds of services over the web which might have varying degrees of interactivity and pre-programming of the content. Therefore, to the extent the Standing Committee might wish to include webcasting under a possible international instrument, an appropriate definition would have to be formulated.

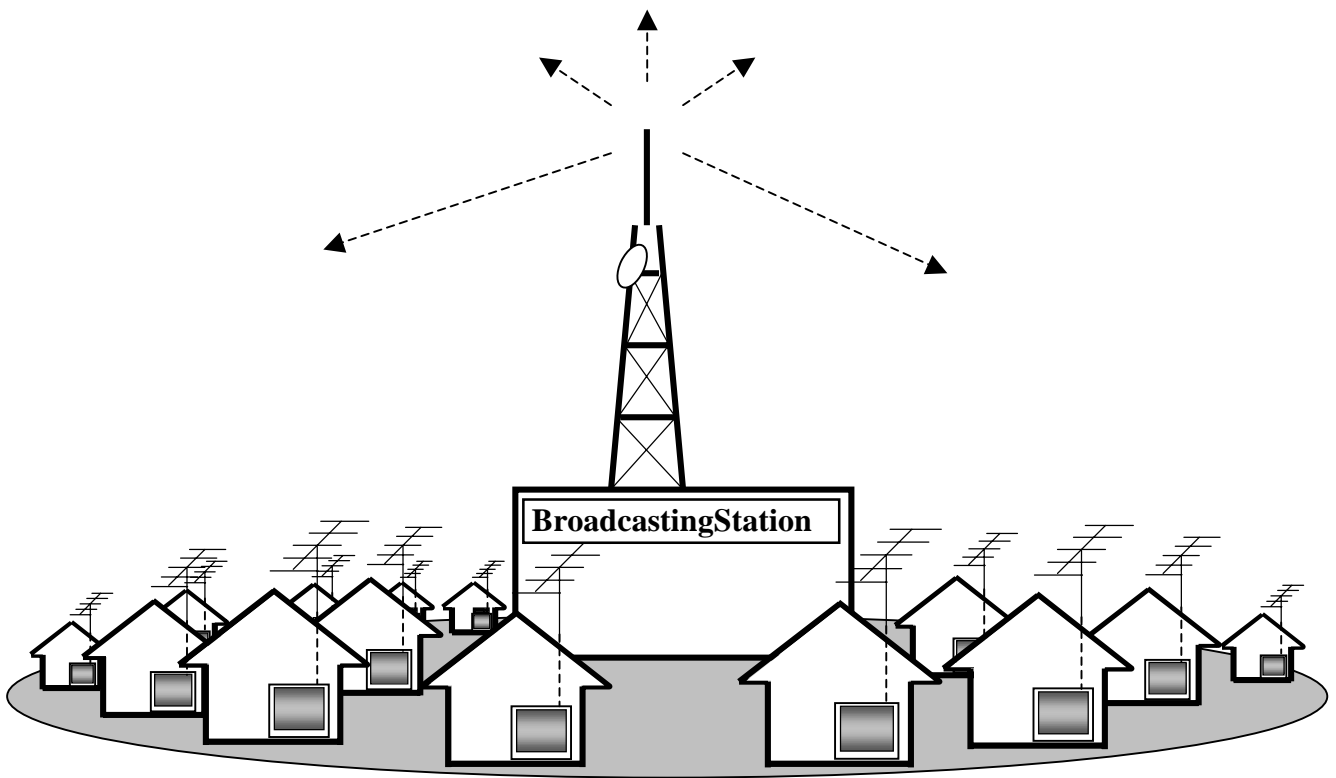
(e) The Scope of Protection

86. As regards the scope of protection, this issue will, as indicated in paragraph 5, above, not be discussed in this paper. Reference is made to paragraphs 14, 75 and 79, above, where the minimum rights for the object of protection under the Rome Convention, the TRIPS Agreement and the Satellites Convention, respectively, are described. In addition, reference is made to the proposals submitted by Governments to the Standing Committee.

87. The Standing Committee is invited to note and to give its comments, if any, on the contents of this document and its Annexes.

[Annexes follow]

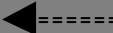
**Broadcasting
Point-to-MultiPoint**

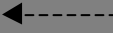



Area of Broadcasting

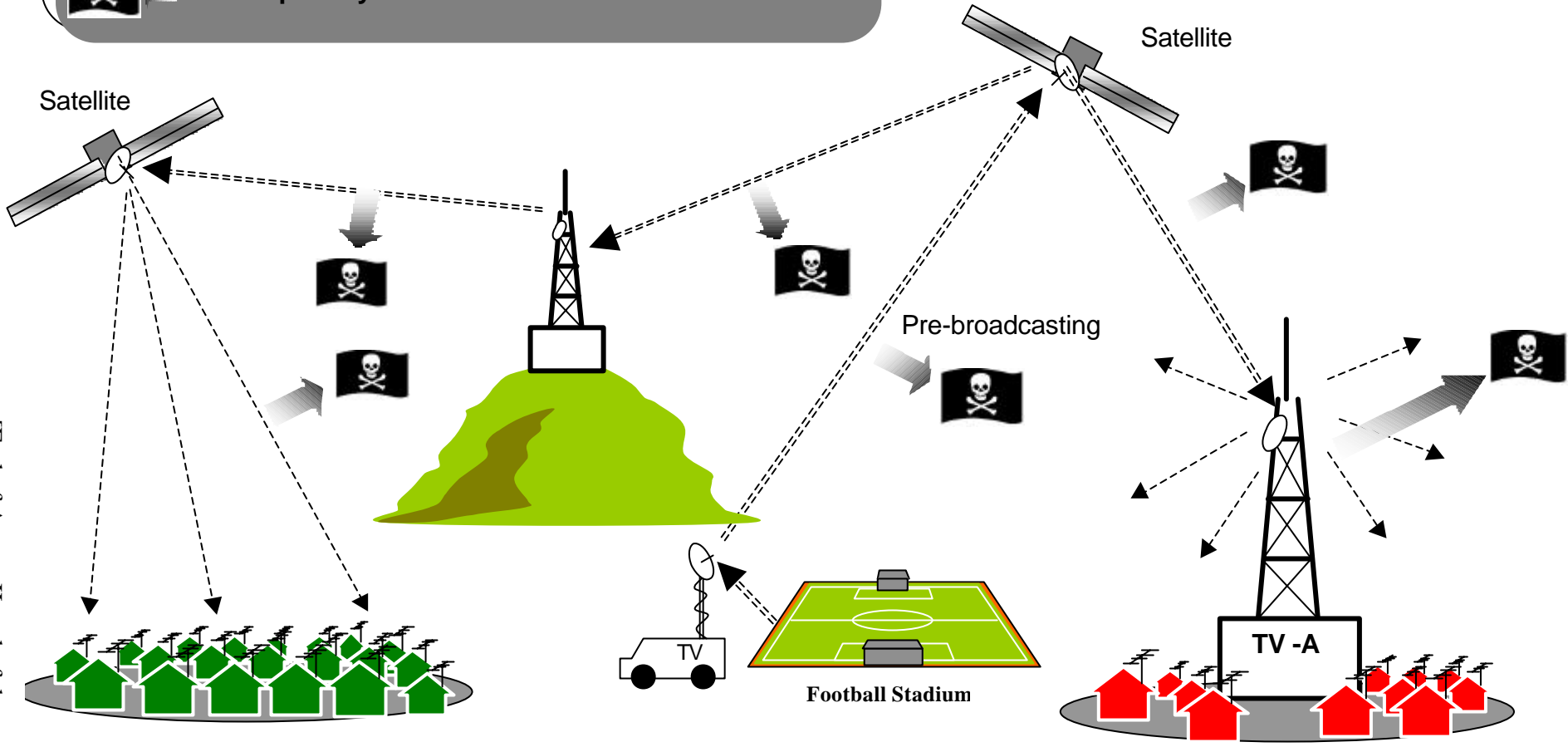
[Annex II follows]

Types of transmissions

 Pre-broadcast Programme carrying signal
 Telecommunication for Transmission of TV
 Programme (Point to Point)

 Broadcasting (Point to Multipoint)

 Intercepted by Pirate



[End of Annex II and of document]