

Revision of ST61

— The key issues to be addressed

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Through the auspices of the ITU many countries of Europe have embarked on a process to revise the arrangements for the planning of terrestrial television for a digital era. Whilst engineers clearly have a vital role to play in providing technical solutions to facilitate the preparation of the new plan, there are other factors that must be resolved before the engineers can proffer a solution.

This article seeks to highlight why we are having a Conference and the key issues to be addressed in seeking a successful outcome. It will require the cooperation and expertise from all the parties involved – including administrations and broadcasters who will need to be clear about their requirements in order that technically satisfactory solutions can be achieved.

Introduction

In order to realize the full potential of future terrestrial digital television and radio services¹ and to make the most efficient use of the available frequency spectrum, a new frequency plan must be developed. This calls for the revision of the European Broadcasting Agreement, Stockholm, 1961 (ST61).

As a result of a CEPT initiative in April 2000, 43 out of 56 countries in the European Broadcasting Area (EBA) indicated their support to the Secretary-General of the ITU, concerning the possible convening of a Regional Radiocommunication Conference (RRC) for the revision of the Stockholm Agreement, 1961 (see Fig. 1). At the ITU Council meeting in June 2001, there were extensive discussions

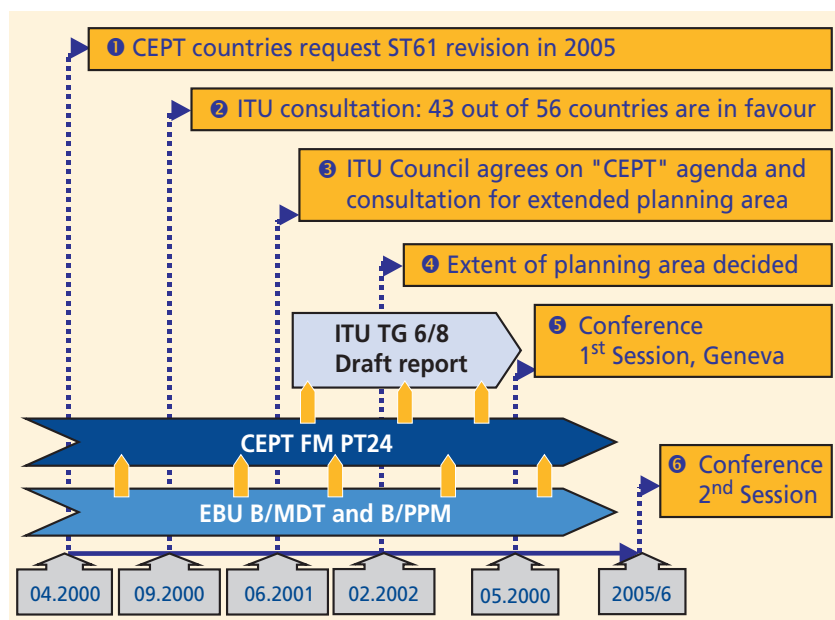


Figure 1
Preparations and overall procedure for the RRC to revise ST61

1. In the context of Europe, the DVB-T and T-DAB systems have been adopted.

on this topic and it now seems possible that the geographic scope of the RRC will be extended to include the whole of the African Broadcasting Area and some, possibly many, of the neighbouring countries. In this respect, a consultation process was initiated by Council Resolution 1180.

Purpose of the Conference

The general purpose of the Conference (defined in ITU Council Resolution 1185) is to establish an agreement and associated frequency plan for terrestrial digital broadcasting in the frequency bands 174 – 230 MHz and 470 – 862 MHz. Whilst in CEPT member countries, the band 174 – 230 MHz is foreseen for use for T-DAB and DVB-T services, and 470 – 862 MHz for DVB-T services, these requirements may not be replicated throughout the planning area.

The Conference will also have to establish co-ordination procedures for the transition from analogue to some future broadcasting situation. From the point of view of Europe, the latter would be an all-digital broadcasting situation, but it is not yet clear if that will be agreed as part of the target for the Conference.

The existing (ST61) plan

Clearly the existing plan is important because this represents the starting point for any new plan. It would not be possible to switch off all the analogue television transmitters overnight, to clear the frequencies and then implement a new plan. Therefore it is necessary to have a thorough understanding of the current situation.

Spectrum usage in Europe for analogue television is based on the Stockholm 1961 Plan – using Bands I, III, IV and V. It contains an Agreement and associated frequency plans for television stations in the frequency bands 41 – 68 MHz, 87.5 – 100 MHz, 162 – 230 MHz and 470 – 960 MHz, and plans for sound broadcasting stations in the frequency band 87.5 – 100 MHz, although the latter part of the plan has been succeeded by the Geneva 84 Plan (GE84)². Within the “television bands”, it is important to note that, for a variety of reasons, there were cases where channels were actually used for non-broadcasting services such as radioastronomy, radiolocation and mobile services, in accordance with the ITU Radio Regulations.

The original Stockholm Plan of 1961 provided – with some regional variations – for, effectively, three to four television coverages in all the countries of Europe. One of the television coverages is usually in the VHF bands with the remaining coverages at UHF.

In the subsequent years, the ST61 plan has been subject to significant development, a large number of low-power fill-in, or relay, transmitting stations have been co-ordinated, in the context of the Stockholm Agreement, to provide nearly complete coverage of a territory or, in some cases, to provide additional services. The total number of stations now exceeds 85,000, although not all of these are included in the updated Stockholm Plan. In some countries it has been found possible to provide for 4 to 6 analogue coverages, although generally this is not complete national coverage.

All this development now leaves few possibilities for significant further analogue development. Nevertheless, the introduction of DVB-T has been facilitated by the Chester 97 Agreement³ – but again not with complete coverage.

2. ITU Regional Administrative Conference for FM Sound Broadcasting in the VHF band (Region 1 and certain countries in Region 3) (2nd session), Geneva 1984.

3. Multilateral Co-ordination Agreement relating to Technical Criteria, Co-ordination Principles and Procedures for the introduction of Terrestrial Digital Video Broadcasting (DVB-T), Chester, 1997.

The new plan

The new plan will need to deal with the development of digital services in the absence of the constraints imposed by the transmission of analogue signals and the need to protect these from interference. It is not reasonable to imagine that the ITU Planning Conference will establish, once and for ever, a plan for the future environment. Rather, it should set a framework within which development can take place. Neither the ST61 nor the GE84 broadcasting plans represented the final position for television & radio planning and service development, and there is no reason to suppose that any new plan will do so either. However, the new plan must be sufficiently forward-looking and sufficiently flexible to cover developments in digital technology in future years.

So what do we expect and hope to get in the revised plan? A general expectation concerning DVB-T – at least in CEPT member countries – seems to be 18 to 30 television programmes, providing for portable reception. In the case of T-DAB, it would be reasonable to expect at least what we have in the updated Wiesbaden 95 Plan, in the frequency band 174 – 230 MHz. In both cases, several programmes would be grouped together in a *multiplex* and then transmitted in a single channel.

ITU decisions and preparations

Conference agenda

The first (technical) session of the conference will take place in May 2004 and the second session of the Conference, which will develop a revised Agreement and associated frequency plan, will take place sometime in the year 2005 or 2006 (see Fig. 2). The exact date of the second (planning) session will be determined by the ITU Plenipotentiary, to fit into the overall schedule of ITU conferences and meetings.

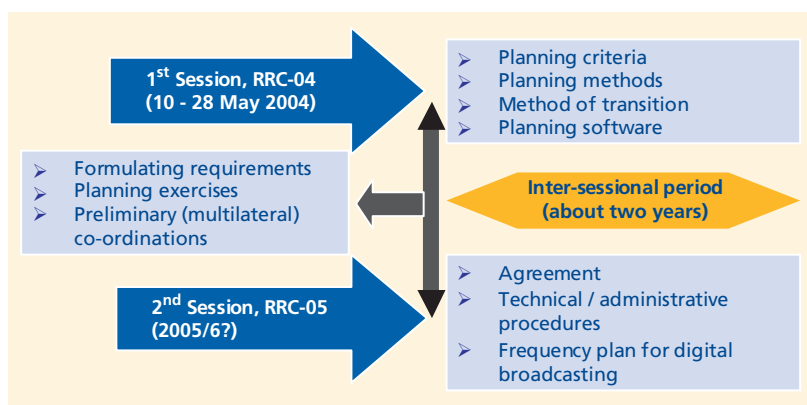


Figure 2
Tasks for the Regional Radiocommunication Conference (RRC04/05)

- **Technical Session** – meeting from 10 – 28 May 2004, has the task of producing a report on the technical basis for the work of the second session (on the planning principles and parameters) and to determine the requirements for the planning exercises.
- **Planning Session** – envisaged for 2005, will adopt a new Agreement and an associated frequency plan for terrestrial digital broadcasting in the frequency bands 174 – 230 MHz and 470 – 862 MHz.

In between the two sessions – a period of about two years – administrations are expected to prepare their requirements, to undertake planning exercises and to make preliminary co-ordinations of those requirements with neighbouring countries (see Fig. 3).

Planning area

The ITU Council also decided to proceed with further consultations on the possible extension of the planning area (draft Resolution 1180) to cover the areas shown in Fig. 4. This followed the wish expressed by African countries that the RRC should not be limited to revising the Stockholm Agreement but should also revise the Regional Agreement relating to the planning of VHF/UHF television broadcasting in the African Broadcasting Area (ABA) and in neighbouring countries – known as Geneva 1989.

The result of this consultation is expected in the first quarter of 2002.

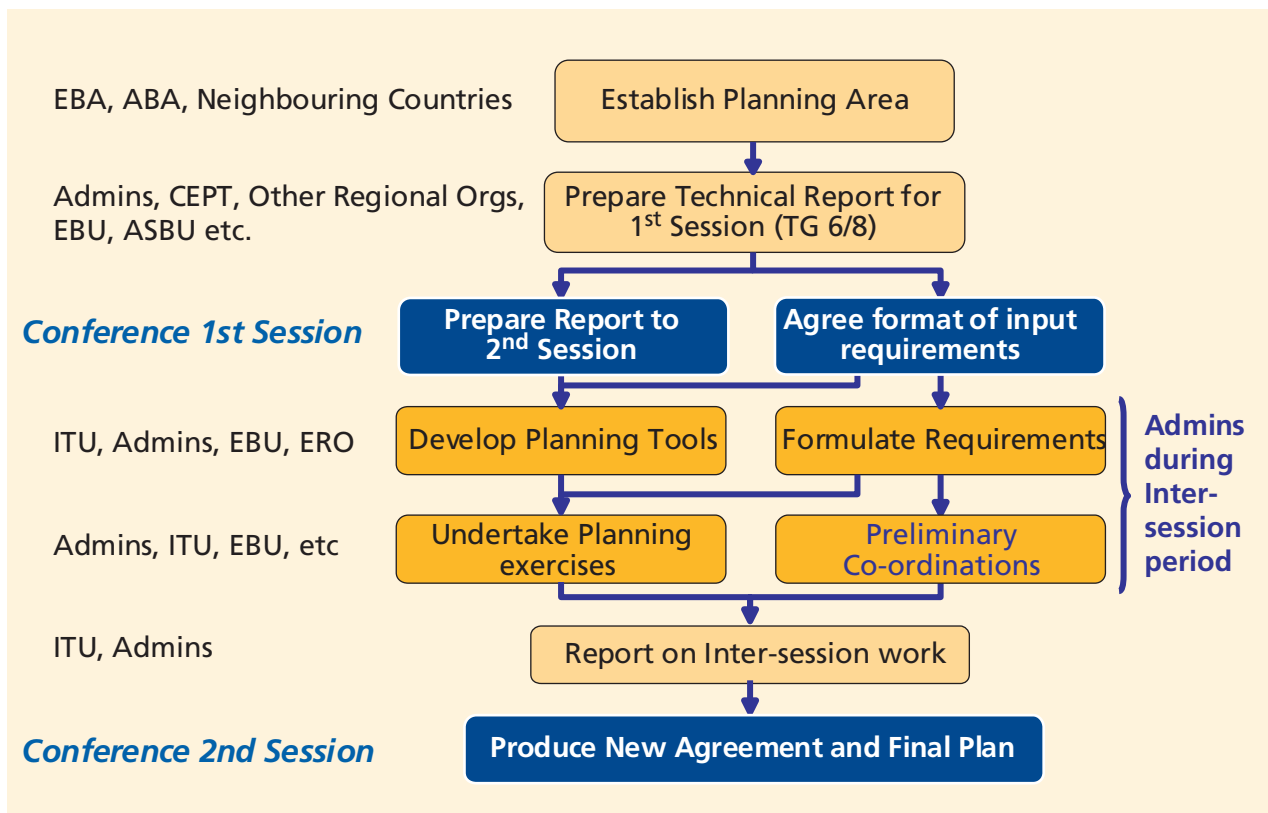


Figure 3
Organizational task map for RRC04/05

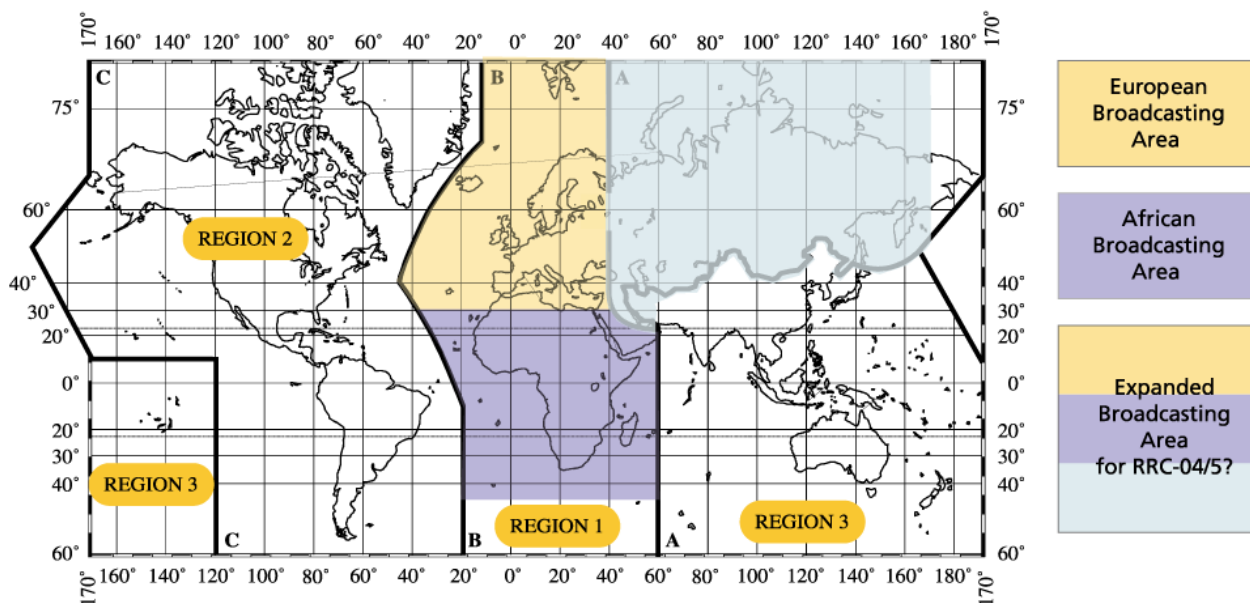


Figure 4
The extent of the planning area for the RRC will depend on the outcome of an ITU consultation process which concludes early in 2002

Conference emotions – it's not all engineering!

Before getting into the technical issues, it is worth considering a topic about which very little is published, namely “Conference Emotions”. These will have a significant influence on the outcome of a conference.

Major ITU Conferences have sets of principles which are intended to govern a large part of the proceedings. In practice, of course, some of these principles will be sacrificed for the sake of convenience, or to enable progress to be made. This is normal and represents a pragmatic approach.

Although this is never written down and is rarely even mentioned, those same conferences are intended to do their business on the basis of scientific truth and engineering realism. Where there is any conflict or even any doubt, the engineering realism takes precedence over the scientific truth. Even this self evident principle is likely to be sacrificed simply because Conferences involve people and, however hard they may try; people are at the mercy of their emotions. It may thus help to identify what some of the dominant emotions may be during the foreseen Conference to replace the Stockholm Agreement and its associated plan. By making the appropriate proposals in advance, it may be possible to avoid the effects of these emotions which could damage progress during the Conference as well as the subsequent implementation of the new plan. It should also be possible to build on those emotions which can help progress.

It is to be expected that *nostalgia* (for the Stockholm Agreement) will play a significant role in the Conference. After all, the ST61 Agreement has served the European Broadcasting Area very well. It has provided a flexible framework within which substantial development has taken place and continues to take place. Flexibility allows for development, which is essential as it is not possible, at the time of any Conference, to foresee all needs, all changes and all options. If there is insufficient flexibility in the new Plan, then it will become necessary to make radical changes. These will be costly and inconvenient both for the broadcaster and for the public.

In a planning Conference, there is a lot of *envy* – people get jealous of what their neighbours get. There is little that can be done about this except perhaps to emphasize the flexibility element of any resultant Agreement. In principle, the principle of equitable access should be sufficient to overcome the potential problem of envy. In practice, it is not that easy, but the inherent flexibility of the DVB-T system and its multiplicity of variants should help, especially for areas which are a few tens of km away from national boundaries.

Although Europeans have been dealing with digital technology for some years there are still some misunderstandings. If the planning area is extended, there will be an increased risk of *confusion* during the Conference. This emphasizes the need for clear explanations of the technical issues. The EBU has a clear role to play in this respect by preparing information and disseminating it to broadcasters that fall within the Conference planning area.

Unless there is very careful preparation, *fear* of what might happen to the analogue assignments of a country which does not have a clear timetable for ‘going digital’ will cause major difficulties for the Conference. In this respect it may be more important for the Conference to produce an agreement which perpetuates the rights gained in the past than to produce an optimized Plan for the future. However, the latter may not matter too much – if there is enough flexibility in the Agreement, and taking into account the inherent flexibility of the DVB-T system and its relative freedom from interference, then the resultant Plan can be improved with time.

Choice of digital standards may also impact on the conference. There is a new market for manufacturers and administrators who see lots of money in it – *monetism*. Some countries may lobby for the choice of a given standard whilst others may want to sell off spectrum. Again the EBU has a role to play, this time in advising on future broadcast-related developments that might capitalise on any released spectrum capacity, e.g. multi-casting, datacasting or interactive services.

Of course there is also a range of positive emotions including, *hope* and *excitement* for the future, that should be emphasized. After all, analogue television, in spite of all of its limitations, has been a force for good and for advance. It has only rarely been used otherwise. Digital television, with its inherent flexibility and its opportunity to offer an even wider range of services, should provide even more opportunity to consolidate the benefits of broadcasting and to reduce the few deficiencies and misuses which do exist.

Approaches to the frequency planning

How do we change the ST61 Plan into an efficient plan for terrestrial digital broadcasting? Some of the planning elements relating to digital television will have to be decided upon before others and may conveniently be considered as three layers.

○ First layer

Firstly, we have to decide what type of reception we want to make possible – fixed, portable or mobile – and then we must decide what quality of coverage we want and over how much of the national territory we want this quality.

○ Second layer

Decisions can be taken concerning the DVB-T system variant (there are 120 possibilities to choose from). Also, network characteristics such as transmitting antenna heights and the distance between stations needs to be considered.

○ Third layer

We can consider whether we want to use Multi Frequency Networks (MFNs) or Single Frequency Networks (SFNs), or a mixture of both. We must also consider whether we want to have our entries in the Plan as *allotments* or as *assignments*, or both.

Allotments or assignments

This topic is categorised as a *third layer* because it is believed that it represents a way of getting something done, rather than something of fundamental importance. In practice, it seems likely that both approaches have their place and both will need to be accommodated by the Conference and inter-session work. It is to be hoped, and worked for, that the Conference does not make a choice of one or the other. A better title to this section might have been “*Allotments AND assignments*”.

Assignment planning

The *assignment* of a radio frequency or radio frequency channel is defined by the ITU as:

“Authorisation given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions.”

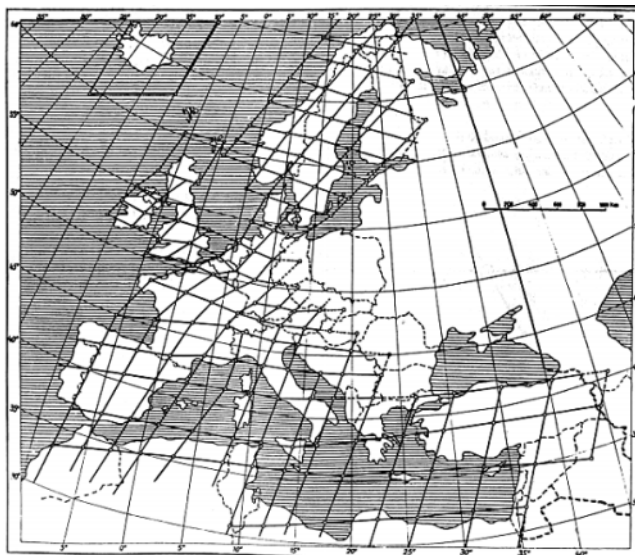


Figure 5
The lattices used in ST61 for UHF television in Western Europe

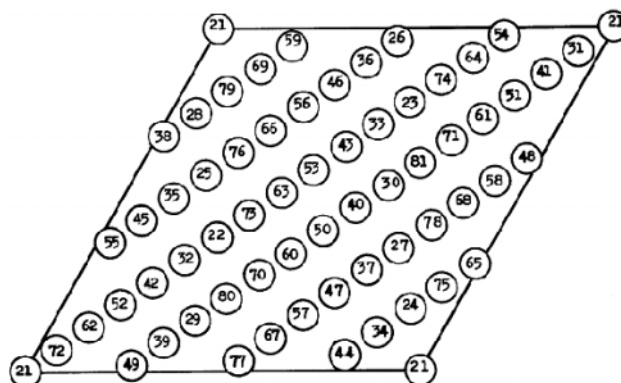


Figure 6
The lattices used in the Stockholm 1961 plan for UHF television in Western Europe. A co-channel assignment (in this case channel 21) is made at each corner of the quadrilateral.

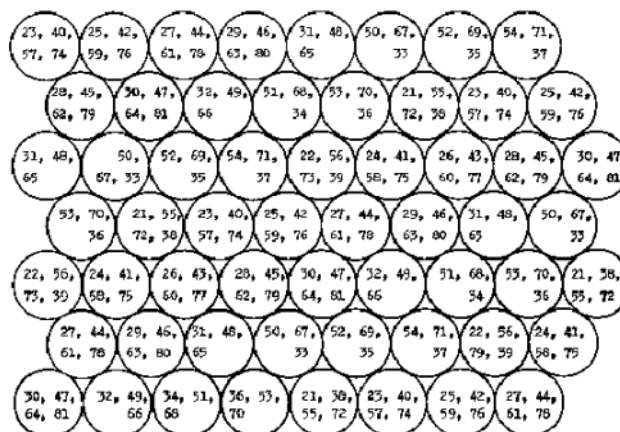


Figure 7
ST61 assignment planning – the channel distribution scheme used in Eastern Europe

In the past, terrestrial broadcast planning in Europe has been by way of assignment conferences (*see Figs 5, 6 and 7*). In assignment planning, a significant amount of individual station planning is needed to prepare for a planning conference. Stockholm 52 and Stockholm 61 were two such conferences relating to terrestrial television. The European broadcasters have gained much experience in assignment planning, particularly since the basic planning methods and criteria of the 1961 Conference are still applied to analogue television planning, although they have been updated in some respects.

Assignment planning requires that essential parts of the transmission infrastructure is known. This is not to say that station characteristics are fixed for all times. For example the ST61 Agreement allows for some flexibility and indeed there have subsequently been many modifications and additions to the Plan.

At the completion of the assignment plan, the locations and characteristics of the transmitters in the planning area are known, and the transmitters can be brought into service without further co-ordination.

For practical reasons (such as the available computer run-time), it is likely that a lower limit for the radiated power will be defined for stations to be dealt with in the initial part of the planning process. Stations with a radiated power below the limit are then included in the plan subsequently.

Allotment planning

The *allotment* of a radio frequency or radio frequency channel is defined by the ITU as:

“Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical areas and under specified conditions.”

The possibility of obtaining allotments at a conference has received considerable attention in recent years, particularly because of the opportunities offered by SFNs. Indeed, the following description relates to the kind of allotment used in WI95 and this kind of allotment could also be used for digital television planning (*see Fig. 8*). Allotment planning for SFNs is particularly suited to situations where “free” spectrum is available or can be made available. Allotments may also be applicable for MFN planning where a country has no plans to use specific transmitter sites and wishes to retain some flexibility for the future.

Allotment planning in general requires less work before and during the planning conference but implies more work after the conference.

An allotment plan should allow for coverage of the areas contained in the plan, i.e. at least the minimum field strength can be provided everywhere in the allotment area and the field strength provided must be protected against interference. An allotment plan must contain sets of test points describing the individual allotment areas and will normally also contain a set of calculation test points outside each allotment area where a certain maximum field strength should not be exceeded to ensure that other areas are protected when the allotment is implemented by means of a transmitter or a set of transmitters.

An allotment plan is established on the basis of one or more defined reference networks which are used to calculate a reference interference situation for co-channel allotment areas.

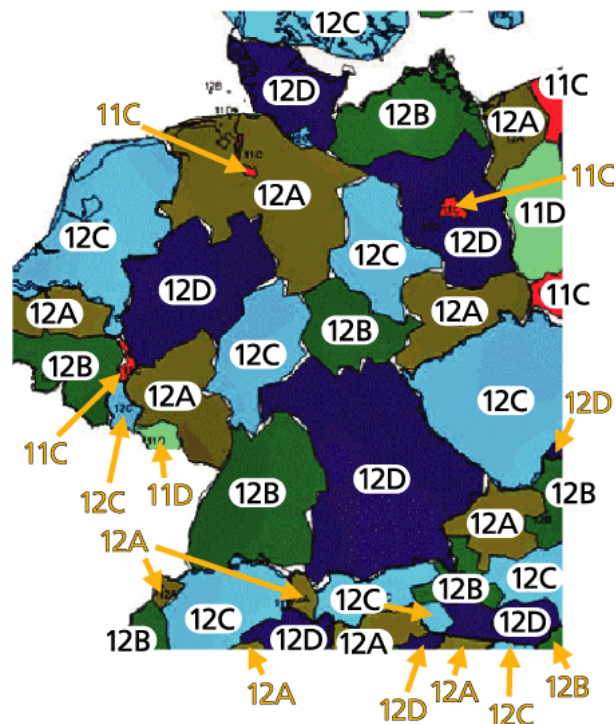


Figure 8
Allotment planning – band III allotment areas from the Wiesbaden 1995 Plan, using channels 12A, 12B, 12C, 12D, 11C and 11D

Conversion of an allotment into (a set of) assignments

A feature of an allotment plan is that it requires subsequent (after the Conference) detailed planning on a national basis to establish a network plan containing the technical characteristics of each transmitter necessary to provide the intended coverage of the allotment area. The network plan may contain more transmitters forming an SFN or, in the simplest case, a single transmitter.

If the network planned for an allotment area does not produce field strengths above the limit at the calculation test points then the network can be implemented without co-ordination, otherwise the full set of stations forming the network must be co-ordinated with the neighbouring countries concerned.

The specific technical data for each station within an allotment area must subsequently be entered into the plan as assignments.

Allotments and assignments – the way forward?

One idea is that the Conference should be able to deal with both allotments and assignments in an equitable way. In fact, this is essential if allotments are to be included as it is certain that the Conference will have to allow for continued operation of analogue assignments for a number of years following the Conference. It follows, therefore, that unless both allotment and assignment planning can be established to have a place at the Conference, then it is probable that only assignment planning will be accepted. Consequently, it is necessary to establish that both have a place, NOT that one is better than the other, NOR that either implies any particular adherence to a specific type of network structure.

Whether one starts with allotments or assignments for the new plan should be seen as only a starting point. The important goal is to provide coverage by a number of services to a determined target. Any assignments which are initially requested will inevitably need to be supplemented by other assignments to complete the coverage, which is likely to be a moving target anyway. Any allotment which is requested will also need to be implemented as a set of assignments and these will be selected to meet the changing nature of the requirement. In both cases, the network structure could be SFN or MFN, or a mixture of the two. Also, the final result of allotment or assignment planning should be almost indistinguishable: if this is not the case, then the planning has failed.

Of course, if both allotment and assignment planning are to be accepted for use at the Conference – or, more precisely, for use during the inter-session preparatory work which should provide the majority of the agreements on which the final plan will be based – it will be necessary to establish a technical basis on which the planning work can be undertaken.

Abbreviations

ABA	African Broadcasting Area	ITU	International Telecommunication Union
ASBU	Arab States Broadcasting Union	MF	Medium-Frequency
CEPT	European Conference of Postal and Telecommunications Administrations	MFN	Multi-Frequency Network
CH97	Chester Frequency Agreement of 1997	RRC	(ITU) Regional Radiocommunication Conference
DTT	Digital Terrestrial Television	SFN	Single-Frequency Network
DVB	Digital Video Broadcasting	ST61	Stockholm Frequency Plan of 1961
DVB-T	DVB - Terrestrial	T-DAB	Terrestrial - Digital Audio Broadcasting
EBA	European Broadcasting Area	UHF	Ultra High-Frequency
FM	Frequency Modulation	URTNA	Union of National Radio and Television Organisations of Africa
GE75	Geneva Frequency Plan of 1975	VHF	Very High Frequency
GE84	Geneva Frequency Plan of 1984	WARC	(ITU) World Administrative Radio Conference
HF	High-Frequency	WI95	Wiesbaden Frequency Plan of 1995
IFRB	(ITU) International Frequency Registration Board		

It is certain that the choice of planning method – assignments or allotments – will be discussed at a political level! The important message should be that whatever method or methods are chosen, the result should be as flexible as possible – both approaches can be designed to have similar flexibility.

MFN or SFN

If there is any choice to be made between multi-frequency (MFN) or single-frequency (SFN)⁴ network planning, it is primarily one of convenience, especially if the coverage areas are not too large. The type of network structure is mainly a choice of how to achieve something, rather than a starting point.

It may seem natural to associate allotments with SFNs, but it does not seem that that choice is vital. An allotment may be primarily satisfied by a single assignment; that is, the use of the allotted channel at a single transmitter site with other sites and, possibly, other frequencies used subsequently to complete the coverage. This is no different from what has been happening for the last 40 years at least. The Conference will have to make provision for both SFNs and MFNs – the moment that any administration expresses a preference for one, then another administration expresses a preference for the other. It is to be hoped, and worked for, that the Conference does not make a choice of one or the other.

A better title for the previous section of this article might have been “MFNs and SFNs”.

Planning approach

A general and important principle for a planning conference is *equitable access* to the frequency resources.

The revision of ST61 can be carried out either as a modification to the existing (updated) ST61 plan – keep what we have and look for the rest – or as a new plan where the channel-numbers are re-distributed – planning from a clean sheet – or as a mixture of both.

4. An SFN is set of co-channel transmitters, normally not causing interference to each other.

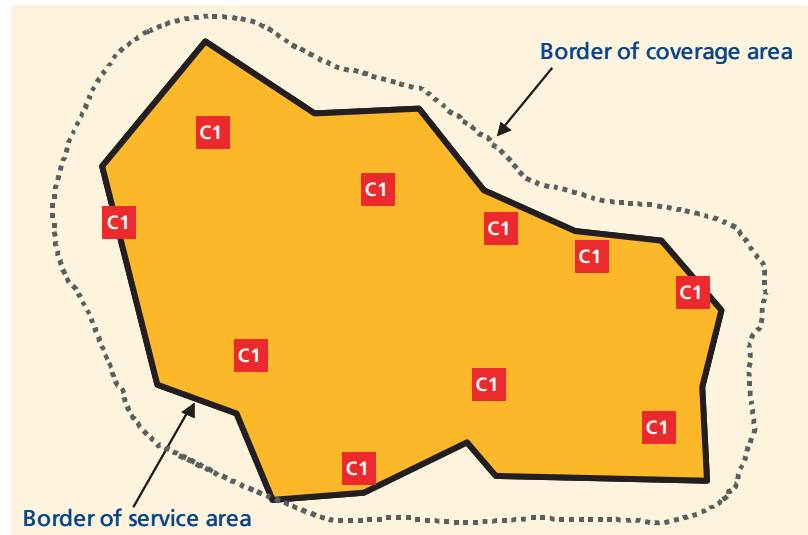


Figure 9
Single Frequency Network (SFN) – all transmitters of the network use the same channel. They possess a common coverage area and cannot be operated independently

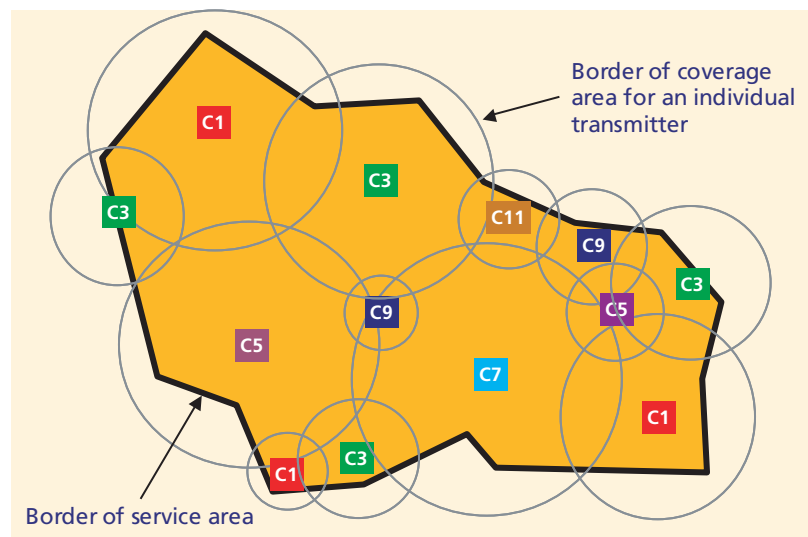


Figure 10
Multi Frequency Network (MFN) – each transmitter uses a different channel (Cx), acting independently and having its own coverage area. Re-use of channels is possible, given sufficient geographical separation.

So what do we have? Some countries have channels for full coverage (or almost full) with five analogue programmes while other only have channels for three full coverages. Consequently, the “keep what we have and look for the rest” approach for a number of countries is unlikely to lead to an optimum plan where “optimum plan” is taken to mean equal coverage for all multiplexes in a given country.

○ Keep what we have and look for the rest

This approach is used at present on the basis of the Chester ‘97 Agreement for the implementation of DVB-T in Europe. One reason why this approach is unlikely to lead to an optimum plan for some countries arises from the application of two different channel distribution schemes in 1961, one for Eastern Europe and another for Western Europe, which led to a wide “patch-working zone” down through Europe, along the former “Iron Curtain”.

○ Planning from a clean sheet

This approach is not necessarily more difficult to use than “looking for the rest” and it is not necessarily more difficult or expensive to implement. In both cases new channels, either some or all, will be assigned to transmitter sites or allotted to areas. However, it is likely to be more difficult for administrations to accept because it inevitably involves changes to existing stations.

The “keep what we have and look for the rest” approach can be applied only by synthesis or on a “trial and error” basis, whereas the “planning from a clean sheet” approach can also be done by means of lattice planning, i.e. by application of an appropriate channel distribution scheme.

Whatever approach or approaches are preferred, it is important to remember that all planning in connection with a planning conference is done on the basis of the requirements sent to the conference from the national administrations concerned. This implies that the national administrations alone decide which infrastructure the revised plan shall be based upon for their country.

Preparations for the Conference

The ITU has established a Task Group, 6/8, to prepare a report for the First Session of the Regional Radiocommunication Conference (RRC-04) for the revision of ST61. This will take into account the RRC Agenda items and the structure included in the resolution approved by the ITU Council in June 2001.

The relevant EBU project groups⁵ have to decide on which technical elements (see Fig. 11) it is important to contribute – both directly to ITU Task Group 6/8 and via the CEPT FM PT24 project team who will assist the European administrations in preparing a common view, particularly in relation to regulatory matters. It should be noted that the EBU, through its project groups and the Technical Department, is actively supporting the work of CEPT FM PT24.

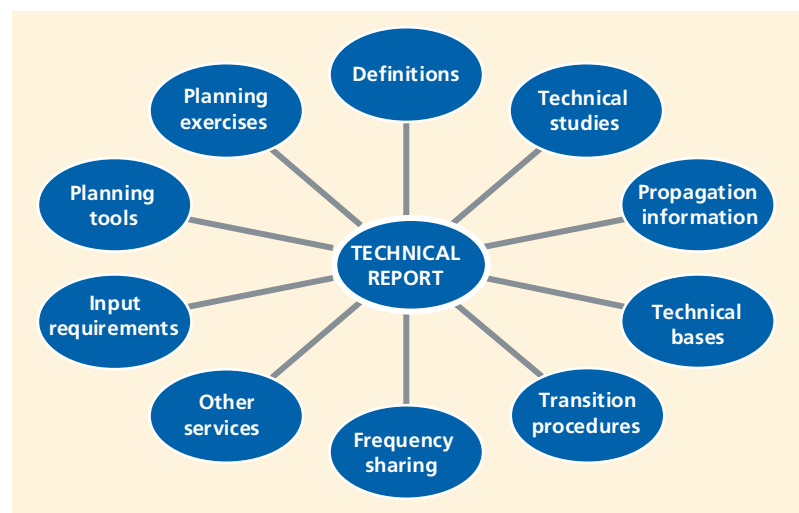


Figure 11

The preparation of a technical report for the 1st Session of the conference, RRC-04, is taking place in ITU Task Group 6/8. Participation of the EBU, CEPT and other broadcasting unions and regional bodies (ASBU, URTNA, etc.) within the area to be covered by the Conference, is essential.

5. Currently the BMC project groups are B/MDT (Migration to Digital Television), B/PPM (T-DAB Preparation for Planning Meetings) and B/SMI (Spectrum Management Issues).

Clearly, there is an ongoing requirement for close inter-organizational co-operation during the preparatory period (*see Fig. 12*).

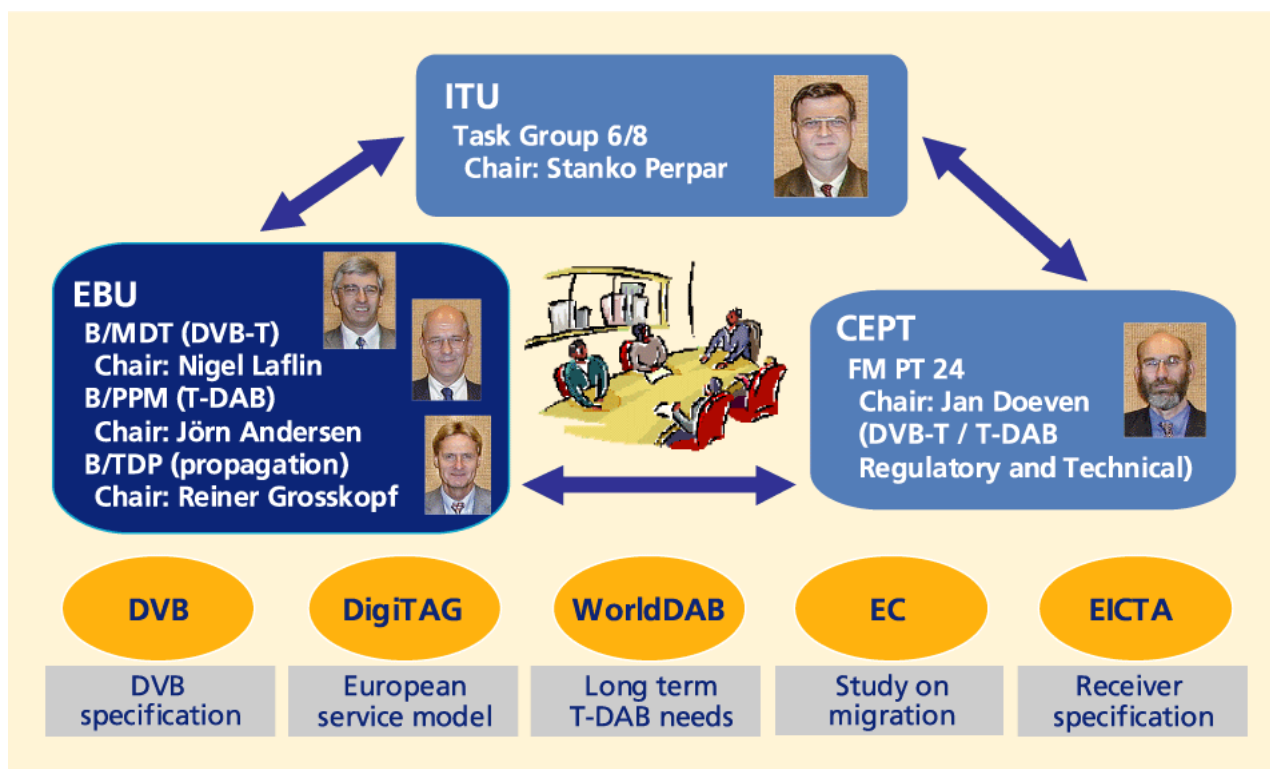


Figure 12
Organization of the preparatory work for RRC-04/05 in Europe

Post conference actions

Implementation

There seems to be a need to consider a major change to the way in which the Conference Agreement will be implemented compared to previous occasions. Agreements such as Stockholm 61, Geneva 75, Geneva 84 and Geneva 89 are, to a very large extent, based on the idea that all agreement is centralised. This was originally via the IFRB⁶, for which this task was a primary function and this is quite obvious from the wordings used in the Agreements.

Because the effective interference ranges are generally shorter for digital television than they are for analogue television, it seems more appropriate to propose a shift in the emphasis from centralised to bi-lateral where the procedure is primarily based upon co-ordination. Such an idea (which is the basis of the successful Chester 97 Agreement) will probably be difficult for some interested parties to accept. However, it does seem to be advisable to make provisions in the Agreement which strengthen the role which co-ordination between neighbouring countries can play.

Transition

It can be considered that there are two phases of the transition process. The first is the transition from analogue-only to mixed analogue and digital, which might be achieved in a relatively short timescale. The second

6. International Frequency Registration Board, now the ITU-R Radio Regulatory Board.

is a transition from mixed analogue/digital to all-digital, which is likely to take many years. It is probable that the two periods will overlap, as it can be expected that each country will need to develop its own timetable and that such timetables will be subject to revision to meet changing circumstances.

In general, different countries will have their own timescales for implementation of digital radio and television or may even wish to continue with analogue broadcasting for the foreseeable future. In some countries the timescale for the introduction of digital services may be critical when faced with a rapid penetration of digital satellite and cable services.

Nevertheless, it can be assumed that, within the whole of the planning area, the introduction and market penetration of digital transmission techniques will represent a long-term process in which analogue and digital transmissions will have to be broadcast in parallel over a significant period of time.

Furthermore, the different market developments in the various countries of the planning area would necessitate different conversion scenarios that will have to be drawn up at national level. Whilst there will be a need to stipulate phase-out dates for analogue broadcasting systems, which should probably lie between 2006 and 2020, an adequate transition period is needed so that consumers and industry can plan on a reliable basis.

It follows from the above that, at an early stage, it will be necessary to address the central question of the continued protection of analogue services in any situation where an administration wishes to do this. The analogue services in question could be those which will be in operation by some specified future date, but not those assignments which have not been brought into operation by that date. The latter assignments, if any still exist by then, will need to be treated within the category of protection of future digital rights. After the specified date, no new analogue services should be introduced (except by co-ordination, of course). Any request by a neighbouring country to introduce or modify its digital services should be dealt with primarily by co-ordination.

Establishing a plan for the transition may not be too difficult – if good will exists. Something similar has been done before. The frequency offsets for many of the high-power UHF television stations contained in the ST61 Plan were optimized at the London Conference (1968), and the Zagreb Plan of 1971 contains the sequence in which the changes should be implemented.

Conclusions – important issues for further consideration

- It is important to recognize that the approach towards the revision of the Stockholm Agreement should be as flexible as possible in order to cover the individual and different requirements of the countries on an equitable basis.
- There seems to be a need to consider a major change to the way in which the Conference Agreement will be implemented, compared to previous occasions. If the maximum benefits are to be obtained from the spectrum, it may be appropriate to consider a shift from centralised co-ordination to a procedure based more upon bilateral co-ordination.



Nigel Laflin joined BBC Research Department in 1972 and has spent his career working in the field of broadcast spectrum planning. In recent years his work has focused on the introduction of digital radio and television services – an area where the BBC is a world leader. In his current position as the Research Leader, Spectrum Planning, at BBC Research and Development, he has responsibility for overseeing and advising on broadcasting spectrum use, with a particular focus on the international aspects of frequency management.

Mr Laflin is leader of EBU project group B/MDT, which is studying the issues involved in a future migration to digital terrestrial television, and is a member of the EBU Broadcast Management Committee. As an active contributor to the broadcast-related activities of the CEPT, he participated in the preparation of the Wiesbaden 95 and Chester 97

Agreements, to which he is a joint UK signatory.

Nigel Laflin is currently engaged in the preparations for the Revision of the Stockholm 1961 Agreement – as a sub-group chairman within the CEPT Project Team (FM PT24) and as a Rapporteur within ITU Task Group 6/8.

- The broadcasters must establish their future terrestrial digital broadcasting (DTT and T-DAB) requirements with governments – at least two years prior to the Planning Conference in 2005/6.
- The choice of coverage requirement and infrastructure within a given country is solely a national matter.
- The planning approach or approaches to be used at the Conference to revise ST61 will be chosen by the national administrations involved. It is time for the broadcasters to start considering which approach is the better, seen from their perspective, and to start discussions with their administrations!
- Governments are likely to be looking for the release of spectrum for new innovative systems – broadcasters must carefully consider what they will need in the long term.
- The responsibility for the creation of a successful plan lies with the national administrations, supported by their broadcasters and network operators.
- It is essential that members of the EBU and CEPT undertake planning studies, and become fully involved in ITU planning exercises, in order to provide knowledge which will enable appropriate requirements to be formulated as input to the 2nd Session of the Conference.
- There is a lot of important work ahead for all broadcasters who will need to be active in the EBU, CEPT and the ITU – a substantial investment of effort and resources is required.

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