INTERNATIONAL TELECOMMUNICATION UNION

Radiocommunication Bureau
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Circular-letter
CR/118

March 1999

To Administrations of Member States of the ITU

Subject: Forms of notice and file formats for electronic notification of frequency assignments to stations in the fixed, mobile and other terrestrial services (excepting the broadcasting service in the LF/MF and VHF/UHF bands)

References: BR Circular-letter CR/36 of 12 April 1995

To the Director General

Dear Sir or Madam,

1 At various occasions, the Bureau informed the administrations about the activities on the modernization of its information systems, and especially on the moving from the current Frequency Management System (**FMS**), using a mainframe computer, to a client-server configuration, using PCs and relational databases under the Terrestrial Radiocommunication System (***TerRaSys)***. Initial information on ***TerRaSys***, together with an explanation of the differences between the **FMS** and the ***TerRaSys***, was presented to the administrations in Circular-letter CR/36. Subsequent developments, related mainly with the FM/TV component of ***TerRaSys***, comprising the VHF-UHF television and VHF sound broadcasting services, were communicated in Circular-letters CR/63 and CR/99.

2 This circular letter covers those aspects that are relevant for the FXM component of the ***TerRaSys***, comprising the fixed, mobile and other services (excepting the VHF/UHF broadcasting and LF/MF broadcasting). The description of the new FXM structure is contained in Annex 1 to this circular letter, the relevant notice forms are included in Annex 2, and the associated electronic format is presented in Annex 3. The relevant forms of notice take account of all requirements for coordination and notification, as specified in Appendix **S4** of the Radio Regulations and in various Resolutions and Regional Agreements. Annex 4, which contains detailed description of the data and some additional explanations, is under preparation and will be communicated shortly.

3 The new formats, as described in this circular letter, are to be used, as from 1 October 1999, when notifying frequency assignments to stations in the fixed, mobile and other services (excepting sound and television broadcasting in the LF/MF and VHF/UHF bands). The Bureau regrets to inform the administrations that it will not be in a position to accept the old forms of notices (which

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have been sent through Circular-letter CR/113 of 18.12.98) and the old file format (which has been described in Circular-letter CR/26 of 9.09.94) after 1 October 1999. This is due to the fact that current Data Base Management System (DBMS) (CA-IDMS 10.21/BS2000), upon which the **FMS** is based, is not *Year-2000* compliant. Consequently, the Bureau is obliged to cease the **FMS** operations on its mainframe computer by the end of this year and the cutover from Siemens/IDMS to NT/Unix/Ingres is now scheduled for the weekend beginning 10 December 1999. As part of the cutover, the Bureau will make the final transfer and conversion of all data from **FMS** to ***TerRaSys***.

4 In this connection, the Bureau would like to urge administrations to abstain from submitting large volumes of notices, in the old formats, especially in the period preceding the cutoff date of 1 October 1999. The Bureau will put all necessary efforts to complete the treatment, by 10 December 1999 when the production on the old system will be terminated, of all notices received prior to 1 October 1999. Unfortunately, the notices whose treatment will not be completed by 10 December 1999, will have to be returned to the administrations with a view to their submission in the new format. Such a course of action will avoid any risk of erroneous treatment of the relevant notices, which may arise if the old formats were treated in the new system, due to the conceptual differences between the two systems.

5 The Bureau also wishes to indicate that, according to the schedule communicated in Circular-letter CR/36, the conversion from **FMS** to ***TerRaSys*** was originally planned for the end of 1998. However, the complexity of the tasks, as well as the additional requirements arising from the decisions of WRC-95 and WRC-97, resulted in a slower development than expected. Nevertheless, the one-year delay seems to be a reasonable delay compared with the scope of the project.

6 The Bureau initially planned to distribute to administrations, for comments, the draft notices as well as the draft file format for electronic notifications related to the FXM component of ***TerRaSys***. However, the tight schedule for cessation of the activities on the mainframe computer, imposed by the *Year-2000* problem, made impracticable any such consultation. Nevertheless, the Bureau is confident that this course of action will not create any difficulty for administrations, having in mind that the new forms of notice are very similar to the previous ones, and the file formats are following the same pattern as the one communicated in respect to the FM/TV component of ***TerRaSys***, which received wide support.

7 The Bureau is committed to ensure the essential continuity of service, as required by the Radio Regulations. In this connection, and in order to enable administrations to fulfill their rights and obligations with regard to notification of frequencies, the Bureau is ready to present complementary information at the forthcoming regional seminars on spectrum management, as well as to provide any additional information that your administration may request on this subject.

Yours faithfully,

Robert W. Jones
Director, Radiocommunication Bureau

Annexes: 3

Distribution:
- Administrations of Member States of the ITU.
- Members of the Radio Regulations Board.

ANNEX 1

Description of the FXM component of the *TerRaSys*

1 Structure of the FXM records

1.1 The development of the FXM component (i.e. the ***TerRaSys*** component which deals with the fixed, mobile and other services, excepting the broadcasting services in the LF/MF and VHF/UHF bands) was preceded by a critical review of the current **FMS** structure, in which all elements were analysed from the point of view of their compatibility with the requirements of Appendix **S4**, of various Resolutions which treat the issues of coordination and notification, as well as of the relevant Regional Agreements. In this connection, the comments of the representatives of administrations at various Seminars were reviewed , as well as those of participants in Task Group 1/4 which dealt with the establishment of the Radiocommunication Data Dictionary. The main objective of this review was to identify those elements in the **FMS** structure which were not clear enough so that they were very frequently the source for erroneous submission of data. Furthermore, the concept of notification was reviewed from the point of view of its basic purpose, i.e. its relevance in the context of international frequency management. To this end, the Bureau concluded that many difficulties can be eliminated if the relevant elements for notification are grouped differently for the different services. The former concept of a universal notice, intended for use by many services in many frequency bands, proved to be inefficient, because of the different requirements for different services and, consequently, the Bureau decided to introduce many more notices, which are applicable only to certain categories of services. This approach, in conjunction with the supply of an appropriate software to administrations, for performing a preliminary data validation before their submission to the Bureau (***TerRaNV***), is expected to result in a considerable decrease of errors in the process of submission of data. Against this background, the Bureau proceeded to the design of the new FXM component of the ***TerRaSys*** for the fixed, mobile and other services , whose salient points are described hereafter.

1.2 The new FXM component is structured in several "fragments", notably:

- NTFD_RR (fragment which deals with the records in the Master Register and with the associated submissions under Article **S11** of the Radio Regulations);
- Req_agrt (fragment which deals with the submissions under No. **S9.21** of the Radio Regulations, in so far as terrestrial services are concerned);
- Com_Freq (fragment which deals with those records in the Master Register which are related to frequencies for common use, as specified in Nos. **S11.13** and **S11.14** of the Radio Regulations) - this fragment is maintained exclusively by the Bureau;
- AP25 (fragment dealing with the Allotment Plan of Appendix **S25** to the RR and the relevant plan modification procedure);
- AP26 (fragment dealing with the Allotment Plan of Appendix **S26** to the RR and the relevant plan modification procedure) - this fragment is maintained exclusively by the Bureau;
- AP27 (fragment dealing with the Allotment Plan of Appendix **S27** to the RR) - this fragment is maintained exclusively by the Bureau;

- GE85M (fragment dealing with the frequency assignment plan governed by the Regional Agreement concerning the MF Maritime Mobile and Aeronautical Radionavigation Services for Region 1, Geneva, 1985);
- GE85N (fragment dealing with the frequency assignment plan governed by the Regional Agreement concerning the planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area, Geneva, 1985);
- Res_300 (fragment dealing with the paired frequencies reserved for NBDP telegraphy and data transmission systems in the HF bands governed by Resolution **300**).

The structure of the FXM component provides for a full flexibility in removing of a fragment, or adding of a new fragment, if required, without difficulty, a feature which was not readily available in the former **FMS**/**PMS**.

Although the relevant database (***TerRaBase***) contains composite data concerning all these fragments, the relationship between each record and a specific fragment is established in a unique and unambiguous manner.

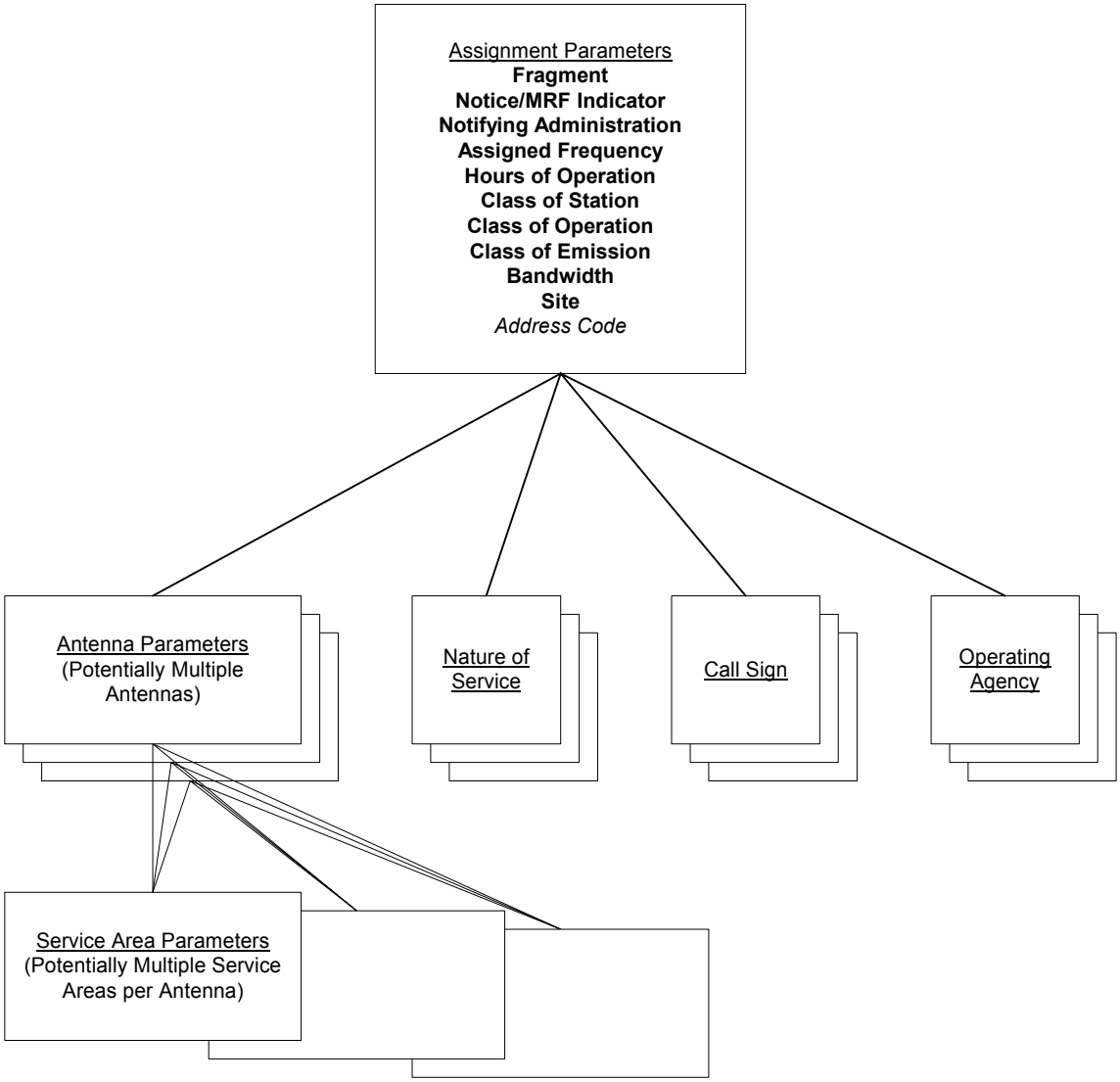
1.3 In the new FXM structure, the following concepts applicable to data contained in ***TerRaBase*** are used:

- the concept of "assignment" with respect to all records of the frequency assignments in the MIFR pertaining to the fragments NTFD_RR and Res_300, with respect to all entries in the frequency assignment Plans, and with respect to all entries in the MIFR pertaining to the fragment Com_freq;
- the concept of "allotment" with respect to the allotments of the frequency allotment plans of Appendices **S25**, **S26** and **S27**;
- the concept of "notice" with respect to all submissions of data under Articles **S9** and **S11**[1] of the Radio Regulations, under Resolution **300**, and under the plan modification procedures of Appendix **S25** and the Regional Plans GE85M (additions, modifications and suppression) and GE85N (suppressions only)[2].

[1] In the context of Article **S11**, the concept of a "notice" corresponds to the meaning of the "frequency assignment" as defined in No. **S11.1**, which is sometimes referred to as a "frequency assignment notice".

[2] The Bureau is considering the need for a notice in the context of the Allotment Plan governed by Appendix **S26** (suppressions only).

1.4 Each assignment (or allotment, or notice, as appropriate) in the FXM structure in ***TerRaSys*** can be represented in the following way:



Each assignment (or allotment, or notice, as appropriate) is distinguished from the other assignments (or allotments, or notices, as appropriate) by certain specific key fields (indicated in bold characters in the above graphical representation). The values of these specific key fields are unique for the given assignment (or allotment, or notice, as appropriate) and they are used as identifying parameters (e.g. for identifying the target in the case of a submission of a notice intended to modify an existing assignment or allotment).

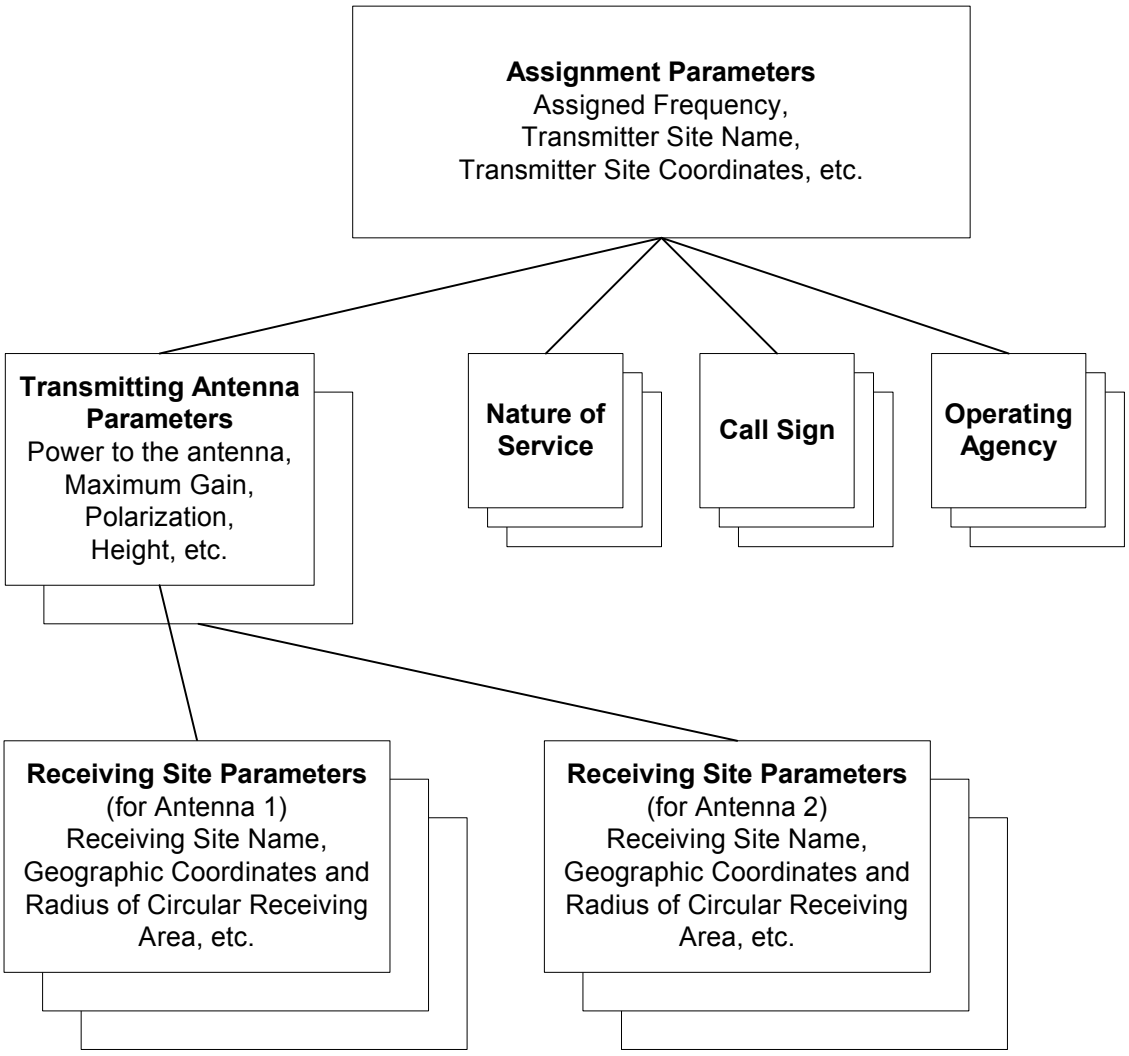
1.5 Each assignment (or allotment, or notice, as appropriate) in the FXM component of ***TerRaSys*** is further described with some additional attributes (data elements), which are organized in terms of "groups" and which may have multiple appearances. These data groups are the antenna parameters (which include the power delivered to the antenna), nature of service, station identification parameters (call sign), service area parameters, and, for some fragments, data on the operating agencies.

1.6 The data pattern concerning antenna parameters is essentially the same as the one in the **FMS**, with the allowance for multiple sets of transmitting antenna parameters. Similarly, the data pattern concerning the service area parameters follows the **FMS** structure, with the possibility of multiple service area per antenna (which was represented by the concept of "sub-entry" in the **FMS**). However, the FXM structure in ***TerRaSys*** provides for a possibility of notifying multiple entries in the fields "Nature of service", "Call sign" and "Operating agency", which represents a major departure from the current **FMS** structure which allows for only one entry in each of these fields. In introducing this change, the Bureau responded to the requests of those administrations which are licensing the same frequency to several operating agencies, for use under different conditions of operation (CO, CP, etc.) and with different call signs, in an unspecified time-sharing arrangement. Such conditions of use are represented, in the current MIFR, through a considerable number of assignments, which differ between them only by the nature of service (e.g. CO/CP), or by the call sign. The proposed new functionality will provide for substantial decrease of the number of recorded assignments, without any loss of the relevant information[3].

1.7 The application of the above concepts, with respect to specific types of notice, is explained in the following paragraphs.

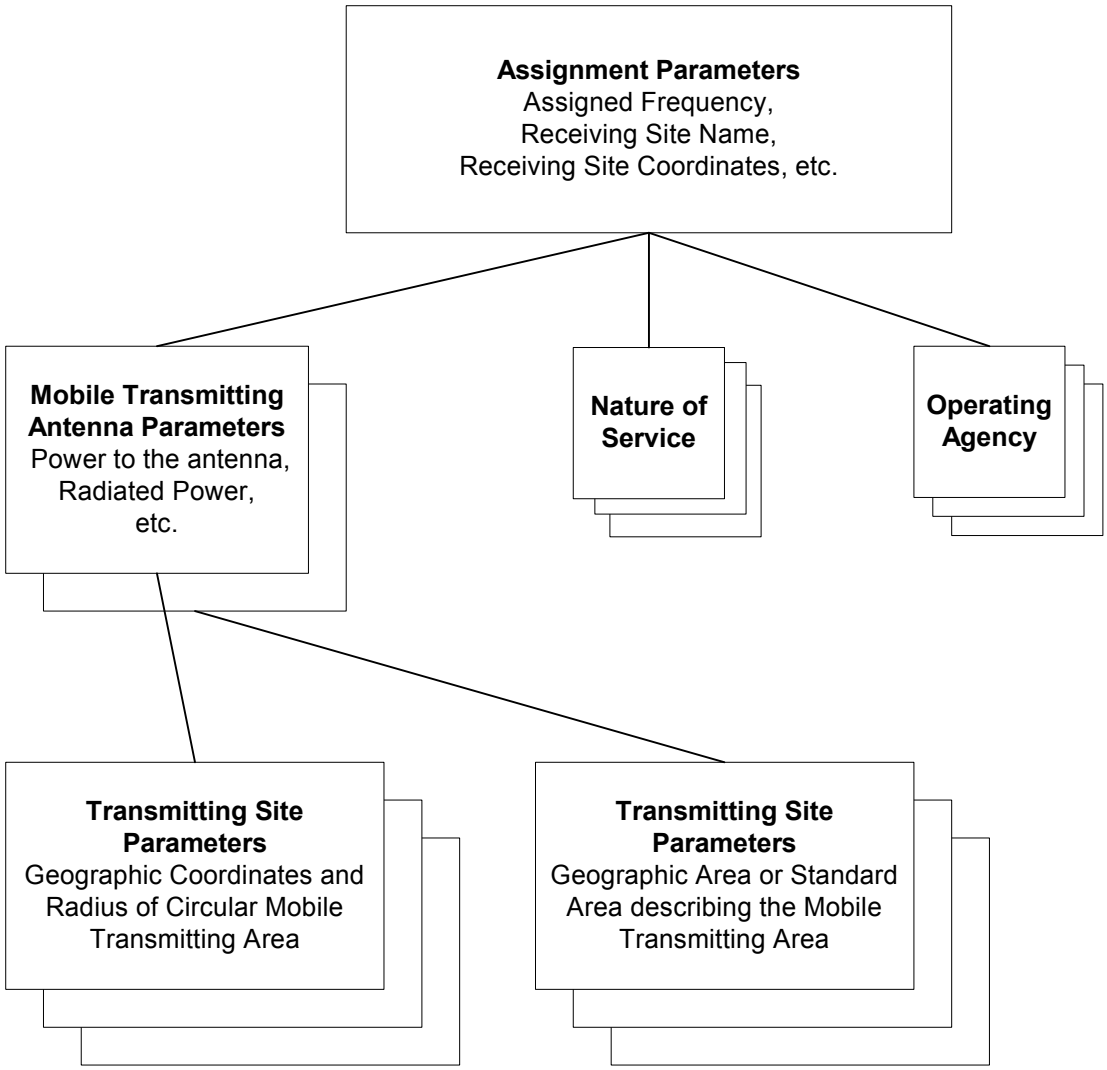
[3] In case of the examination of the probability of harmful interference (e.g. under Resolution 300) the Bureau will use the most sensitive nature of service (e.g. CP).

1.7.1 For Notice Types T11 (individual transmitting station in the fixed services), T12 (individual transmitting station in services other than fixed service and the broadcasting service in the LF/MF and VHF/UHF bands), T16 (individual transmitting station for updating of the GE85M Plan), and T17 (individual transmitting station using adaptive systems at MF/HF), the general structure is as follows:



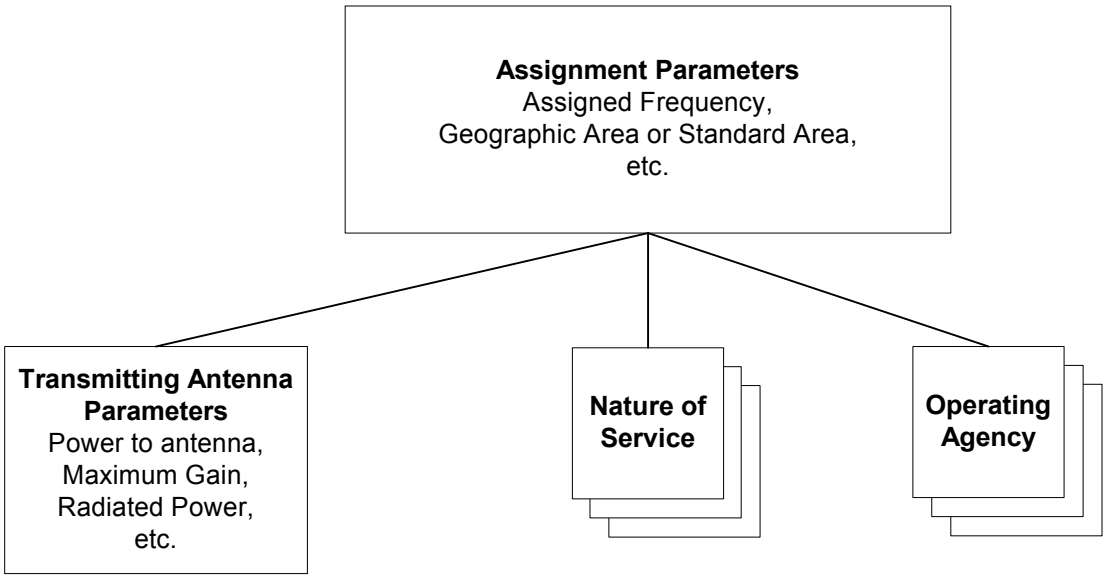
As shown in the above diagram, this notice has two sets of transmitting antenna parameters ("antennas"), each with its own set of three receiving sites. In fact, there is *no* limit concerning the number of "antennas" for one notice, and *no* limit concerning the number of receiving sites per antenna. Note, however, that the precise parameters for the assignment, the antenna, and the receiving site vary according to the Notice Type; the fields shown above are merely examples.

1.7.2 For Notice Type T13 (individual receiving land station), the general structure is:



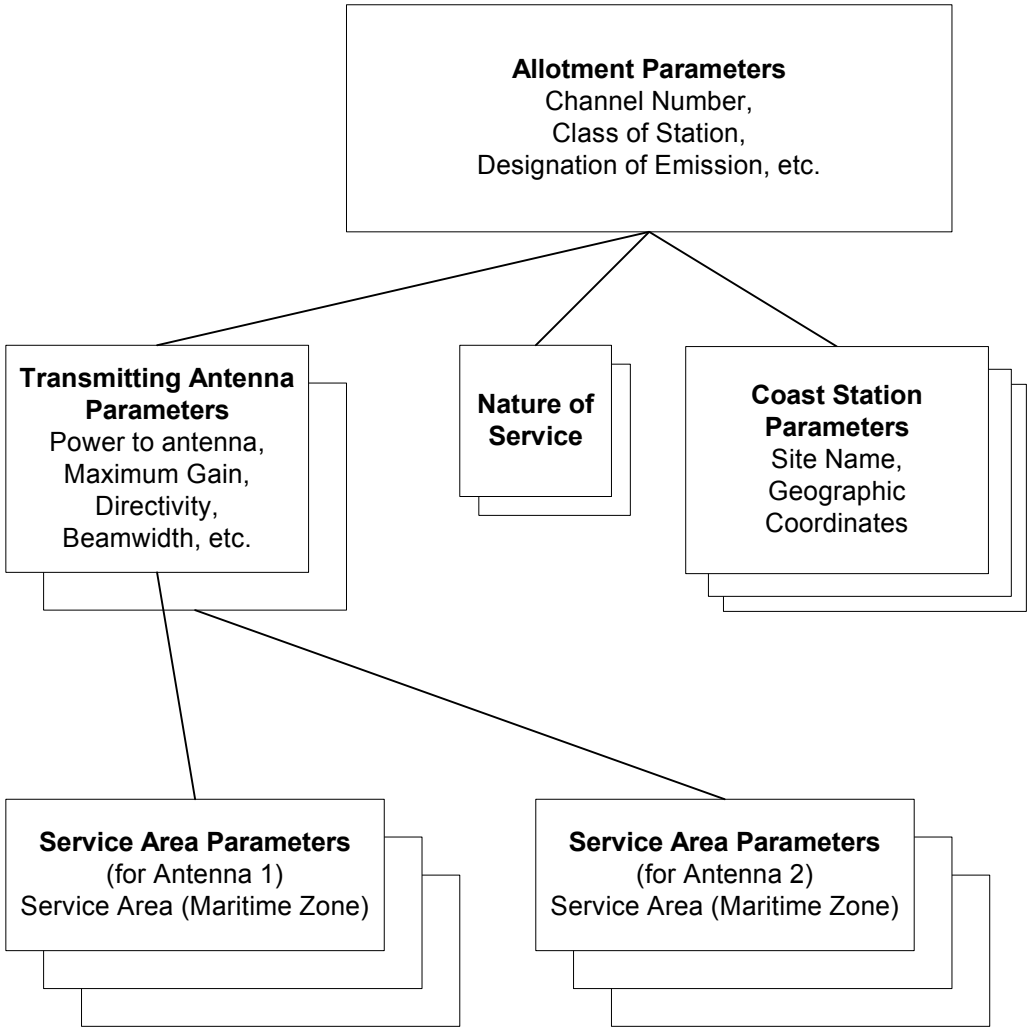
As shown in the above diagram, this notice has two sets of transmitting antenna parameters ("antennas"), each with its own set of three transmitting sites. In fact, there is *no* limit concerning the number of "antennas" for one notice, and *no* limit concerning the number of transmitting sites per antenna.

1.7.3 For Notice Type T14 (typical transmitting station), the general structure is:



It is to be noted, that the new structure provides only for a single set of transmitting antenna parameters, in line with the concept of typical station (No. **S11.17**).

1.7.4 For Notice Type T15 (frequency allotment in the maritime mobile services, in the bands governed by Appendix **S25**), the general structure is:



As shown in the above diagram, this notice has two sets of transmitting antenna parameters ("antennas"), each with its own set of three service areas. In fact, there is *no* limit concerning the number of "antennas" for one notice, and *no* limit concerning the number of service areas per antenna. Similarly, as shown in the above diagram, this notice has three intended coast stations (which have to be submitted in the context of request for initial allotments by administrations that have no allotments in the Allotment Plan of Appendix **S25**); in fact, there is *no* limit concerning the number of intended coast stations.

2 Conversion from FMS to *TerRaSys*

2.1 The structure of the FXM component in ***TerRaSys***, as explained in the previous section of this annex, has considerable impact on the conversion of the FXM records from **FMS** to ***TerRaSys***. In general, as one FXM assignment in ***TerRaSys*** contains only one class of emission, the "entries" from the current **FMS** assignments, which correspond to different classes of emission, will be converted into separate ***TerRaSys*** assignments. This concept would eliminate many inconsistencies from the former **FMS**, where different classes of emission (both symmetric and non-symmetric)

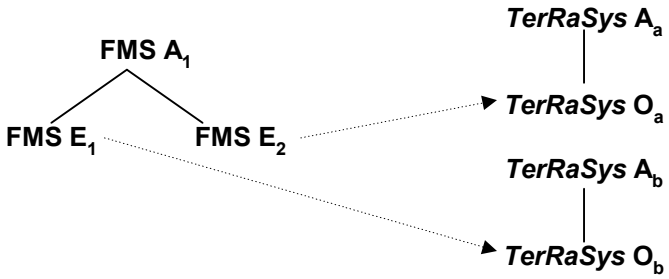
were related to the same assigned frequency, which often resulted in an incompatible relationship between the assigned frequency, the reference (carrier) frequency and the notified bandwidth.

2.2 Due to the above differences between the FXM structure in **FMS** and the FXM structure in ***TerRaSys***, the current records in the MIFR (under **FMS**) may look differently in ***TerRaSys***[4]. Some of the possible results of the conversion are explained hereafter.

2.2.1 Entries which currently pertain to a single **FMS** assignment may remain together in a single ***TerRaSys*** assignment (e.g. in the cases of two entries which are related to the same class of emission, but with two different azimuths of maximum radiation):

Abbreviations **FMS A_1** and **FMS E_1** used above designate "assignment No 1" and "entry No 1" in current **FMS**. Abbreviations ***TerRaSys*** **A_a** and ***TerRaSys*** **O_a** designate "assignment A" and "operation A"[5] in ***TerRaSys***.

2.2.2 Entries which currently pertain to a single **FMS** assignment may be separated into different ***TerRaSys*** assignments (e.g. in the case of two different classes of emission):



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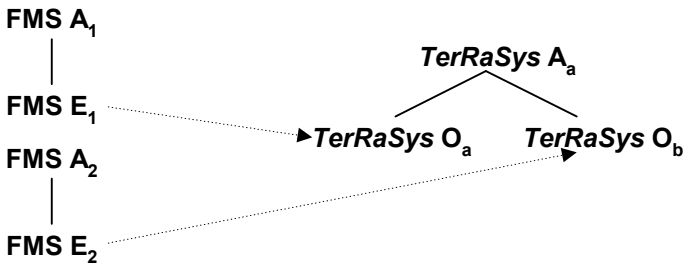
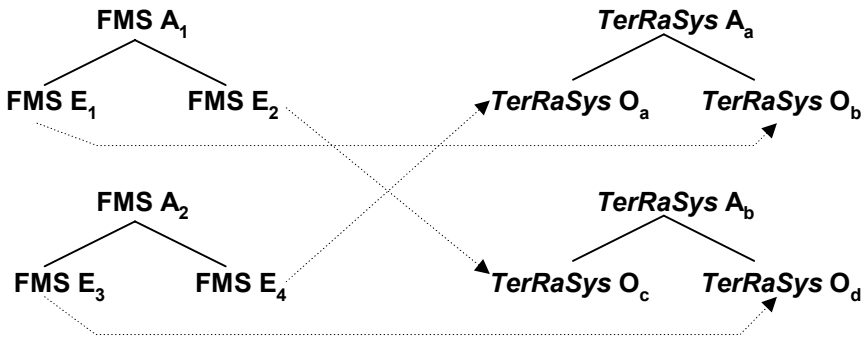
[4] Some aspects related to the possible differences in this regard were explained in Circular-letter CR/110, dated 4 December 1998, which described the new "Terrestrial CD-ROM publication", in pursuance of Resolution 30 (WRC-97).

[5] The term "operation", in the ***TerRaSys*** structure, is related to a set of transmitting antenna parameters with an associated set of service area parameters, and has no direct equivalence with any term from the **FMS** structure. Consequently, it may be a combination of "FMS entries" if both FMS entries were related to the same class of emission. However, it may be also a combination of "FMS sub-entries" related to different service area parameters.

2.2.3 Entries which currently appear in separate **FMS** assignments may be grouped together into a single ***TerRaSys*** assignment (e.g. two identical assignments, at the level of identifying parameters, with the only difference of having two different azimuths of maximum radiation):



2.2.4 Combinations of the above, such as operations from two **FMS** assignments being converted into two ***TerRaSys*** assignments, but with different operations grouped together in the assignments:

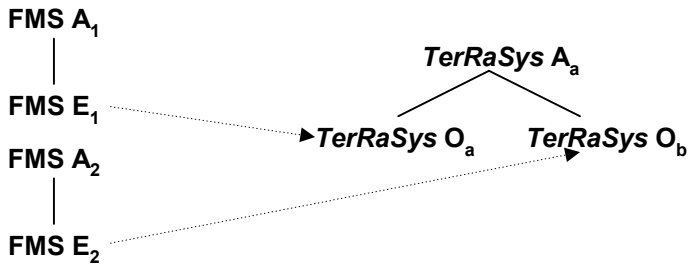


2.3 There are many implications arising from this conversion. Among them are:

- One ***TerRaSys*** assignment may have multiple Assignment ID numbers from multiple **FMS** assignments.
- Two or more ***TerRaSys*** assignments may have the same Assignment ID numbers from a single **FMS** assignment.
- Combinations of the above, such as two or more ***TerRaSys*** assignments, each with the same set of multiple Assignment ID numbers from the same **FMS** assignments.
- Because of the above implications, the Assignment ID numbers transferred from **FMS** *cannot* be considered to be unique, and they *cannot* be considered to point to a single ***TerRaSys*** assignment or notice.
- The implications regarding Assignment ID numbers also apply to Administration Reference ID numbers for those cases where they exist.

2.4 All of ***TerRaSys*** (not only FXM) treats notices as replacement notices when they are notices to modify an existing assignment. With FXM, **FMS** assignments may be split and merged to create ***TerRaSys*** assignments.

2.4.1 Consider two separate **FMS** assignments which would be grouped together into a single ***TerRaSys*** assignment:

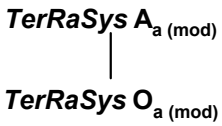


2.4.2 An administration intending, for example, to modify **FMS A_1** would submit a simple notice:

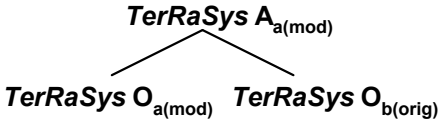
2.4.3 A simple conversion from the **FMS** notice to a ***TerRaSys*** notice would be:

2.4.4 In ***TerRaSys***, this would find ***TerRaSys*** **A_a** as its target:

2.4.5 When ***TerRaSys*** **N_a** received favourable findings, it would replace ***TerRaSys*** **A_a**, leaving:

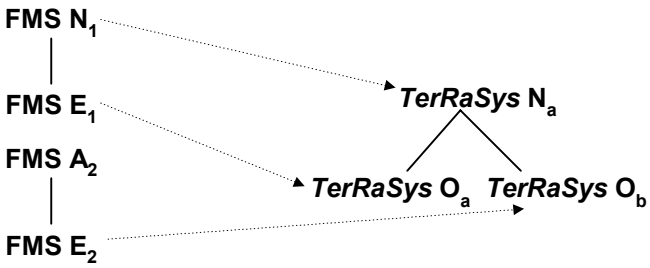


2.4.6 Significantly, because the notice would replace the entire ***TerRaSys*** assignment, it would *not* leave:



2.4.7 In other words, the second operation would disappear. This may or may not be the wish of the administration submitting the notice. This is something which may happen accidentally because the administration is thinking in **FMS** terms rather than ***TerRaSys*** terms.

2.4.8 To avoid this problem during the conversion from **FMS** to ***TerRaSys***, in such a situation, the conversion program will actually generate a notice such as:



2.4.9 This will permit the replacement notice concept to work with those notices arriving from **FMS** in the manner anticipated by those submitting the notices under **FMS**. However, notices submitted using the ***TerRaSys*** notice format will be treated in accordance with the ***TerRaSys*** methods. In other words, administrations will have to take into account all of the operations of a ***TerRaSys*** assignment when they prepare a ***TerRaSys*** notice.

2.5 In the conversion process, the Bureau was faced with situations where some fields, pertaining to non-identifying parameters, have conflicting values as a result of a merge of two **FMS** assignments into a single ***TerRaSys*** assignment. The majority of these conflicting situations are being resolved through appropriate algorithms (e.g. determination of a missing carrier frequency). However, some conflicting situations cannot be resolved in a simple way. Although some of them are subject of consultations with the administrations concerned, others (like the site name problem) could not be resolved on a case-by-case basis, due to the large number of conflicting situations[6] and the tight schedule for implementation of ***TerRaSys***. The site name problem appears when two (or more) **FMS** assignments, related to two different site names (but with identical geographical coordinates and related to the same assigned frequency), are merged into a single ***TerRaSys*** assignment. To resolve this problem, the Bureau decided to use the concept of a "principal site name", which is determined on the basis of the site name which appears in the assignment (notice) with the most recent (highest) assignment ID, and to store all other appearances in a table of "secondary site names". In all searches by site name, only the principal site name would be considered. However, the display of the results would include also the secondary site names (if any). This problem is drawn to the attention of the administrations due to possible consequences in future: as the new formats contain only one site name, the submission of a notice intended to modify an assignment which contains both principal and secondary site names will result in a replacement of all these names with the latest submission. The administrations are therefore invited to pay attention to the first ***TerRaSys*** CD-ROM publication after the cutover, so as to keep trace of the multiple site names, if required.

2.6 The Bureau is aware that these considerations do *not* cover all of the implications arising from the conversion of the FXM structure in **FMS** to the FXM structure in ***TerRaSys***. None the less, this provides a sampling of the implications, and should be useful in providing the basic information to administrations for use of the forthcoming ***TerRaSys*** CD-ROM publication, as well as for preparing the necessary forms under the new ***TerRaSys*** format.

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[6] The trial run against a limited sample (AP1/A1 records) indicated some 6 656 conflicting cases of this type.

3 Practical impact of the new TerRaSys structure and the conversion from FMS to TerRaSys on the process of notifications of frequency assignments.

The implementation of new ***TerRaSys*** structure and the conversion of data from **FMS** to ***TerRaSys*** will have a significant impact on the process of notifications of frequency assignments. Therefore, some practical recommendations listed below concerning submission of information may be useful for administrations.

3.1 When submitting a frequency assignment to the Bureau, the information should be provided using ***TerRaSys*** notice forms which are presented in Annex 2 to this circular letter (in case of paper notifications) or should comply with requirements to the file structure for electronic notifications which is described in Annex 3.

3.2 Before submitting modifications to or suppressions of recorded frequency assignments it would be desirable to check whether the assignments to be modified (suppressed) have been split or merged as a result of the conversion. This can be done by comparison of the content of the IFL-on-CD-ROM (edition March 1999) which gives the latest status of **FMS** data base and the first ***TerRaSys*** CD-ROM which will describe the content of MIFR in ***TerRaSys*** format. If an assignment has changed its structure a careful analysis should precede the notification of this assignment in order to prevent possible loss of recorded information.

3.3 A concept of replacement notices used in ***TerRaSys*** would be always kept in mind during the preparation of a notification which means that the new notice completely replaces a recorded assignment (rather than modifies certain parameters as it was in **FMS**).

3.4 The BR's assignment ID can not serve any longer as unique identifying parameter for finding the assignment to be modified or suppressed or withdrawn. Consequently, it is mandatory to provide a set of identifying parameters which are described in Annexes 3 and 4 in order to find the right target assignment in ***TerRaBase***.

ANNEX 2

Forms of notice for use when notifying frequency assignments to stations in the fixed, mobile and other terrestrial services (excepting the broadcasting service in the LF/MF and VHF/UHF bands) to the Radiocommunication Bureau, as from 1 October 1999

The following forms are applicable to the notification/submission of frequency assignments/allotments to stations in the fixed, mobile and other terrestrial services (excepting the broadcasting service in the LF/MF and VHF/UHF bands):

TerRaSys **notice form**	**Applicable to**	**Replacing current FMS notice forms**
T11	TERRESTRIAL TRANSMITTING STATION (TX) IN THE FIXED SERVICE (APPENDIX S4, ANNEXES 1A AND 1B)	AP1/A1, APS4/A1
T12	TERRESTRIAL TRANSMITTING STATION (TX) (Except station in the fixed, or LF/MF/VHF/UHF broadcasting services, or typical station) (APPENDIX S4, ANNEXES 1A AND 1B)	AP1/A1, APS4/A1
T13	TERRESTRIAL RECEIVING LAND STATION (RX) (APPENDIX S4, ANNEXES 1A AND 1B)	AP1/B, APS4/B
T14	TERRESTRIAL TYPICAL TRANSMITTING STATION (TP) (APPENDIX S4, ANNEXES 1A AND 1B)	AP1/C, APS4/C
T15	FREQUENCY ALLOTMENT IN THE MARITIME MOBILE SERVICE (APPENDIX S25)	AP5, APS25
T16	TERRESTRIAL TRANSMITTING STATION (TX) (Plan update Regional Agreement Geneva, 1985) (Article 4 of the agreement)	AP1/A1, APS4/A1
T17	TERRESTRIAL TRANSMITTING STATION (TX) USING ADAPTIVE SYSTEMS (APPENDIX S4, ANNEXES 1A AND 1B)	AP1/A1, APS4/A1

The relevant paper notice forms are enclosed with this circular letter. They also are available through the Internet at the ITU website under http://www.itu.int/bredh/notice-forms.

Additional guidelines concerning the use of these forms are included in Annex 4 (which will be communicated shortly).