



CEPT Report 47

Second Report from CEPT to the European Commission
in response to the Mandate on inclusion of information
on rights of use for all uses of spectrum between
400 MHz and 6 GHz (Tasks 4 and 5 in response to the EC
Mandate on EFIS)

Report approved on 21 June 2013 by the ECC

0 EXECUTIVE SUMMARY

Background:

This Report addresses specific questions relevant to the gathering of information which could be used as input to a spectrum inventory on various spectrum usages either for commercial or public purposes.

The Mandate to CEPT specifically recognises the existing role of the ECO Frequency Information System (EFIS) and the potential to develop it in such a way as to enable it to serve as a primary input source to the spectrum inventory. The role and objectives of the spectrum inventory are set out in the present Radio Spectrum Policy Programme (RSPP, Decision 243/2012/EU [3], Art. 9). The Mandate focuses on the part of the EC Decision on EFIS (2007/344/EC) [1] with regard to the practical modalities and uniform formats for the collection and provision of data by the Member States to the Commission.

A Commission Decision of 16 May 2007 (2007/344/EC) [1] and a Directive of the European Parliament and of the Council of 7 March 2002 (676/2002/EC) [2] on harmonised availability of information regarding spectrum use within the Community decided to use the ECO Frequency Information System (EFIS) for publication and access to spectrum information within the Community.

This framework has been established to improve transparency about the use of spectrum, particularly for those who have an interest in access to the market across Europe.

The Mandate to CEPT on inclusion of information on rights of use for all uses of spectrum between 400 MHz and 6 GHz contains the following tasks:

- 1. To confirm that it is technically possible for the EFIS system to accommodate comprehensive information regarding spectrum usage rights for the whole range from 400 MHz to 6 GHz without limit to the type of application based on the current common formats in Annex II of Commission Decision 2007/344/EC [1].*
- 2. To highlight any necessary change to the current common formats contained in Annexes I and II of Decision 2007/344/EC [1] by taking into account the data needed/relevant for the methodology under development according to Article 9 par.2 of Decision 243/2012/EU [3]. This might for example be necessary to differentiate current data collection in accordance with Annex II from data collection for types of use other than ECS in the range 400 MHz to 6 GHz. Any changes to current common formats should only deal with non-confidential information and allow an assessment of the time duration, geographical extent and deployed technology, while limiting the administrative burden on the Member States.*
- 3. To assess the level, coherence and uniformity of information that is currently being provided by the Member States when providing information in accordance with Annexes I and II as well as when providing non-regulatory information being collected by EFIS which has relevance for the inventory.*
- 4. To state the necessary additional operational details, if any, in particular the links and updating mechanisms between ECO and national administrations and assess the technical and administrative impacts on Member States, taking into consideration the need to minimise additional costs and manpower for national administrations with a clear distribution of responsibilities. In this context it should be investigated which Member States use direct automatic updates from national databases to EFIS and where national databases do not exist.*
- 5. To assess the possibility and the benefits to update information provided by Member States pursuant to Article 3.2 of Decision 2007/344/EC [1] every three months, and drawing from experience, to estimate the increase in administrative and cost burden this could represent for Member States.*

The Mandate aims to extend the scope of the Decision regarding rights of use and possibly radio interface information in the spectrum range 400 MHz to 6 GHz as well as the means to keep the information as up-to-date as possible. The Mandate was adopted by the RSC in August 2012.

Tasks 1 to 3 of the Mandate are dealt with in a separate CEPT Report (CEPT Report 46 [4]).

The present CEPT Report 47 addresses Tasks 4 and 5 and is subject to the CEPT public consultation procedure. The work on Tasks 4 and 5 included a CEPT questionnaire sent out by ECO to CEPT administrations on 1 October 2012. A total of 37 countries have provided a response to the questionnaire.

The principal conclusions of this Report are as follows:

Task 4 under the Mandate: to state the necessary additional operational details, if any, in particular the links and updating mechanisms between ECO and national administrations and assess the technical and administrative impacts on Member States, taking into consideration the need to minimise additional costs and manpower for national administrations with a clear distribution of responsibilities. In this context it should be investigated which Member States use direct automatic updates from national databases to EFIS and where national databases do not exist.

National allocations, applications, Rights of Use (RoU) and Radio Interface Specifications (RIS) information are or will in future be stored in a database or an Excel spread sheet in nearly all administrations. This means that this information is or will be available in electronic format.

The actualisation of the current level of RoU information (number of entries) for EFIS does not pose a problem for the administrations. The upload of a high number of RoU entries is seen as much more critical and will require modifications in database tools or new national database systems. This poses an additional burden (financial and manpower) for the administrations, the extent of which could currently not be evaluated.

Making all the RoU information available in EFIS will mean internal costs for providing information to the national authority by the licence holders (i.e. the operators). These costs cannot be estimated today.

Administrations call mainly for assistance from the ECO in first-time cases when they start to upload information into EFIS or change from manual upload to semi-automatic or automatic upload to EFIS. In addition, assistance from the ECO is called for when changes in the XML file common format take place.

The objective to enable automatic upload of EFIS data is to minimise the administrative burden in future.

Data format

To ensure homogeneous information and keep the burden on administrations as limited as possible it is necessary to have a common data exchange format, which avoids entering/changing more often than necessary new records in administrations' databases. Dedicated formats for several frequency bands make sense in cases of electronic questionnaires to collect more necessary data/information.

Content

It is not believed that it would be of benefit to provide detailed information concerning all individual RoU, applications and other information between 400 MHz and 6 GHz. Without further information from national administrations this information may be misleading and may not accurately reflect the actual spectrum usage situation.

Some detailed information on RoU will not be of benefit to the users of EFIS or provide the data needed relevant to Article 9 par. 2 of the RSPP on spectrum inventory.

For example it is not possible to collect information about RoU data for governmental services such as military, public safety and security services. In addition it may not be possible for some administrations to provide information on certain civil usages (e.g. PMR, aeronautical, radiolocation, etc...). The reasons for this are, among others, business confidentiality, national legislation on data protection, the lack of legal requirement for publication and national security reasons.

The provision of information by administrations regarding non-ECS (Electronic Communications Services) applications is limited in EFIS. Some additional information on RoU could be made available in EFIS, particularly for applications beyond harmonised European ECS bands. However, these cases should be

identified as part of a specific spectrum inventory action and not before the need for this is clearly identified. Further it is mentioned by administrations that to provide such information, special database systems and additional manpower are necessary, which consequently will increase the burden on administrations, whereas the benefit is not apparent.

As required by Article 9 of the Authorisation Directive, RoU should be as technology neutral as possible. For this reason, many awards of new spectrum are done on a technology neutral basis. As a result of this there are, in an increasing degree, no records of the technology in use. In areas where spectrum has been allocated to more than one licensee, there is a possibility that two or more different applications could be in use (see section 5.2).

Information on the technology of certain frequency bands regulated by a general authorisation / licence-exempt approach is also not available in many cases.

Information on geographical area could be national, regional or transmitter site information. To provide the coverage area information of thousands of transmitters, many parameters must be taken into account. All these parameters depend on the frequency band and considered applications.

To require this information on the coverage area of thousands of transmitters will have a considerable impact on the burden of administrations with regard to manpower and costs, whereas the benefit is not apparent (e.g. in the case of PMR/PAMR transmitters) (see section 5.1).

Collecting, preparing and uploading all RoU information in EFIS has a different level of impact on all administrations: additional costs, additional manpower and in many cases changes in national law. Especially the last item, changing national law, could be a protracted process or may not be feasible.

Information which is considered confidential or classified by an administration, an international institution, or any third party in accordance with EU and national law will be protected and not be available, in particular:

- business confidential information;
- information in relation to protection of privacy and
- information in relation to public security and defence.

Changes in other national law which are related to the above are slow, time-consuming, or may not be feasible.

To provide all RoU information in EFIS will mean higher costs and more manpower for administrations (e.g. for modifications of their software, organisation of procedures) which consequently would increase the burden of administrations, whereas the benefit is not apparent. These additional items could only be implemented with a time delay in next year's state budgets, i.e. there are severe implementation issues.

Taking the above evaluation into account, the use of a more focused approach via electronic questionnaires is proposed. This approach would minimise the burden on administrations (costs and manpower); at the same time it will enable a thorough review of the specific frequency bands and applications under investigation.

Proposed methodology of using electronic questionnaires

The use of electronic questionnaires is proposed as a method to retrieve qualitative and quantitative information. Based on the information given in the questionnaires, an analysis can be made in relation to the goals set out in the Radio Spectrum Policy Programme. This is, as already mentioned in the CEPT Report 46 [4], an efficient, demand-oriented and cost-effective method to complete the information available in EFIS. This proposal would meet the requirements of Article 9 par. 2(a) of the RSP on spectrum inventory to minimise the administrative burden on Member States.

- Upload to EFIS information in electronic format which was gathered in the framework of the activities of CEPT working groups;
- Provision of high level overview of spectrum use;

- Using tailored electronic questionnaires to collect missed and/or further information for the frequency bands of interest on a case-by-case basis;
- Detailed investigation of frequency bands of interest using the collected information (e.g. reallocation, compatibility and/or sharing studies).

Task 5 under the Mandate: to assess the possibility and the benefits to update information provided by Member States pursuant to Article 3.2 of Decision 2007/344/EC [1] every three months, and drawing from experience, to estimate the increase in administrative and cost burden this could represent for Member States.

National allocation and application plans pass different national steps (e.g. parliament, public consultation). Usually these procedures take much longer than three months (application information from the national frequency utilisation plans is relevant as demonstrated in CEPT Report 46 [4]). Generally, national allocation plans are only revised after a WRC (every 3 to 4 years), and national frequency utilisation plans not more often than once or twice a year. These facts make an actualisation of the information in EFIS every three months impossible.

Information on allocations, applications, RoU and RIS is mostly actualised/ updated by administrations not more than twice a year or simply on an ad hoc basis, when changes occur. This actually ensures that the most up-to-date information is available in EFIS. A demand for an update every three months appears at this point undesirable; especially in view of the fact that, owing to different national regulations in some cases no changes take place within this short timeframe.

A demand to update/actualise more often the information in EFIS will mean higher costs and more manpower for administrations (e.g. modifications of the software, organisation of procedures), which will consequently increase the burden on administrations, whereas benefits of this are not apparent. Additional items could only be implemented with a time delay in next year's state budgets.

No reasons have been identified to update the information in EFIS every three months which would justify this additional burden for administrations.

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
CEPT	European Conference of Postal and Telecommunications Administrations
CSV	Character Separated Values format
EC	European Commission
ECA	European Common Allocation
ECC	Electronic Communications Committee
ECO	European Communications Office
ECS	Electronic Communications Services
EFIS	ECO Frequency Information System
ERP	Effective Radiated Power
ETSI	European Telecommunications Standards Institute
EU	European Union
FS	Fixed Service
ITU	International Telecommunication Union
NRA	National Regulatory Authority
PAMR	Public Access Mobile Radio
PMR	Professional Mobile Radio, Private Mobile Radio
PMSE	Programme Making and Special Events
PPDR	Public Protection and Disaster Relief
RF	Radio Frequency
RFID	Radio Frequency Identification Devices
RIS	Radio Interface Specification
RoU	Right of Use
RSC	Radio Spectrum Committee
RSPG	Radio Spectrum Policy Group
RSPP	Radio Spectrum Policy Programme
R&TTE	Radio Equipment and Telecommunications Terminal Equipment
SRD	Short Range Devices
TRA-ECS	Terrestrial Radio Applications Capable of Providing Electronic Communications
VSAT	Very Small Aperture Terminal
WG FM	Working Group Frequency Management
WRC	World Radio Conference
XML	EXtensible Markup Language

1 INTRODUCTION

The Report, based on the information given by administrations in reply to the questionnaire, is structured as follows:

- Section 2: National databases, with regard to RoU and RIS information, export of information capabilities and compatibility to EFIS.
- Section 3: Updating of the information, related costs, manpower and updating cycles.
- Section 4: Required ECO assistance.
- Section 5: Administrative and technical impacts when providing specific information in EFIS, related costs, manpower and other.
- Section 6: Provision of RoU information – benefits and impacts.
- Section 7: Conclusions and Recommendations.

The annexes of this Report include supporting and background information:

- Annex 1: EFIS mandate to CEPT
- Annex 2: WGFM questionnaire in relation to tasks 4 and 5 of the mandate
- ANNEX 1: List of references.

2 NATIONAL DATABASES WITH REGARD TO ROU AND RIS INFORMATION, EXPORT OF INFORMATION CAPABILITIES AND COMPATIBILITY WITH EFIS

The first three questions to administrations concerned the aspect of national databases: whether already available, or planned, and the format of the information available with regard to export to EFIS.

Table 1: National databases and export of data into EFIS

Country	RIS	RoU	Remarks
Andorra	Word-file Semi-automatic export to EFIS intended in future	Excel-file Semi-automatic export to EFIS intended in future	Recently, via the Official Government Bulletin (www.bopa.ad), Andorra published the first national frequency table. Furthermore, application procedures for some bands and with some frequency assignments were published. Andorra sets up a database tool. Once all the information is inserted, it shall be EFIS-compatible.
Austria	Database XML-file; and semi-automatic export to EFIS	Database XML-file and semi-automatic export to EFIS	
Belarus	Database	Database	Belarus plans to upload allocations and application data by using XML-file and semi-automatic export to EFIS in the near future. RIS and RoU data export to EFIS is not planned.
Belgium	Database for recent RIS Word-file for older RIS XML-file and semi-automatic export to EFIS	Database XML-file semi-automatic export to EFIS	
Bosnia Herzegovina	Database XML-file and semi-automatic export to EFIS	Database XML-file and semi-automatic export to EFIS	Database contains links to external Word/PDF versions of BiH Rules and ECC Deliverables that contain RIS for applications within bands (under "Regulation").

Country	RIS	RoU	Remarks
Bulgaria	Database Manual upload to EFIS	Database Manual upload to EFIS	
Croatia	Word and paper files No data uploaded yet. In future, XML file and semi-automatic export to EFIS	Database XML file and semi-automatic export to EFIS	Croatia plans a new database to be introduced in 2013/2014 with possibility to generate XML EFIS – compatible files.
Cyprus	Word files Manual upload to EFIS	Database Manual upload to EFIS	RIS: publication in TRIS and EFIS RoU: The capability for the generation of EFIS-compatible files will be checked with the manufacturer.
Czech Republic	Word files For the time being there is no plan to have RIS as integral part of national database due to technical limitation. Manual upload to EFIS In case of large data file, an XLS file is manually compiled from which XML format is generated and uploaded into EFIS.	Database (and some older ones on paper) Manual upload to EFIS In case of large data file, a XLS file is manually compiled from which XML format is generated and uploaded into EFIS.	RIS: RIS Information related to frequency bands is included in General Authorizations (GA) and Radio Spectrum Utilisation Plan (RSUP). GA and RSUP are not part of a national database. Ad RoU: The data which is used in EFIS for description of rights of use of radio spectrum is incorporated in databases of an internal system (SPECTRA) which is used by the CTO for RS management. A database designated for public use is available via web of the CTO (http://www.ctu.cz/ctu-online/vyhledavaci-database/prehled-vyhledavacich-databazi.html only in Czech). It provides information whether there is some assignment within dedicated band and which service it is related to.

Country	RIS	RoU	Remarks
Denmark	<p>Word file</p> <p>No dedicated RIS database planned</p> <p>Manual upload to EFIS</p>	<p>Database</p> <p>XML file and semi-automatic export to EFIS</p>	<p>Many RIS are stored in the national database: Retsinformation.dk However, some RIS are only available on the website of the Danish Business Administration.</p>
Estonia	<p>Spread sheet (Excel)</p> <p>Manual upload to EFIS</p> <p>In future, XML file and semi-automatic export to EFIS</p>	<p>Database</p> <p>Manual upload to EFIS</p>	<p>There are two different databases one (existing) with RoU information) and another (planned for 2013-14, under construction) with RIS and general spectrum information. Unfortunately at the moment those databases are not capable of generating files compatible with each other. The new database with frequency allocations and RIS information has also RoU information, but it should be filled manually.</p>
Finland	<p>Database</p> <p>XML file and semi-automatic export to EFIS</p>	<p>Database</p> <p>Manual upload to EFIS</p> <p>(which might be not feasible anymore if all RoU in 400-6000 MHz need to be uploaded)</p>	<p>Two different databases, which communicate with each other. Databases are not connected to internet due to classified and secure information.</p> <p>Additional SQL queries needs to be developed to fully support new planned RoU requirements. The estimated cost due to these additional queries needs to be carefully evaluated; the queries also need to be resolved before cost analysis can be done.</p> <p>The quality of data cannot be guaranteed when importing all RoU from 400 MHz to 6 GHz, since licence holder information changes quite often and RoU holders do not always report changes immediately and in time.</p> <p>Also, some RoU are not perhaps relevant e.g. sub-sub-sub division of a specific company. More discussion on the content of RoU lines is required at EFIS/MG level.</p>

Country	RIS	RoU	Remarks
France	<p>Database</p> <p>XML file and semi-automatic export to EFIS</p> <p>(manual update also frequently required)</p>	<p>Database</p> <p>XML file and semi-automatic export to EFIS</p> <p>manual update also frequently required)</p>	<p>RIS: National regulations are notified to European Commission according to EU Directive 98/34 by ARCEP. When available, this information is uploaded in EFIS by ANFR based on information provided by ARCEP.</p> <p>RoU: On frequency bands where the rights of use are tradable, ANFR collects information provided by ARCEP. This information is stored in an internal database and then uploaded in EFIS.</p> <p>ANFR is currently updating its overall IT system.</p> <p>Objectives include optimisation of means to update EFIS data.</p>
Germany	<p>Spread sheet (Excel)</p> <p>XML file and semi-automatic export to EFIS possible</p>	<p>Spread sheet (Excel)</p> <p>XML file and semi-automatic export to EFIS</p>	<p>Redesign of the national database software planned for 2013 to 2014 to implement the RIS and RoU data. The database should be capable of generating EFIS-compatible files in XML format. Furthermore, the new software should be able to supply fully automatic upload with an interface with login info incorporated.</p>
Greece	<p>Word-files</p> <p>Manual upload to EFIS</p>	<p>Database</p> <p>Manual upload to EFIS</p>	<p>RIS: database planned by 2015 which can produce EFIS compatible files.</p>
Hungary	<p>Word-file</p> <p>Manual upload to EFIS</p> <p>In future, XML file and semi-automatic export to EFIS</p>	<p>Database</p> <p>Manual upload to EFIS</p> <p>In future, XML-file semi-automatic export to EFIS</p>	<p>There is an on-going project to develop a spectrum management supporting IT system (called STIR). It will be able to generate EFIS-compatible file. For the time being the RoU information is handled by the FMS system at our Authority. The STIR will be able to receive RoU information from the FMS and upload it in to the EFIS. This function will be ready, according to our plans, by</p>

Country	RIS	RoU	Remarks
			the 2014. RIS information will be defined just in the STIR and automatically uploaded into the EFIS.
Iceland	Word-file Manual upload to EFIS	Spread sheet (Excel) No RoU in EFIS yet	RIS information in NTFA RoU information concerning GSM/3G/FWA and DVB on website a No plans for national database.
Ireland	Database Manual upload to EFIS In future, XML-file semi-automatic export to EFIS	Database Manual upload to EFIS In future, XML-file semi-automatic export to EFIS	ComReg's national database does not have the functionality to automatically compile RIS/RoU data and generate EFIS compatible files. A future upgrade of Ireland's national database around Q4 2013 will include EFIS functionality, i.e. the XML file is created and uploaded to EFIS manually.
Latvia	Spread sheet (Excel) and Word-file Manual upload to EFIS In future, XML-file semi-automatic export to EFIS	Spread sheet (Excel) Manual upload to EFIS In future, XML-file semi-automatic export to EFIS	Information about all of the radio frequency assignments is stored in databases. RIS in a new database planned for 2013 with XML-file export to EFIS.
Liechtenstein	Database XML-file semi-automatic export to EFIS	Database XML-file semi-automatic export to EFIS	
Lithuania	Word-file Manual upload to EFIS	Database XML-file semi-automatic export to EFIS	Several databases, some of them do not interact with others
Luxembourg	Database XML-file semi-automatic export to EFIS possible		RIS and RoU are stored in two different databases.
Former Yugoslavian Republic of Macedonia (FYROM)	Database Manual upload to EFIS	Database Manual upload to EFIS	According to the National Telecommunication Law, the obligation is to update the National Plan once a year and this concerns RIS,

Country	RIS	RoU	Remarks
			Allocations and Applications.
Malta	Spread sheet (Excel) XML-file semi-automatic export to EFIS	Database Manual upload to EFIS	
Montenegro	Database	Database planed. So far word-, excel- and paper-files.	Combination of different types (e.g. for RIS is a combination of database, excel and word). It is planned to store all spectrum data in one database. All RIS and RoU in a new database planned for 2013 with XML-file export to EFIS.
Netherlands	Database XML-file semi-automatic export to EFIS	Database Manual upload to EFIS	
Norway	Word-file Manual upload to EFIS	Database XML-file semi-automatic export to EFIS	Currently no plans for implementing a database for RIS
Poland		Database Manual upload to EFIS At the moment the RoU data cannot be generated in EFIS compatible format, but if the burden to prepare the data is higher the Office will consider such a feature.	The Polish Administration cannot answer questions regarding radio interfaces (RIS) because Poland has not yet regulated any radio interface. Data is uploaded manually, but automation is under consideration.
Portugal	Database XML-file semi-automatic export to EFIS	Database XML-file semi-automatic export to EFIS	Finalising the migration of RIS data into the national database. It is expected that it will be possible to generate EFIS-compatible files in XML format for national RIS and RoU.
Romania	Word files Manual upload to EFIS	Word files Manual upload to EFIS	Database will be implemented in 2013 with possibility to use XML-file uploading to EFIS
Slovak Republic	Database XML-file semi-automatic export to EFIS	Database XML-file semi-automatic export to EFIS	Data export with minor manual changes only.

Country	RIS	RoU	Remarks
Slovenia	Word-file No dedicated RIS database planned Manual upload to EFIS	Database Manual upload to EFIS	RoU database: defined as database of decisions on the assignment of radio frequencies (licences). Snapshot of database is available on web page: http://www.apek.si/frekvence for the time being in Slovenian language only.
Spain	Word-file XML-file semi-automatic export to EFIS	Database XML-file semi-automatic export to EFIS	No plan to have a database for RIS or the functionality to generate XML files for RIS or RoU.
Sweden	Word- and Excel-files Manual upload to EFIS In future, XML-file and semi-automatic export to EFIS	Database Manual upload to EFIS In future, XML file and semi-automatic export to EFIS	New EFIS compliant database with current EFIS formats as of end of 2012. Any changes in the document type definition (DTD) will create additional manual work.
Switzerland	Database XML-file semi-automatic export to EFIS	Database XML-file semi-automatic export to EFIS	
Turkey	RIS up to now not uploaded to EFIS	Database XML file and semi-automatic export to EFIS	
United Kingdom	Database XML file and semi-automatic export to EFIS	Database Manual upload to EFIS.	RoU: Ofcom does have a database for some licence types, but the RoU data is not stored in an EFIS compatible system. Information for the majority of RoU is held in a number of databases. There are some legacy paper records that are in the process of being transferred. There is no single database for RoU in the UK. While most records are held directly by Ofcom, information on RoU for certain licence types, e.g. PMSE and Aeronautical, are held by third parties that

Country	RIS	RoU	Remarks
			<p>carry out a licensing function on behalf of Ofcom.</p> <p>Information relating to military deployments would be held in a protected database. Access to this information is limited to restricted personnel.</p>

For those countries which do not have a database or where the national database cannot generate XML files, an intermediate process to generate XML files is necessary.

At the present time, 15 administrations use XML file and semi-automatic export (XML file generated by national database, uploaded after manual log in) to EFIS for RIS information and 17 for RoU information. A considerable number of countries have plans to change from manual to XML file and semi-automatic export to EFIS, very often at the time when a new national database will be introduced which can generate EFIS XML compatible files. However, around 16 administrations still use manual uploading for RIS and RoU information to EFIS and some indicate that this is sufficient for the amount of changes needed at the present time. (Note: all figures from answering administrations only).

Manual uploading of RoU information is not considered possible anymore for many administrations if all RoU information from 400 MHz to 6 000 MHz is required to be uploaded. Only generation of XML-files compatible with EFIS and without intermediate process to generate XML files would facilitate automatic updates in EFIS for such bigger amount of data. A manual intermediate process would be considered as an operational difficulty.

Assessment
<p>The RoU and RIS information is or will be stored in a database or an Excel spread sheet in nearly all administrations. This means that this information is or will be available in electronic format.</p> <p>The actualisation of the current level of RoU information (number of entries) for EFIS does not pose a problem for the administrations. The upload of a high number of RoU entries is seen as much more critical and will require modifications in database tools or new national database systems. This poses an additional burden (financial and manpower) for the administrations, the extent of which could currently not be evaluated.</p>

3 UPDATING OF THE INFORMATION, RELATED COSTS, MANPOWER AND UPDATING CYCLES

The administrations provided information on how often they update the information in EFIS including plans for more frequent updates and related considerations.

Table 2: Updating of the information in EFIS

Country	Allocations	Applications	RIS	RoU	Remarks
Andorra					Andorra is still evaluating the procedure since they are just getting started.
Austria	On ad hoc basis after the publication of a revised NTFA/ frequency utilisation plan		On an ad hoc basis after the publication of new or revised RIS	Every six months	Updates will be done when there is something to update. No plans for more frequent updates. Due to the national implementation and the European notification process (min. 3 months) an update every 3 months does not make any sense.
Belarus	On an ad hoc basis. No plans to upload data more frequently.				
Belgium	On an ad hoc basis. No plans to upload data more frequently.				
Bosnia Herzegovina	Each 6 months. No plans to upload data more frequently.				
Bulgaria	On an ad hoc basis. No plans to upload data more frequently.				The data is updated on an ad hoc basis when there are any changes in the allocation and application information, RIS and RoU. If there are no changes, of course it makes no sense to update data twice a year.
Croatia	On ad hoc basis. No plans to upload data more frequently.		No data uploaded yet. Planned to upload RIS data twice a year.	On ad hoc basis. No plans to upload data more frequently.	Data is updated according to changes made in national table of frequency allocation and utilisation and following changes regarding licensing of "mobile band".
Cyprus	On an ad hoc basis, normally every 6 months. No plans to upload data more frequently.				In Cyprus the number of RoU and RIS issued per three months are not so large that will justify the update of the database every three months. The cost and the manpower needed is not a constraint

Country	Allocations	Applications	RIS	RoU	Remarks
					for such numbers.
Czech Republic	An update is based on the WRC period and on revision of the National Frequency Allocation Table.	On an ad hoc basis when a part of frequency utilisation plan is approved and published. An update is provided at least twice a year.	On an ad hoc basis. Generally, an update is provided at least twice a year.	At most twice per year or if some RoU changes have occurred.	There is no reason to update data in EFIS more frequently. Data changes not so often. The process of RIS data updating cannot be automated.
Denmark	Every time when the NTFA is updated.	Every time when the NTFA is updated.	Every time new RIS are made. On an ad hoc basis.	Every 6 months	Updating more frequently not considered possible for allocations and applications and not considered necessary for RIS and RoU.
Estonia	Twice a year	Every time when the NTFA is changed	Twice a year.	On ad hoc basis (so far for TRA-ECS only)	In general, the appropriate updates of EFIS are made on a regular basis after the establishment of updates of national regulations concerning frequency allocations; RIS information and RoU information is updated if it changes. So EFIS data in general is updated at a minimum 3-4 times a year. If update of data will be foreseen for the whole range 400 MHz to 6000 MHz it will certainly need additional funds and manpower resources.
Finland	Allocations after WRC, i.e. when the changes come into force.	Twice a year after changes in frequency utilisation plan	Twice a year	On ad hoc basis when there are changes in the ECS bands	No plans to perform updates more often than is currently done. More frequent update period needs more manpower, and if there are no changes in the data we cannot see the reason to perform data update. Due to security reasons it is not a safe approach just to upload masses of data without real reasoning. There might be additional security issues that need to

Country	Allocations	Applications	RIS	RoU	Remarks
					be taken care of in EFIS, even when the data is public. This requirement comes when uploading masses of data from secure data systems to public data systems.
France	On an ad hoc basis. No plans to upload data more frequently.				Most information within the scope of current EFIS requirements is relatively stable. Updates only if sufficient or significant changes.
Germany	On an ad hoc basis. No plans to upload data more frequently.				Updating the EFIS data at fixed dates is not favoured by Germany. Updating on an ad hoc basis is much more up-to-date. So far as, it could happen that, less or more than four times within a year, the data in EFIS had to be updated. That is independent of costs or manpower, if the data exists in electronic format (database) and using an export filter
Greece	Data in EFIS is updated in a regular basis (every six months), provided that changes have been occurred in the meanwhile.				
Hungary	On an ad hoc basis. Allocations and applications in EFIS are changed immediately after acceptance.		On an ad hoc basis. No plans to upload data more frequently. Maximum time delay in EFIS does not exceed 4 months.		Additional requirements compared to those facilitated by STIR would require one man-year per year.
Ireland	Yearly	Yearly	Every 6 months	Every 6 months	ComReg is not planning to upload to EFIS more than twice a year. Manually creating the XML file and upload is time consuming and has an effect on the department's resources. It would be an added administrative burden for ComReg to carry out a manual upload of RIS data to EFIS every three months. It is worth noting that RIS and RoU do not change on a regular basis and often not at all over the lifetime of

Country	Allocations	Applications	RIS	RoU	Remarks
					a licence for ECS which are generally granted for 10 years or more. Therefore it is unclear as to the benefits of mandating an update every three months.
Iceland	On an ad hoc basis. No plans to upload data more frequently.			No RoU in EFIS yet.	RoU concerning GSM/3G/FWA/DVB information are updated on website if any change is made.
Latvia	On an ad hoc basis.			Every 3 months	The information about RIS, allocations, applications and documents are updated after coming into force of changes in the NTFA.
Liechtenstein	Once a year, usually a few weeks after the new NTFA has been approved by the parliament.		Every 4 months or when new RIS are available or changes are confirmed.		No plans to upload data more frequently.
Lithuania	On an ad hoc basis, not rare twice a year. No plans to upload data more frequently.				There might be no new ROU or RIS issued for some period even longer than 3 months in the ECS bands, consequently there would be nothing to update.
Luxembourg	On an ad hoc basis. No plans to upload data more frequently. The Luxembourg Administration is of the opinion that there is no reason to update EFIS information every three months if there is no change in the national data. Updating with unchanged data increases the inefficient use of manpower. It has to be noted that the national legislation concerning the updating process of the NTFA foresees each time a public consultation and a publication on the national level in a document reflecting the national legislation in force (Memorial). This complete process may take up to 3 Months.				With regard to RIS, Allocations, Applications and RoU, the Luxembourg Administration updates its information each time after a national update of the NTFA, this means on a case by case basis. It has to be noted that the national legislation concerning the updating process of the NTFA foresees each time a public consultation and a publication on the national level in a document reflecting the national legislation in force (Memorial). This complete process may take up to 3 months

Country	Allocations	Applications	RIS	RoU	Remarks
Former Yugoslavian Republic of Macedonia (FYROM)	Once per year			On an ad hoc basis (efforts to update the changes in a timely manner)	RIS, allocations and applications: obligation from the Nation Telecommunication Law to update once a year, as the NTFA is updated once a year.
Malta	At least twice a year to reflect amendments to the National Frequency Plan.		On an ad hoc basis.		No plans to upload data more frequently.
Montenegro	On an ad hoc basis. No plans to upload data more frequently.				After any major changes of the data (RIS or ROU or allocations or applications) is necessary to update EFIS.
Netherlands	On an ad hoc basis. No plans to upload data more frequently.				Updates only when needed. No fixed time points.
Norway	On an ad hoc basis. Goal is to achieve updates twice a year.				Need to implement work routines regarding this matter
Portugal	On an ad hoc basis. No plans to upload data more frequently. The existing national administrative process to approve a new/revised national RIS implies a longer timeframe than three months.				<p>National RIS, RoU, allocations and applications usually do not change every three months, and as a consequence it is considered that it is not necessary to update EFIS on a three months basis. At the moment an ad hoc basis will be the best option to upload information, i.e., when there is new information to upload.</p> <p>According to the interpretation of RoU in Portuguese law, the RoU's do not change very often.</p> <p>Currently, the regulatory framework concerning the rights of use of frequencies applies to a limited number of uses/applications, i.e., PMR or fixed links do not require rights of use in the sense of the Authorization Directive (please revert to Law no. 51/2011, of 13 September, article 30 available at http://www.anacom.pt/rend</p>

Country	Allocations	Applications	RIS	RoU	Remarks
					er.jsp?contentId=1099877). Therefore, the RoU concept in the whole frequency range 400 MHz to 6 GHz is bounded to certain types of uses /applications.
Poland	After each NTFA update	On an ad hoc basis.		On an ad hoc basis.	Polish administration will be in line with the guidelines and binding on future regulations in this matter. The update of data twice more frequently as it is presently will need substantial manpower and preparing suitable software will significantly add to the costs that are difficult to assess at the moment.
Romania	On an ad hoc basis. No plans to upload data more frequently.				Each time the Romanian NTFA is updated or when RIS/RoU changes occur.
Slovak Republic	Once a year. No plans to upload data more frequently.		Twice a year. No plans to upload data more frequently.		When new NTFA is approved by the Government
Slovenia	On an ad hoc basis when changes occur.				As part of NTFA data, RIS data have to pass TRIS procedure (three month)
Spain	On an ad hoc basis when the NTFA is updated	On an ad hoc basis when the NTFA is updated	The RIS are only updated when there are changes.	Twice a year	The update of the NTFA and RIS does not have a fixed period. Generally there are updates once per year for NTFA. Spain considers that it is not necessary to update the data every three months, because there are not enough changes in this short time slot.
Sweden	On an ad hoc basis when changes occur			At least twice a year	The information in RIS, allocations and applications are based on documents that are legally binding (notification according to the 98/34Procedure). The process of updating these documents is stated in national and EU law (on a rather detailed level) and

Country	Allocations	Applications	RIS	RoU	Remarks
					the process takes 12 to 18 months.
Switzerland	Once a year, usually a few weeks after the new NTFA has been approved by the parliament.		Every 4 months or when new RIS are available or changes are confirmed.		No plans to upload data more frequently.
Turkey	On an ad hoc basis Normally twice a year		On an ad hoc basis in future	On an ad hoc basis when changes occur	Update of these information once a year or twice a year is more preferable. RIS and RoU do not change considerably very frequently; update of data every three months is not necessary. .
United Kingdom	Information is uploaded periodically depending on any national changes being introduced. This is usually as a result of WRC changes.	On ad hoc basis when national changes are introduced.	On an ad hoc basis when any national changes are introduced.	On an ad hoc basis when an award has been completed or when a transfer of a licence awarded by competitive/comparative selection has occurred.	Information is uploaded as and when appropriate i.e. when there are significant changes. This can vary from twice a year to more frequently. The UK considers this ad hoc approach to be the most flexible and efficient way to ensure that the data is kept up to date We do not believe that requiring Member States to upload information every three months would be of benefit especially when the information has not changed since the last upload.

Assessment

The national allocation and application plans pass different national steps (e.g. parliament, public consultation). In summary these procedures take much longer than three months. Often national allocation plans are for the most part, only revised after a WRC (every 3 to 4 years). These facts make an actualisation of the information in EFIS each three months impossible.

The information on allocations, applications, RoU and RIS is mostly actualised by administrations on an ad hoc basis. This ensures that the most actualised information is available in EFIS.

A demand to update/actualise more often the information in EFIS will mean higher costs and more manpower for the Administrations (e.g. modifications of the software, organisation of procedures), which will consequently increase the burden on the Administrations, whereas benefits of this are not apparent.

In response to the question on how administrations consider an update every three months of the RIS and RoU information as compared to twice a year, the following result appeared (33 administrations answered the question):

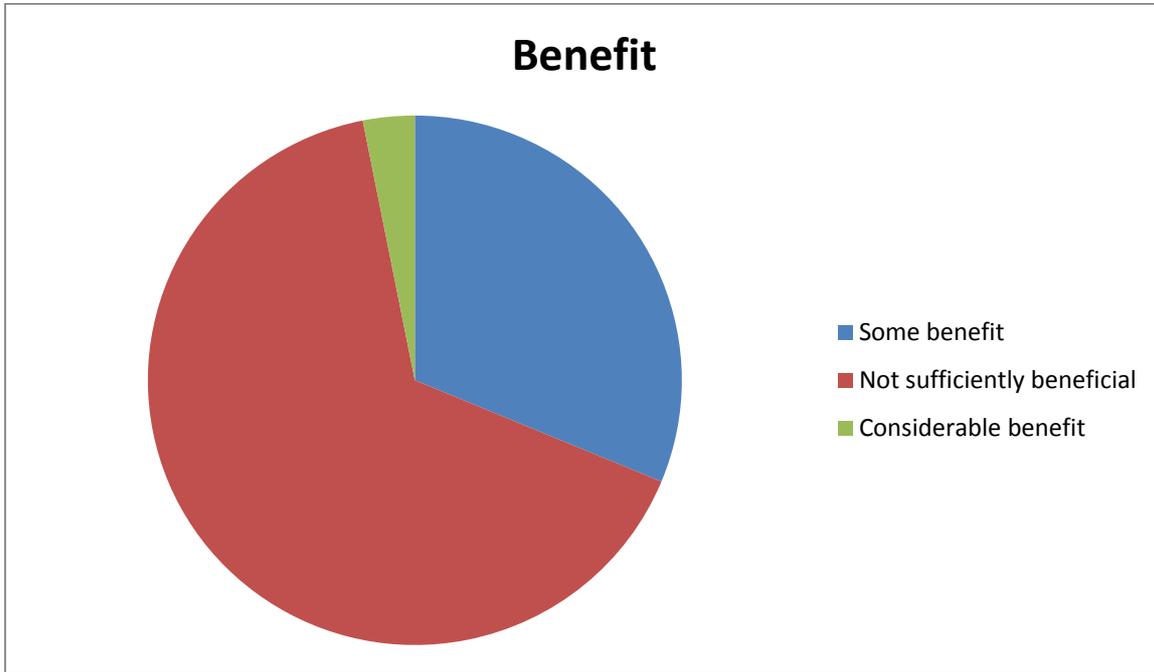


Figure 1: Benefits of updating information in EFIS every three months

Updating data at predefined moments in time is not considered very useful by many administrations. More frequent updates, e.g. every three months, are seen by the majority of administrations as not being sufficiently beneficial or relevant in the context of spectrum inventory.

There seems to be no added value in more frequent updates given the number of relevant RoU and RIS and the pace of evolution in that area. The development of regulation and authorisation processes requires time to ensure sufficient confidence and transparency. Regulation once published, needs stability to ensure proper visibility to the market.

In addition, it is not seen as sufficiently beneficial owing to extra cost and manpower, even with a semi-automatic upload. In order for the spectrum inventory to be performed as efficiently as possible, it would be wise to focus the initial efforts on dedicated frequency bands under consideration. It should be noted that spectrum management is a long-term matter. The changes and trends that materialise do not happen suddenly or within very short time periods. Given this fact, a three month update rhythm would not provide additional input of the trends to identify and analyse, thus it does not match the purpose of the spectrum inventory.

Slovakia pointed out that if changes to the national IT system or more frequent uploads are envisaged, these could only be implemented with a time delay, if no such consideration in the next year's state budget reflects additional expenses.

The cost of introducing a new IT system that has been configured for operations within spectrum management has been stated by Sweden (in the process of introducing a new database at the present time) to be around 500,000-750,000 EURO. Introducing such a new system will also require several man-years of project support.

The majority of administrations support the underlying aim to ensure that the information in EFIS should be as up to date as possible. However, due to the infrequent changes in RoU and RIS, it is not believed that a

requirement to upload information every three months would bring much benefit. This is because in many cases the data would not have changed. The current approach ensures that updates are uploaded when changes occur (or soon after). Changes are simply not expected to be sufficiently frequent to justify the suggested frequency of updating and manpower it would require.

Austria pointed out that for ECS bands the licence duration is more than 15 years, so normally the benefit of updating this information every three months is minimal.

Assessment

The information on allocations, applications, RoU and RIS is updated by administrations on an ad hoc basis, when necessary. This ensures that the most up-to-date information is available in EFIS. A demand for an update every three months appears at this point unnecessary; especially in view of the fact that, based on the different national regulations, in some cases no changes take place within this short timeframe.

A demand for more frequent actualisation of the information in EFIS will also increase costs and manpower for the administrations (e.g. modifications of the software, organisation of procedures), whereas the benefit is not apparent. The additional items could only be implemented with time delay in next year's state budgets and/or changes in national regulations.

No reasons have been identified to update the information in EFIS every three months which would justify this additional burden for Administrations.

Concerning the availability of national RoU data and whether or not this available data already covers the whole spectrum range 400 MHz to 6 GHz, the following overview in Figure 2 is the result from 33 responses.

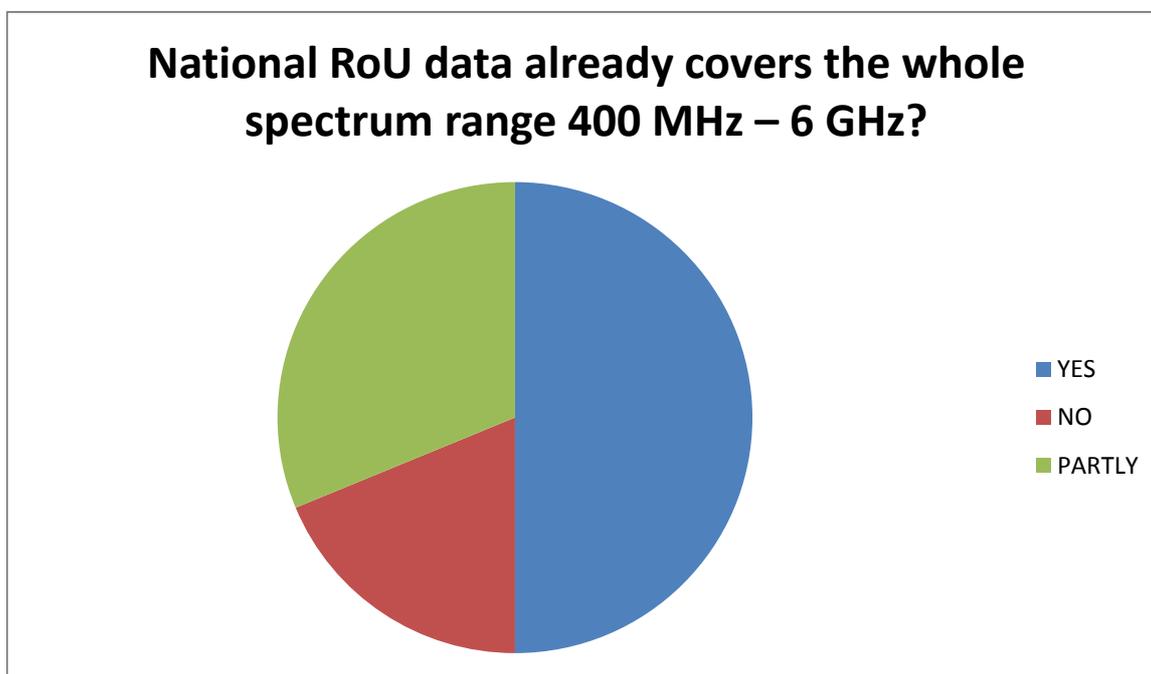


Figure 2: Availability of RoU data

The focus of this question was on the availability of data on the national level. Administrations which do not have all the RoU data available on national data need therefore to consider which effort would be needed

theoretically, to make RoU data that cover the whole spectrum range 400 MHz to 6 GHz available. About half of the administrations do not have all RoU data available for a variety of reasons.

Administrations indicated that some specific RoU information on certain applications was not (yet) available in electronic format or with all the technical parameters (i.e. geographical coordinates). Additional manpower would be necessary to complete the RoU data on the national level and provide the information in the single data set. Additional cost will be incurred for specific software for database and exporting the data in the EFIS XML format.

A number of civil administrations clearly do not hold data on governmental use which is totally outside their given competence of civil administration.

The national conditions/restrictions for specific applications with regard to making RoU information available in EFIS must be clarified first. Some administrations answered YES under the condition that this does not include data on general authorisations. Others pointed out that they do not have non-civilian RoU information available.

Some information can be open to possible abuse, if published, such as PMR band licence details, defense and police usage systems, radars, civil aviation, VSAT licences used by banks.

Apart from the question of whether it is useful to publish all RoU information for the bands 400 MHz to 6 GHz, some administrations pointed out that, there is a legal impediment to publish names and addresses of users.

Assessment

It is to be considered that about half of the administrations do not have all RoU data available for a variety of different reasons, based on their national situation and/or legislation.

Some specific RoU information on certain applications is not (yet) available in electronic format or with all the technical parameters (i.e. geographical coordinates). In some countries the civil administrations clearly do not hold data on governmental use which is outside their given competence of civil spectrum administration.

To make all RoU information available will mean increased costs and more manpower for the administrations (e.g. modifications of the software, organisation of procedures) which consequently will increase the burden of Administrations.

4 REQUIRED ECO ASSISTANCE

11 countries indicated that they would start using XML files in the near future.

Andorra, Belarus, Estonia, Latvia and Sweden indicated that they would like to have some assistance from ECO with regard to getting started with semi-automatic uploading of information to the EFIS database by means of XML files. It is in general a normal procedure to ask ECO for assistance with regard to the first creation of an XML file for uploading to EFIS. Ireland, Montenegro, Romania, Poland (with regard to RoU information), Croatia (with regard to RIS information) and Hungary also indicated that they would like to start using XML files.

Some countries pointed out that changes in the XML file common format have a similar effect and will require assistance from ECO as well as manual work at the administrations regarding necessary adaptations in the export of data and also the national database. It may also take more than one year to implement such changes in the semi-automatic upload process.

The objective will be to enable automatic upload of EFIS data and to minimise the administrative burden.

Existing RIS models for ECC Deliverables (that could be used to import into a national database or refer to it) is seen as essential by some administrations (in line with the "Guide for usage of RIS template within the ECC").

Assessment

Administrations call mainly for assistance from the ECO in first-time cases when they start to upload information into EFIS or change from manual upload to semi-automatic or automatic upload to EFIS. In addition, assistance from the ECO is called for when changes in the XML file common format take place.

The objective to enable automatic upload of EFIS data is to minimise the administrative burden in future.

5 ADMINISTRATIVE AND TECHNICAL IMPACTS WHEN PROVIDING SPECIFIC INFORMATION IN EFIS - RELATED COSTS, MANPOWER AND OTHER

Table 3: For which frequency bands and/or services/applications is your national RoU/authorisation data not publicly available?

Country	
Austria	Everything, except SRDs, other general licensed applications, broadcasting applications and ECS bands because of data protection, the information is not publicly available or the information is not intended to be public.
Belarus	National RoU/authorisation data is not publicly available for those frequency bands which are designated for governmental utilization because of some constraints and national conditions.
Bosnia Herzegovina	Military bands, police forces, state defence, civil aviation equipment etc. is one category requiring protection of data, but also many PMR users such as taxi driving companies, security guard service providers, VSAT used by banks etc. dislike to have their data on frequencies assigned published.
Bulgaria	For some frequency bands national RoU/authorisation data are not publicly available. The reasons are that authorisations are not existent or needed for certain services, specific authorisations are not bound to frequencies or specific applications, and the information is not publicly available.
Croatia	<p>According to the present RoU, data is publicly available only for ECS bands and for broadcasting service in the 470-790 MHz band.</p> <p>For other services such as fixed (e.g. point-to-point), mobile (e.g. PMR), governmental, aeronautical radionavigation and radiolocation RoU data is not publicly available due to the fact that RoU data is not relevant without additional information, and because of lack of public demand.</p>
Czech Republic	<p>A database designated for public use is available via web of the CTO (http://www.ctu.cz/ctu-online/vyhledavaci-databaze/prehled-vyhledavacich-databazi.html, only in Czech). It provides information whether there is some assignment within dedicated band and which service it is related to.</p> <p>In specific cases (EC-Act, Volume 3, Section 15, point 3) information is not publicly available as follow:</p> <ul style="list-style-type: none"> a. the Ministry of Interior for the purposes of security of the State; b. the Police of the Czech Republic for the purposes of security of the State; c. the Security Information Service;

Country	
	<ul style="list-style-type: none"> d. the Prison Guard Service and Court Police of the Czech Republic; e. the Fire Rescue Service of the Czech Republic.
Denmark	All licensed frequency use is published in the RoU database. However information on unlicensed use is not available. This includes some frequency use by the national defence.
Estonia	Authorisations are not existent or needed; authorisations which consist of commercial, security or private information, which is considered not to be publicly available; all authorisations concerning Defence Forces.
Finland	RoU/authorisation data is maintained in our database systems for frequency planning and spectrum fees. No other legal reason to provide list of individual RoU holder publicly available.
France	<p>The French NTFA (National Table of Frequency Allocations) is not publicly available in electronic format. It is available in paper format on demand.</p> <p>Only electronic simplified version of NTFA is currently publicly available, consistently with info available in EFIS.</p> <p>Concerning military uses, it should be noted that the NATO Civil/Military Capability Panel Spectrum Management (CaP3) has already decided in military session to provide information to the EFIS database on the military use of spectrum including EFIS application layer 2 as a harmonised approach, except where national laws do not allow.</p> <p>Corresponding information for France in EFIS is currently limited to application "Layer 1" information (i.e. "Defence systems"). Consistently with the recent NATO decision, France will progressively display in EFIS application "Layer 2" information in relation with military use.</p>
Germany	<p>Defence systems, PPDR, PMR/PAMR, aeronautical applications, because of public security, business confidentiality or data privacy protection.</p> <p>National situation:</p> <p>Most of the PMR/PAMR RoU information is not available in electronic format, the information that is available in electronic format is not totally complete relating to technical parameters (i.e. geographical coordinates) and is not in a data format for the upload into EFIS. A lot of manpower is necessary to complete the RoU data and the information in the single data sets. Additional cost will arise for specific software for database and export the data in the EFIS XML format.</p>

Country	
Hungary	<p>In case of non-civil frequency users (generally defence sector and national security organizations), the type of information to be restricted may include the information mentioned in annexes I or II of the 2007/344/EK decision and this information is not publicly available.</p> <p>In case of civil frequency users, the President of National Media and Infocommunications Authority has the right to classify data and there is no general type of information in civil frequency management which is automatically confidential.</p>
Ireland	<p>RoU/authorisation data is not publicly available for bands which are not tradable in accordance with Article 9.3 of Directive 2002/21/EC or which have not been granted through competitive or comparative selection procedures pursuant to Directive 2002/20/EC.</p>
Iceland	<p>RoU information only available for GSM/3G/FWA and DVB. Information concerning other frequency bands not publicly available.</p>
Latvia	<ol style="list-style-type: none"> 1. Our national RoU / authorisation data at present is publicly available in EFIS. 2. Maybe it should be feasible to differentiate not amongst the types of uses, but amongst certain frequency bands. 3. Possible main reasons on information confidentiality can be found in annex1 (doc. RSCOM12-35 inventory under the RSPP and national rules on confidentiality and responses from Member States)
Lithuania	<p>The national RoU/authorisation data is not publicly available if:</p> <ol style="list-style-type: none"> 1. the authorisation is not needed for certain services and (or) frequency bands; 2. the band is used for services related to national defence, security, maintenance of public order, guarding of state borders, civil aviation, etc. <p>We consider that in the above mentioned cases the RoU/authorisation data need not be publicly available in EFIS as well.</p>
Luxembourg	<p>No RoU information exists for licence-exempt applications.</p> <p>RoU information, considered to be used for national security and defence, is not publically available.</p> <p>Currently, the Luxembourg information is application based and publically available through the national frequency register.</p>
Former Yugoslavian Republic of Macedonia (FYROM)	<p>Military and Police</p>

Country	
Malta	<p>Malta is only making publicly available the RoU/authorisation data that is related to the provision of publicly available electronic communications services. Therefore, only RoU / authorisation information for the frequency ranges 174-230 MHz, 470-862 MHz, 880-915 MHz / 925-960 MHz, 1710-1785 MHz / 1805-1880 MHz and 3400-3600 MHz is currently being published. The RoU / authorisation information for the other frequencies within the range 400 MHz to 6 GHz is not being published.</p> <p>In addition it should be noted that certain publicly available electronic communications services are being provided in the “unlicensed” 2.4 GHz (2400-2483.5 MHz) and 5.4 GHz (5470-5725 MHz) frequency bands. RoU / authorisation information for these bands is not being published since this spectrum is regulated by a general authorisation and not by individual rights of use.</p> <p>In addition authorisation data limited to spectrum that is licensed for private use is not normally published.</p>
Montenegro	<p>Law on Electronic Communications (“Official Gazette of Montenegro”, No. 50/2008) prescribe in article 2 that this Law shall not be applied to electronic communications networks, radio stations, equipment and radio frequencies which are installed and used exclusively for the purposes of defence of Montenegro and armed forces, police and security services in the field of international exchange of certain information.</p> <p>The table of allocation of radio frequency spectrum of Montenegro prescribe radio frequency bands for military applications.</p>
Netherlands	<p>Details on spectrum use for public security, military, state security etc. will not be included in EFIS. This information is considered confidential. Authorisations for this use are not needed and spectrum is assigned to these categories of users based on need justification plans. In the National Table of Frequency Allocations it is indicated in which bands there is public use, but no details are given.</p>
Portugal	<p>For frequencies used for defence/military systems as well as frequency bands and radio spectrum allocated to undertakings that do not provide public communications networks or publicly available electronic communications services, as a consequence of the application of the Portuguese law (Law 5/2004, of February 10, amended and republished by Law 51/2011, of September 13).</p>
Poland	<p>Only government (incl. military) use data is not publicly available due to national regulations.</p>

Country	
Romania	It is not possible to disclose information that is confidential or to protect commercial rights and private data, or if the data concerned is not of public interest (i.e. private usage).
Slovak Republic	The information regarding „military“ services is not publicly available.
Slovenia	Assignments of governmental use only.
Spain	<p>The information about military/defence uses is restricted (not publicly available).</p> <p>Also, some radio services as radio navigation, radiolocation, aeronautical and other, have very few data for public information.</p>
Sweden	<p>RoU is not publicly available when the licence holder is a private person – this is due to the Personal Data Act (which aims to prevent the violation of personal integrity in the processing of personal data). This is not a major issue regarding the ECS-bands, but a major issue regarding other licenses in the 400-6000 MHz range.</p> <p>Regarding military use this information is kept in a separate process with no documents available electronically. Only a few technical officers within the administration can access this information.</p> <p>Information from operators regarding future deployment and technology and also the current status of their networks is considered to be sensitive information due to competition law, and as such it cannot be publicly available. The foundation for a continuous and prosperous dialogue with the operators depends upon the creditability and trustworthiness of the Administration. This ensures that the administrations work to secure measures together with the operators designed to reduce the vulnerability of the transmission network, the mobile networks and the services.</p> <p>The mobile networks deployment on a national basis is considered to be confidential information classified as national security, due to threat of terrorism and civil defence. Furthermore, this is a basis for the ongoing work to secure functional telecommunications with a high level of security, in the event that Sweden becomes the victim of sabotage, terrorist or armed attacks. Even if information about all mobile base stations becomes/is made available, it would not be possible to publish them on an international or national website, or even make them available to any third parties of any kind.</p> <p>A large amount of the data in licences within the range of 400-6000 MHz is considered to be classified as confidential due to</p>

Country	
	<p>national security. Examples would include installations at airports and radio frequencies used to control the power supply for the whole community.</p> <p>All in all this would mean that a large percentage of the non-ECS licences have to be verified manually before each upload. The verification has to secure that all of the above mentioned aspects are considered.</p> <p>The lack of an IT system that can provide possibility to classify the information means that this verification has to be done manually each time. Even with an IT system that could classify licence information, PTS is obliged to reconsider the classification each time, which would cause a substantial administrative burden.</p> <p>Given that a large part of the information cannot be published, the input data to the inventory will give a false picture of the real use of the frequencies. For example all radio frequencies used to control the water and power supply in Sweden would appear to be unused. In total a rough estimate would indicate that 50 % of the licences in the 400 – 6000 MHz include some information that is not publicly available for different reasons.</p>
Turkey	Only GSM and UMTS RoU information is publicly available.
United Kingdom	<p>For data protection reasons, information relating to some RoU e.g. for radio amateurs, is not publically available.</p> <p>Other licences such as aircraft, airport operation and PMSE are issued by a third-party on behalf of Ofcom and we do not currently publish this information.</p> <p>Information that has defence, national security or public safety implementations is protected from release. This includes information relating to civil aeronautical radars and PPDR.</p> <p>Information on 'receive only' services (unless granted a Recognised Spectrum Access (RSA) licence) are not required to be authorised.</p>

Summary of Table 3:

- Most administrations do not intend to make RoU/authorisation data available for governmental services such as military, police, fire brigades, security services or, if at all, only very limited information;
- Many administrations do not consider that RoU information could/should be provided for unlicensed bands;
- A considerable number of administrations indicate restrictions concerning authorisation data for PMR/PAMR, satellite services, aeronautical services, radio navigation, fixed services or even the amateur service;
- For some services it was indicated that the lack of a dedicated authorisation regime would prohibit making information available;
- Administrations also indicate their individual right to classify specific authorisation information whenever considered necessary;
- The lack of an IT system that can provide possibility to classify information or the need to manually verify the classification aspect can provide a big burden for an individual administration;
- Data protection, business confidentiality, security concerns are also reasons why individual administrations may refrain from providing certain information;
- A considerable percentage of all RoU information in the spectrum from 400 MHz to 6 GHz may be subject to some restriction with regard to publication of this data in EFIS.
- Some administrations opt to publish only data for which there is a legal requirement for publication thus challenging the legal basis for an expedient/advantageous publication of RoU information.

Assessment

It would not be possible to collect information about RoU data for governmental services such as military, public safety and security services. In addition, the provision of RoU information about several civil usages may not be possible. The reasons for this are, among others, business confidentiality, national legislation on data protection, the lack of legal requirement for publication and national security reasons.

In addition to the RoU information about ECS, there is limited RoU information regarding non-ECS use available from administrations.

Further it is mentioned by several administrations that in order to provide this information, special database systems and manpower will be necessary which would consequently increase the burden on administrations, whereas the benefit is not apparent.

Another question raised was on the administrative and technical impacts, if any, should there be a requirement for additional information to be required in EFIS about the geographical extent of RoU (e.g. precise definition of regional or local RoU geographical area/extent) and the technology deployed. A considerable number of administrations do not consider that this level of information is appropriate / relevant in EFIS, as explained in CEPT Report 46 [4].

5.1 GEOGRAPHICAL INFORMATION

Several current databases do not contain full data on geographical area/extent, so such activity would require additional human resources that may be very difficult to provide, and the benefit would be uncertain.

The impact that this would have, would vary depending on the type of RoU issued. For some RoU, spectrum is allocated on an area basis and using a specific national or regional grid referencing format. This information is already held against the licence, but would require changes to the XML extracting script that would need to be developed. This is expected to be an additional burden (cost/effort), owing to multiple systems needing to be changed across a number of organisations throughout a country as well as in all

Europe. This would need to be developed and converted into XML files and would require a significant level of manpower throughout many administrations, especially when considered for 'regional' geographical extent. Any extension of data mentioned in EFIS must be carefully considered. All data items should be precisely defined, and the definitions should be transparent across various national conditions.

The extent of a licence technically coordinated using assignment software sometimes takes into account other users and terrain. The extent of the allocation is based on a variety of factors including transmitter power and antenna height. To require an administration to provide a definition of geographical extent for these licences would be almost impossible.

On the other hand, some geographical area information is already implemented in RoU for licences with local coverage in EFIS.

Additional geographical data collection is considered by many administrations as extensive and difficult to collect. In addition to the cost for the reconstruction needed to cover a new scope it would be necessary to further develop a new IT system that could handle/calculate this information. The cost is estimated by one administration alone at 1-2 million Euro. The additional manpower needed would be approximately 10 full-time resources in the initial set-up and 3-4 full-time resources to update the information, again in addition to the resources needed. Furthermore there would be the need in some administrations to establish new procedures, update the licence conditions and amend the legislation regulating the funding of the administration and the legislation regulating the obligations that can be set in the licences.

The opinion provided in the vast majority of the answers is that the proposed additional information does not provide sufficient benefits in relation to the costs involved. The task of finding a method or model that all Member States can agree upon and also execute seems arduous. Given that the frequency range 400 MHz to 6 GHz contains a vast selection of different radio services it is unlikely that one would be able to identify a model or method that would encompass geographical information for all of these services, especially since the range includes licences for transmitters that do not have a fixed position, i.e. they are mounted in airplanes, helicopters, mobile video links for TV transmissions, or used for emergency services, mobile military radar stations, temporary licences for specific events.

While the extent of the impact of providing information about geographical coverage is sizeable enough to motive careful investigations as to what information is absolutely necessary in the data collection and considerations whether the benefits clearly outweigh the costs involved, it needs to be emphasised that EFIS is an advanced data collection and database tool, but not a spectrum planning or coordination tool.

Assessment

Information on geographical area could be national, regional or transmitter site information. To provide the coverage area information of thousands of transmitters, many parameters must be taken into account. All these parameters depend on the frequency band and considered applications.

To require this information on the coverage area of thousands of transmitters will have a considerable impact on the burden of administrations with regard to manpower and costs, whereas the benefit is not apparent (e.g. in the case of PMR/PAMR transmitters).

5.2 TECHNOLOGY DEPLOYED

As required by Article 9 of the Authorisation Directive, ECS RoU should be as technology neutral as possible. For this reason, many new awards of spectrum are done on a technology neutral basis. As a result of this, there are in an increasing degree, no records of the technology in use. In areas where spectrum has been allocated to more than one licensee there is a possibility that two or more different applications could be in use.

Specifically, concerning the technology deployed, it is not a straightforward matter. In many bands operators can use different technologies in the same frequency band (technology neutral approach). The administrative and technical impacts as well as additional costs and manpower are difficult to estimate at this stage for these technology-neutral bands; an in-depth investigation would be required.

Information on the technology of certain frequency bands regulated by a general authorisation / licence-exempt approach is also not available.

Assessment

As required by Article 9 of the Authorisation Directive, RoU should be as technology neutral as possible. For this reason, many new awards of spectrum are done on a technology neutral basis. As a result of this, there are, in an increasing degree, no records of the technology in use. In areas where spectrum has been allocated to more than one licensee there is a possibility that two or more different applications could be in use.

Information on the technology of certain frequency bands regulated by a general authorisation / licence-exempt approach is also not available.

5.3 OTHER IDEAS/WAYS TO ENSURE THAT THE RELEVANT INFORMATION IS AVAILABLE IN EFIS, TAKING INTO ACCOUNT THE DATA NEEDED RELEVANT TO ARTICLE 9 PAR.2 OF THE RSPD ON SPECTRUM INVENTORY AND ALSO DRAWING FROM EXPERIENCE

Note: It may in this context also be relevant to differentiate between RoU for ECS and other types of use.

The following comments, ideas and considerations were provided:

Format:

1. Information should be provided in dedicated formats on a frequency band by frequency band consideration;
2. It would be better to define different RoU format for particular type of use (service or application);
3. Development of a template of "common database file" (single Excel row of table with clear instructions including procedure on completing and sending). This would enable a relevant administration to keep up to date information simultaneously with entering new records into own database;
4. .

Content:

1. Rather provide the number of licensees in different bands, information relating to the applications used and other relevant information than all individual RoU information. This will make it possible to provide a high level summary of spectrum use and allow identifying a number of bands that could be subject to further detailed investigation. It is not believed that providing the European Commission with the specific individual details of all RoU would be of benefit. Without knowledge from the national administrations this information may provide misleading information that does not accurately reflect the actual situation;
2. Upload of the relevant statistics or aggregated data indicating the efficiency of the use of some frequency bands is enough;
3. Some relevant information can be made available in EFIS also by providing links to a national authorisation register.

Method

4. Prefer a method where coordinated questionnaires within CEPT is used instead of regular updates of EFIS, starting with the frequency bands identified within the spectrum inventory pilot study as having the most potential for efficiency gains. In this way, the questionnaire can be handled within the CEPT work force that is available today. This also means that the questionnaire can be constructed and adapted to the frequency band in question and its specific features. Using tailored questionnaires would minimise the new administrative burden upon the administration and still ensure that relevant information on the relevant frequencies is obtained;
5. For the detailed investigations it was recommended that a questionnaire approach is taken with questions that are tailored to find out more about the specific use in the band. It is envisaged that an investigation into a band used by PMSE would require a different set of information than that for MSS. "One size fits all" would not produce the information needed to adequately assess the efficiency of the band. This is similar to the approach taken by CEPT when carrying out studies;
6. When CEPT Working groups gather information relating to specific bands or usage, this information should be uploaded to EFIS as data. This will over time enable information collected as part of CEPT studies to also be used more widely for spectrum inventory purposes. There may also be other information produced by third parties or the European Commission that may be useful to include in EFIS. This approach would mean that the costs are minimised as administrations already provide the information to CEPT;
7. Moreover, when the European Commission needs more detailed information from Member States on dedicated bands, it could be done on a case-by-case basis (see Questionnaire on GSM-R, on Satellite earth Station in 3.5 GHz band). This could be done also for "bands of interest". Such information could contribute to provide more in-depth information where appropriate. This could include confidential information. Results of questionnaires from CEPT on an ad hoc basis are also already publicly available in EFIS.
8. It is doubtful whether EFIS RoU information is the most appropriate tool to obtain the data needed relevant to Article 9 par. 2 of the RSPG on spectrum inventory.

Suggestions/ideas

9. A step-by-step approach (i.e. start with the collection of quantitative and overview data first before entering a second stage where additional information will be collected) would be a better way to take this forward. This would involve the appropriate quality checks and full testing of the system's robustness and functionality at each stage of the development to ensure it is fit for purpose. This approach would enable the inventory to be fine-tuned, providing the Commission and administrations with important information on how the spectrum is used.
10. In this context it was noted that section 6 of the RSPG opinion on Spectrum Review [6] states that *"The quantification of spectrum supply has to be done by National administrations taking into account the EFIS and ECA tables and the positions of stakeholders. They should compare the results of this phase in order to achieve a consolidated view with the assistance of the EC, possibly with a number of options. This could be undertaken either in a RSPG working group or in CEPT"*.
11. In frequency bands where RoU are limited, full information about the available or granted RoU could be provided by the regulators. In frequency bands where RoU are not limited, statistical information could be reported regarding the actual use of each of the bands, such as number of rights and/or licensees, number of stations deployed, amount of spectrum in use, duration of licences, etc.

Assessment

Data Format:

To ensure homogeneous information and keep the burden on administrations as limited as possible, it is necessary to have a common data exchange format, which avoids entering/changing more often than necessary, new records in administrations' databases.

Dedicated formats for several frequency bands make sense in cases of CEPT electronic questionnaires to collect more necessary data/information.

Content:

It is not believed that it would be of benefit to provide all the detailed information (individual RoU, applications and other). Without knowledge from the national administrations this information may be misleading and may not accurately reflect the actual situation.

Method:

- Upload to EFIS information in electronic format which was gathered in the framework of the activities of CEPT working groups
- Provision of a high level overview of spectrum use
- Using tailored electronic questionnaires to collect missed and/or further information for the frequency bands of interest on a case-by-case basis
- Detailed investigation of frequency bands of interest using the collected information (e.g. reallocation, compatibility and/or sharing studies)

6 PROVISION OF ROU INFORMATION – BENEFITS AND IMPACTS

Changes to the information uploaded to EFIS and related proposals in this CEPT Report already have a cost impact on administrations. In general, there is a need for stability in the requirements regarding EFIS. Without that stability, over time, the task to update more automatically will become very difficult. In addition, there is a necessity to reduce (or at least not to increase) the administrative burden/cost for the administrations. The recently published ECC Report 180 [5] already contains some guidance to achieve a higher level of uniformity of the information in EFIS uploaded by administrations. Electronic questionnaires as stipulated in this CEPT Report are also considered a good tool to achieve a more uniform information basis.

The electronic questionnaire concept will also provide for a step by step implementation approach, on the basis of a priority list for frequency bands and/or applications, to have additional spectrum inventory related information available in EFIS.

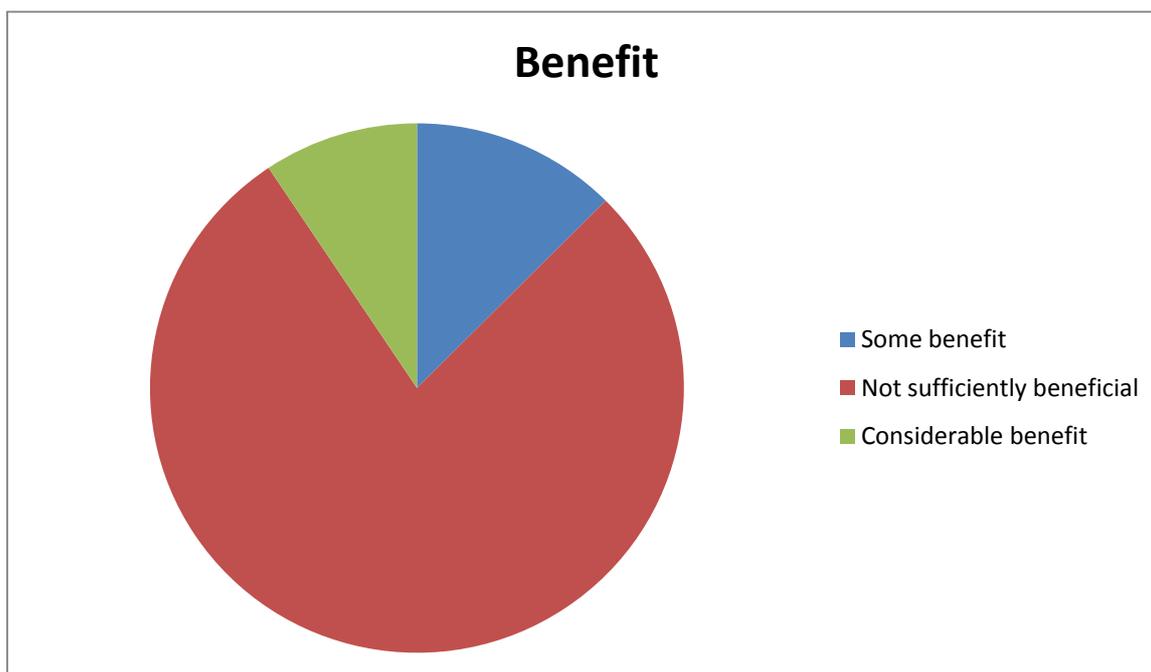


Figure 3: How do you consider the benefits of providing national RoU data covering the whole spectrum range (400 MHz to 6 GHz)?

26 out of 33 answering administrations do not see sufficient benefits of providing national RoU data covering the whole spectrum range (400 MHz to 6 GHz).

The main reasons stated for this clear majority opinion are based on:

Additional cost and effort:

- The extra cost and additional manpower needed for the work and processing of huge amount of data are not proportional with the benefits of providing national RoU data covering the whole spectrum range (400 MHz to 6 GHz);
- New opportunities for innovative ways to use radio spectrum would definitely not appear through any set of indicators on spectrum usage in the EFIS database; this issue is a matter for the assessment

of various conditions that require extensive analysis on supposed evolution scenarios for understanding of the long term spectrum need;

- Providing RoU data for the whole spectrum range (400 MHz – 6 GHz) would result in a considerable administrative burden on the national organisations as the information would have to be compiled and even in several cases uploaded manually.
- Several administrations indicated that they simply do not have the resources or manpower to provide RoU data covering the whole spectrum range (400 MHz – 6 GHz).
- Not sufficiently beneficial to warrant extra cost/manpower as there seems to be only very limited interest in having this information and as far as no spectrum scarcity is detectable;
- The NRA is financed mainly through licence fees and licence holders have to pay for all changes in the long run. In addition to this, licence holders (i.e. the operators) will have internal costs for providing information to the national authority, costs that cannot be estimated today;
- The necessary changes to the existing national database solutions will cost a lot of money and take a lot of time;
- Typical costs estimated are in the range of 1-3 million EURO per year (manpower and IT costs). This depends, to a large extent, on how much of this that can be handled automatically and if the legal requirements can be fulfilled. Included in these estimates is the different activities in the process of providing information – collection of data, verification of data, legal assessment, business confidentiality and secrecy due to national protection) and uploading of data. This will of course be more burdensome and costly with the very first upload performed in the new scope and become less costly in the subsequent.

Comments on benefits:

- The benefits of delivering accurate and detailed information on other applications than mobile applications in harmonised ECS bands still have to be demonstrated.
- If such data is required it would be more efficient and beneficial to collect it on the basis of identifying specific bands where the collection and provision of such data would contribute to meaningful outcomes in terms of, for example, meeting excess demand for radio communication services.
- Relevant RoU information should be provided to EFIS in line with the objectives of the spectrum inventory while noting that the RoU concept is strictly speaking, not limited to specific frequencies or type of service (e.g. it is not limited to ECS). In this context, it is to note that some administrations do not distinguish between RoU for ECS or non ECS bands.
- There are examples such as the 400 MHz PMR case where the burden on administrations is high and the benefit for the internal market gained by providing a considerable number of RoU entries seems limited.
- Trading of frequency rights is not likely in many of the bands considered.

Other issues (limitations etc.):

- No need to provide data on RoU holders outside national systems. This kind of records may cause also some legal problems.
- In case of governmental usage of spectrum, the rights of use are limited to the rights described in the National Table of Frequency Allocations (NTFA). For example, in these cases no individual authorisations with limited duration are granted by many administrations.
- Those administrations who answered that they see some benefit of providing national RoU data covering the whole spectrum range (400 MHz to 6 GHz) limited this potential benefit to only certain applications.

Definitions

- It is important to clarify the interpretation of the RoU concept when considering application of this concept in the frequency ranged from 400 MHz to 6 GHz. Otherwise, non-coherence problems can

be foreseen and the usability of the information and possibilities to compare information amongst countries may be rather limited.

Assessment

Making all the RoU information available in EFIS will mean internal costs for providing information to the national authority by the licence holders (i.e. the operators). These costs cannot be estimated today.

To provide all RoU information in EFIS will mean higher costs and more manpower for the administrations (e.g. modifications of the software, organisation of procedures) which consequently would increase the burden of the administrations, whereas the benefit is not apparent. These additional items could only be implemented with time delay in next year's state budgets and/or regulations.

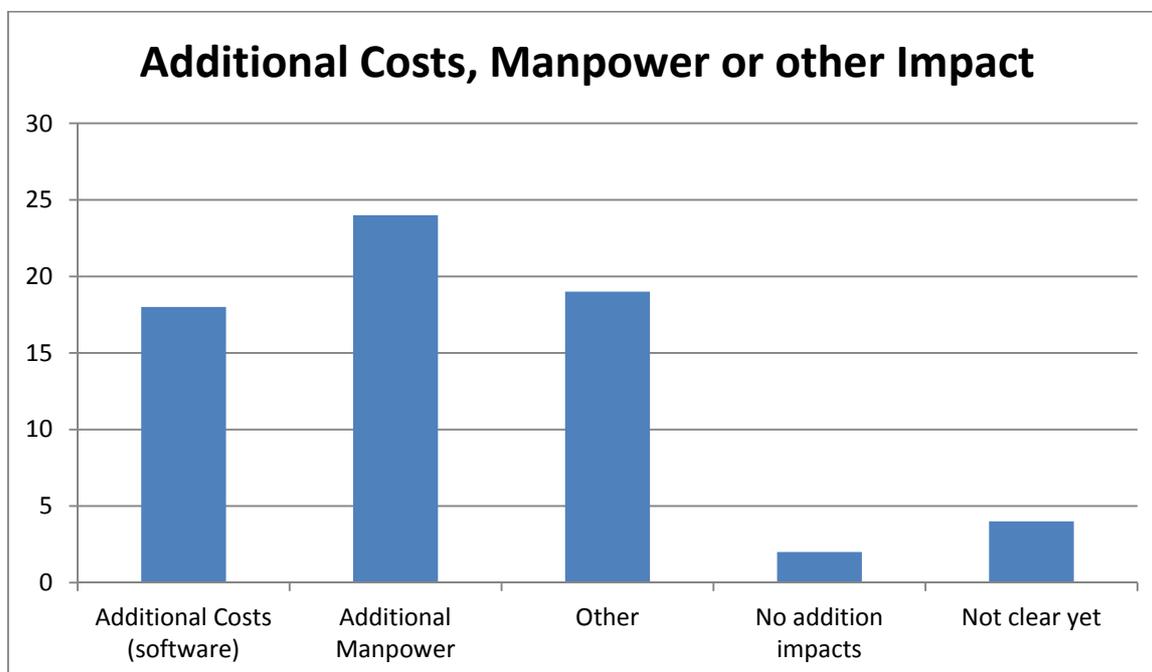


Figure 4: What are the administrative and technical impacts, if any, that the proposal to provide all rights of use between 400 MHz to 6 GHz would cause your Administration?

24 administrations expressed a strong concern that they would not have sufficient manpower at all to provide all RoU between 400 MHz to 6 GHz since their national database software currently does not have the functionality to automatically compile RoU data and upload to EFIS.

In addition, administrative and technical impacts are seen also from additional cost, and the requirement to change national legislation, conditions and restrictions on publication of information as well as organisational split of responsibility aspects.

Three administrations stated that they were not clear yet about the impacts.

Under 'Other', a lot of different reasons have been mentioned: requirement to change national legislation or licence terms, conditions or restrictions on publication of information, organisational / split of responsibility

aspects. However, the concern that a change to provide all RoU between 400 MHz – 6 GHz would need a rather long implementation time, from 1 to 2 years, was stressed several times.

Two administrations provided a deeper analysis about the impact on their procedures:

UK:

Cost: The proposal to require all RoU between 400 and 6000 MHz would impose significant costs on Ofcom and other third parties licensing on Ofcom's behalf e.g. PMSE. As RoU information is not held in an EFIS-compatible format we would require our and our third-party IS providers to develop solutions to convert this information into an EFIS-friendly XML file. Current estimates of these changes are in the region of £150,000-£400,000; however, a full impact and cost analysis has not been undertaken and these costs may be significantly more. In addition to the one-off implementation costs there would be an ongoing yearly support cost that would equal around 5% of the initial implementation cost (£7,500 - £20,000)

Manpower: The resource costs of running the project to implement this decision would cost between £50,000 - £200,000, depending on the level of complexity required and number of systems that would require changing. In addition we expect there to be ongoing manpower support costs in the region of £20,000 - £40,000 depending on the level of support required.

Other: As advised above there is a split of responsibility concerning spectrum authorisation in the UK. There may need to be changes in the contractual arrangements between Ofcom and these third parties in order for them to provide EFIS with information relating to their systems. These additional responsibilities would be reflected in increased costs to Ofcom for them to continue to carry out their licensing function. The cost of this is difficult to quantify but we expect this to be in the region of £40,000 to £100,000 per annum.

Sweden:

If one uploads the information that would be publicly available regarding all the licences in the range 400-6000 MHz we estimate:

1. That a reconstruction of the IT system would cost approximately 4-5 million Euro
2. That, with a new IT system in place, we would need 4-5 full-time resources each year to collect and manage the information. In addition to that 5-10 full-time resources annually to verify before each upload what can be published.

The estimates in 1) and 2) are based on an assumption that an IT system can be built and until that is in place the work would require much more manual efforts. We cannot give an indication on the impact of the change regarding the cost or manpower needed if the task has to be performed manually. We assume that it would require at least 3-4 years to rebuild or to build a new IT system that can perform these tasks.

3. National legislation would have to be amended – a process that takes a couple of years. There are at least two aspects in the current legislation that would have to be amended – firstly the requirements that we can put upon the license holders and secondly the financing directives for the administration. We do not foresee any need for organisational changes between different Swedish administrations, as the national radio administration holds the overall responsibility for these questions.

For information relating to radio frequencies used within the aviation industry one should be able to collect information from SAFIRE (Spectrum and Frequency Information Resource), managed primarily by the ICAO and Eurocontrol.

Assessment

Collecting, preparing and uploading all RoU information in EFIS has a different level of impact on all administrations: additional costs, additional manpower and changes in national law. Especially the last item, changing national laws, would be a protracted process or may be not feasible.

Overview over the changes to national legislation administrations expect as a consequence:

The following information was provided on necessary changes to the national legislation:

1. Governmental services: changes may be necessary in the national laws concerning official secrets, national armed forces and/or or the criminal law;
2. Public services: sensitive commercial information on cellular sites, number of subscribers, planning approaches etc., if prohibited by merchants. This can be in conflict with national freedom of information law as well as the criminal law;
3. Other services (PMR, satellite services etc.); similar considerations as for public services apart from the aspect that users quite often use dedicated solutions to convey sensitive information (e.g. bank information, collection of payment information from many points of sale in a VSAT network or similar). Users of these services can refuse to permit the NRA to provide any details about such networks to EFIS in accordance with the national laws.

In addition to the responses received as part of the CEPT questionnaire, administrations have also provided detailed information to the European Commission regarding the type of information, in relation to spectrum management, that is considered to be confidential under national law, at various degrees either to the general public or to external public authorities. The responses to this questionnaire were summarised in RSCOM12-35 [7] published 8 January 2013 and presented at RSC 41.

Assessment

Information which is considered confidential or classified by an administration, an international institution, or any third party in accordance with EU and national law will be protected and not be available, in particular:

- business confidential information;
- information in relation to protection of privacy and
- information in relation to public security and defence.

Changes in other national law which are related to the above are slow, time-consuming, or may be not feasible.

7 CONCLUSIONS AND RECOMMENDATIONS

The principal conclusions of this Report are as follows:

Task 4 under the Mandate: to state the necessary additional operational details, if any, in particular the links and updating mechanisms between ECO and national administrations and assess the technical and administrative impacts on Member States, taking into consideration the need to minimise additional costs and manpower for national administrations with a clear distribution of responsibilities. In this context it should be investigated which Member States use direct automatic updates from national databases to EFIS and where national databases do not exist.

National allocations, applications, Rights of Use (RoU) and Radio Interface Specifications (RIS) information are or will in future be stored in a database or an Excel spread sheet in nearly all administrations. This means that this information is or will be available in electronic format.

The actualisation of the current level of RoU information (number of entries) for EFIS does not pose a problem for the administrations. The upload of a high number of RoU entries is seen as much more critical and will require modifications in database tools or new national database systems. This poses an additional burden (financial and manpower) for the administrations, the extent of which could currently not be evaluated.

Making all the RoU information available in EFIS will mean internal costs for providing information to the national authority by the licence holders (i.e. the operators). These costs cannot be estimated today.

Administrations call mainly for assistance from the ECO in first-time cases when they start to upload information into EFIS or change from manual upload to semi-automatic or automatic upload to EFIS. In addition, assistance from the ECO is called for when changes in the XML file common format take place.

The objective to enable automatic upload of EFIS data is to minimise the administrative burden in future.

Data format

To ensure homogeneous information and keep the burden on administrations as limited as possible, it is necessary to have a common data exchange format, which avoids entering/changing more often than necessary new records in administrations' databases. Dedicated formats for several frequency bands make sense in cases of electronic questionnaires to collect more necessary data/information.

Content

It is not believed that it would be of benefit to provide detailed information concerning all individual RoU, applications and other information between 400 MHz and 6 GHz. Without further information from national administrations this information may be misleading and may not accurately reflect the actual spectrum usage situation.

Some detailed information on RoU will not be of benefit to the users of EFIS or provide the data needed relevant to Article 9 par. 2 of the RSPP on spectrum inventory.

For example it is not possible to collect information about RoU data for governmental services such as military, public safety and security services. In addition, it may not be possible for some administrations to provide information on certain civil usages (e.g. PMR, aeronautical, radiolocation, etc...). The reasons for this are, among others, business confidentiality, national legislation on data protection, the lack of legal requirement for publication and national security reasons.

The provision of information by administrations regarding non-ECS applications is limited in EFIS. Some additional information on RoU could be made available in EFIS, particularly for applications beyond harmonised European ECS bands. However, these cases should be identified as part of a specific spectrum inventory action and not before the need for this is clearly identified. Furthermore, it is mentioned by

administrations that to provide such information, special database systems and additional manpower are necessary, which consequently will increase the burden on administrations, whereas the benefit is not apparent.

As required by Article 9 of the Authorisation Directive RoU should be as technology neutral as possible. For this reason, many awards of new spectrum are done on a technology neutral basis. As a result of this, there are, in an increasing degree, no records of the technology in use. In areas where spectrum has been allocated to more than one licensee, there is a possibility that two or more different applications could be in use (see section 5.2).

Information on the technology of certain frequency bands regulated by a general authorisation / licence-exempt approach is also not available in many cases.

Information on geographical area could be national, regional or transmitter site information. To provide the coverage area information of thousands of transmitters, many parameters must be taken into account. All these parameters depend on the frequency band and considered applications.

To require this information on the coverage area of thousands of transmitters will have a considerable impact on the burden of administrations with regard to manpower and costs, whereas the benefit is not apparent (e.g. in the case of PMR/PAMR transmitters) (see section 5.1).

Collecting, preparing and uploading all RoU information in EFIS has a different level of impact on all administrations: additional costs, additional manpower and in many cases changes in national law. Especially the last item, changing national law, would be a protracted process or may not be feasible.

Information which is considered confidential or classified by an administration, an international institution, or any third party in accordance with EU and national law will be protected and not be available, in particular

- business confidential information;
- information in relation to protection of privacy and
- information in relation to public security and defence.

Changes in other national law which are related to the above are slow, time-consuming, or may not be feasible.

To provide all RoU information in EFIS will mean higher costs and more manpower for administrations (e.g. for modifications of their software, organisation of procedures) which consequently would increase the burden of administrations, whereas the benefit is not apparent. These additional items could only be implemented with a time delay in next year's state budgets, i.e. there are severe implementation issues.

Taking the above evaluation into account, the use of a more focused approach via electronic questionnaires is proposed. This approach would minimise the burden on administrations (costs and manpower); at the same time it will enable to a thorough review of the specific frequency bands and applications under investigation.

Proposed methodology of using electronic questionnaires

The use of electronic questionnaires is proposed as a method to retrieve qualitative and quantitative information. Based on the information given in the questionnaires, an analysis can be made in relation to the goals set out in the Radio Spectrum Policy Programme. This is, as already mentioned in the CEPT Report 46 [4], an efficient, demand-oriented and cost-effective method to complete the information available in EFIS. This proposal would meet the requirements of Article 9 par. 2(a) of the RSPP on spectrum inventory to minimise the administrative burden on Member States.

- Upload to EFIS information in electronic format which was gathered in the framework of the activities of CEPT working groups;
- Provision of high level overview of spectrum use;

- Using tailored electronic questionnaires to collect missed and/or further information for the frequency bands of interest on a case-by-case basis;
- Detailed investigation of frequency bands of interest using the collected information (e.g. reallocation, compatibility and/or sharing studies).

Task 5 under the Mandate: to assess the possibility and the benefits to update information provided by Member States pursuant to Article 3.2 of Decision 2007/344/EC [1] every three months, and drawing from experience, to estimate the increase in administrative and cost burden this could represent for Member States.

National allocation and application plans pass different national steps (e.g. parliament, public consultation). Usually these procedures take much longer than three months (application information from the national frequency utilisation plans is relevant as demonstrated in CEPT Report 46 [4]). Often national allocation plans are only revised after a WRC (every 3 to 4 years), and national frequency utilisation plans not more often than once or twice a year. These facts make an actualisation of the information in EFIS every three months impossible.

Information on allocations, applications, RoU and RIS is mostly actualised/ updated by administrations not more than twice a year or simply on an ad hoc basis, when changes occur. This actually ensures that the most up-to-date information is available in EFIS. A demand for an update every three months appears at this point undesirable; especially in view of the fact that, owing to different national regulations, in some cases, no changes take place within this short timeframe.

A demand to update/actualise more often the information in EFIS will mean higher costs and more manpower for administrations (e.g. modifications of the software, organisation of procedures), which will consequently increase the burden on administrations, whereas benefits of this are not apparent. Additional items could only be implemented with a time delay in next year's state budgets.

No reasons have been identified to update the information in EFIS every three months which would justify this additional burden for administrations.

ANNEX 1: MANDATE FOR CEPT



EUROPEAN COMMISSION

Directorate-General for Communications Networks, Content and Technology
Electronic Communications Networks and Services
Spectrum

Brussels, 31 August 2012
DG CNECT/B4

RSCOM12-22rev3

ADOPTED

RADIO SPECTRUM COMMITTEE

Working Document

**Opinion of the RSC
pursuant to Advisory Procedure under Article 4 of Regulation
182/2011/EU and Article 4.2 of Radio Spectrum Decision 676/2002/EC**

Subject: Draft Mandate to CEPT – Review of Decision 2007/344/EC

This is a Committee working document which does not necessarily reflect the official position of the Commission. No inferences should be drawn from this document as to the precise form or content of future measures to be submitted by the Commission. The Commission accepts no responsibility or liability whatsoever with regard to any information or data referred to in this document

**MANDATE TO CEPT
ON INCLUSION IN EFIS OF INFORMATION ON RIGHTS OF USE FOR ALL USES OF SPECTRUM
BETWEEN 400 MHZ AND 6 GHZ.**

1. PURPOSE

The purpose of this mandate is to modify the Commission Decision 2007/344/EC of 16 May 2007 on harmonised availability of information regarding spectrum use with the EC, so as to enable EFIS to be integrated into the inventory, which has been created by the Radio Spectrum Policy Programme adopted by EP and Council Decision 243/2012/EU of 14 March 2012 (RSPP Decision).

The inventory aims in particular to allow the identification of frequency bands in which the efficiency of spectrum use can be improved, to identify bands which could be suitable for reallocation and spectrum-sharing to support Union policies, to analyse the various types of use of spectrum by private and public users and to identify bands that could be allocated or reallocated to improve their efficient use, promote innovation and enhance competition in the internal market and to explore new ways for sharing spectrum.

To do so, the Commission must take implementing measures by 1 July 2013 to develop practical arrangements and uniform formats for the collection and provision of data by the Member States to the Commission on the existing uses of spectrum. In that context, the administrative burden on the Member States should be minimised and business confidentiality must be preserved where there are obligations to provide specific information under the Radio Spectrum Decision 676/2002/EC.

The EFIS database could evolve to become an integrated part of the inventory if comprehensive data on rights of use is collected, while avoiding any duplicate effort for the Member States.

2. JUSTIFICATION

Pursuant to Article 4 of the Radio Spectrum Decision¹ the Commission may issue mandates to the CEPT for the development of technical implementing measures with a view to ensuring harmonised conditions for the availability and efficient use of radio spectrum; such mandates shall set the task to be performed and the timetable therefore.

When Decision 2007/344/EC was adopted, it was decided as a first step, to limit the requirement of Member States to providing information on the rights of use to what was considered at that time as spectrum with a high economic interest, i.e. bands used for the provision of electronic communications services which have been made tradable or which are granted through competitive or comparative selection procedures. Moreover, RoU information provided to EFIS was to be updated every six months by Member States.

The inventory created by the RSPP will now focus on spectrum ranging from 400 MHz to 6 GHz. Considering the exhaustive character of the inventory and the need to analyse technology trends, future needs and demand for spectrum in all policy areas for the whole range from 400 MHz to 6 GHz as well as the need to identify bands in which the efficiency of existing spectrum uses can be improved, precise information will be necessary with regard to all rights of use for the whole range covered by the inventory and requires the withdrawal of the limitation set by the 2007 Decision. As the accuracy of the inventory depends on the availability of up-to-date information, it would be

¹ Decision 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community, OJL 108 of 24.4.2002.

appropriate that the information be updated by Member States every three months rather than six months.

Furthermore, the RSPG Opinion on the Review of Spectrum Use (RSPG12-408) recommends that "measures be undertaken to continue the development of the EFIS database resource supported by the appropriate regulatory framework (RSPP and EC Decision 676/2002) with the aim of providing comprehensive information on spectrum usage rights".

There is therefore a need to revise the Commission Decision of 16 May 2007 on harmonised availability of information regarding spectrum use within the Community, in order to extend the scope of its Annex II regarding the format for information on rights of use, and to modify the rhythm of information updates.

It appears from a presentation made to the Radio Spectrum Committee on 20 March 2012 by ECO that the EFIS system could be easily adapted to accommodate the collection of additional information regarding spectrum usage rights for the whole spectrum range from 400 MHz to 6 GHz without limit to the type of application. Moreover, a few Member States have apparently already broadened the collection of information to bands as low as 30 MHz or as high as 10 GHz as well as to bands used for local coverage (3.4 GHz for BWA).

3. MAIN EU POLICY OBJECTIVES

The Commission intends to modify its Decision 2007/344/EC of 16 May 2007 on harmonised availability of information regarding spectrum use within the Community to broaden the scope of Annex II thereof to the whole spectrum from 400 MHz to 6 GHz and to cover all services and applications and to provide as up-to-date information as possible.

This modification will allow for EFIS to be integrated into the inventory which has been created by the 2012 Radio Spectrum Policy Programme and will supplement other practical arrangements which the Commission intends to adopt pursuant to Article 9 par.2 of the RSPP Decision for the collection and provision of data by the Member States and for the development of a methodology for the analysis of technology trends, future needs and demand for spectrum in the EU policy areas covered by the RSPP.

4. TASK ORDER AND SCHEDULE

Through this mandate, the CEPT is requested:

(1) To confirm, as indicated by ECO earlier, that it is technically possible for the EFIS system to accommodate comprehensive information regarding spectrum usage rights for the whole range from 400 MHz to 6 GHz without limit to the type of application, based on the current common formats in Annex II of Commission Decision 2007/344/EC.

(2) To highlight any necessary change to the current common formats contained in Annexes I and II of Decision 2007/344/EC by taking into account the data needed/relevant for the methodology under development according to Article 9 par.2 of Decision 243/2012/EU. This might for example be necessary to differentiate current data collection in accordance with Annex II from data collection for types of use other than ECS in the range 400 MHz to 6 GHz. Any changes to current

common formats should only deal with non-confidential information² and, on that basis, allow an assessment of the time duration, geographical extent and deployed technology³, while limiting the administrative burden on the Member States.

(3) To assess the level and the coherence of information that is currently being provided by the Member States when providing information in accordance with Annexes I and II as well as when providing non-regulatory information being collected by EFIS which has a relevance for the inventory.

(4) To state the necessary additional operational details, if any, in particular the links and updating mechanisms between ECO and national Administrations and assess the technical and administrative impacts on Member States, taking into consideration the need to minimise additional costs and manpower for national Administrations, with a clear distribution of responsibilities. In this context it should be investigated which Member States use direct automatic updates from national databases to EFIS and where national databases do not exist.

(5) To assess the possibility and the benefits to update information provided by Member States pursuant to Article 3.2 of Decision 2007/344/EC every three months, and drawing from experience, to estimate the increase in administrative and cost burden this could represent for Member States.

The Commission may provide CEPT with further guidance on this mandate.

CEPT is mandated to provide deliverables according to the following schedule:

Delivery date	Deliverable
15 November 2012	Draft final report on tasks 1, 2, and 3 with the necessity for a public consultation to be decided by CEPT.
10 March 2013	Final report on tasks 1, 2, and 3. Draft final report on tasks 4 and 5 with the necessity for a public consultation to be decided by CEPT.

In implementing this mandate, the CEPT shall, where relevant, take the utmost account of Community law applicable and support the principles of technological neutrality, non-discrimination and proportionality insofar as technically possible.

The Commission, with the assistance of the Radio Spectrum Committee pursuant to the Radio Spectrum decision, may consider applying the results of this mandate in the EU, pursuant to Article 4 of the Radio Spectrum Decision.

This mandate is without prejudice to the provisions of the Radio Spectrum Policy Programme regarding the inventory and the possibility to make any changes to the EFIS Decision by implementing measures adopted pursuant to the RSPP.

² Sensitive information, e.g. on governmental use, is not intended for collection in EFIS and will be exchanged if necessary and possible between the Commission and the individual Member States by other means.

³ By taking into account, among others, the application terms used in the EFIS layer 3.

ANNEX 2: WGFM QUESTIONNAIRE TO ADMINISTRATIONS IN RELATION TO TASKS 4 AND 5

WGFM QUESTIONNAIRE TO CEPT ADMINISTRATIONS

**Ref Tasks Nos 4 and 5 of the Mandate to CEPT
“MANDATE TO CEPT ON INCLUSION IN EFIS OF INFORMATION ON RIGHTS OF USE
FOR ALL USES OF SPECTRUM BETWEEN 400 MHz AND 6 GHz”- Decision 2007/344/EC**

Information to be provided in the cover of the questionnaire

Responding organisation	[responding organisation]
Country	[country of the responding organisation]
Address / e-mail address	[mail address of the responding organisation]
Contact name	[contact name within the responding organisation]

CEPT Administrations⁴ are kindly requested to return the completed questionnaire before 15 November 2012 to the European Communications Office (ECO)

To
preferably by e-mail
or by fax:

Thomas Weber
thomas.weber@eco.cept.org
+45 33896330

Introduction

The Radio Spectrum Committee of the European Commission at its meeting on 5 July 2012 discussed a Draft Mandate to CEPT: “MANDATE TO CEPT ON INCLUSION IN EFIS OF INFORMATION ON RIGHTS OF USE FOR ALL USES OF SPECTRUM BETWEEN 400 MHz AND 6 GHz”. The Mandate has now been issued. Noting the content and the deadline and that the ECO is managing EFIS it was decided to allocate the Mandate to the ECO and to develop the response in consultation with our members for consideration at the next ECC meeting (first three tasks).

The purpose of the Mandate is to modify the Commission Decision 2007/344/EC [1] of 16 May 2007 on harmonised availability of information regarding spectrum use with the EC, so as to enable EFIS to be integrated into the inventory, which has been created by the Radio Spectrum Policy Programme adopted by EP and Council Decision 243/2012/EU [3] of 14 March 2012 (RSPP Decision).

The tasks requested from CEPT through the Mandate are given below in an abbreviated form. Tasks Nos 1, 2 and 3 are dealt with in CEPT Report 46, and tasks Nos 4 and 5, to which this questionnaire applies, in CEPT Report 47.

Tasks

Through the Mandate, CEPT is requested⁵:

1. *To confirm, as indicated by ECO earlier, that it is technically possible for the EFIS system to accommodate comprehensive information regarding spectrum usage rights for the whole range from 400 MHz to 6 GHz without limit to the type of application, based on the current common formats in Annex 2 of Commission Decision 2007/344/EC [1].*
2. *To highlight any necessary change to the current common formats contained in Annexes I and II of Decision 2007/344/EC [1] by taking into account the data needed/relevant for the methodology under*

⁴CEPT Administrations from non-EU and non-EFTA countries are kindly requested to answer this questionnaire on a purely voluntary basis.

⁵The text of the tasks is abbreviated. For the full text of the Mandate, see Annex 3 of the present Report

development according to Article 9 par.2 of Decision 243/2012/EU. Any changes to current common formats should only deal with non-confidential information⁶ and allow an assessment of the time duration, geographical extent and deployed technology⁷, while limiting the administrative burden on the Member States.

3. To assess the level, coherence and uniformity of information that is currently being provided by the Member States when providing information in accordance with Annexes I and II as well as when providing non-regulatory information being collected by EFIS which has a relevance for the inventory.
4. To state the necessary additional operational details, if any, in particular the links and updating mechanisms between ECO and national administrations and assess the technical and administrative impacts on Member States, taking into consideration the need to minimise additional costs and manpower for national administrations, with a clear distribution of responsibilities. In this context it should be investigated which Member States use direct automatic updates from national databases to EFIS and where national databases do not exist.
5. To assess the possibility and the benefits to update information provided by Member States pursuant to Article 3.2 of Decision 2007/344/EC every three months, and drawing from experience, to estimate the increase in administrative and cost burden this could represent for Member States.

The questionnaire deals with data covered by the Decision 2007/344/EC Annex I and II, i.e. radio interface specifications and rights of use, respectively.

The questions are equally relevant to both data categories. Please write replies to the questions for both radio interfaces specifications and rights of use. Some questions also refer to allocation and application data since task no. 5 refers in general to all data (art.3.2 of Decision 2007/344/EC) For ease of reference, the following abbreviations are used:

Radio interface specifications: RIS
Rights of use: RoU

It is acceptable for administrations to submit two copies of the questionnaire, one containing answers for radio interfaces, one for rights of use, should this be more convenient.

Note: the requirement on RoU in the existing EC Decision on EFIS applies primarily to authorisations for ECS which are granted through competitive or comparative selection procedures. When investigating the applicability of the RoU concept on a broader basis, the nature of applications in use should be carefully considered.

Please indicate your answer clearly, either by writing YES/NO answers in capital letters or by highlighting them.

⁶Sensitive information, e.g. on governmental use, is not intended for collection in EFIS and will be exchanged if necessary and possible between the Commission and the individual Member States by other means.

⁷ By taking into account, among others, the application terms used in the EFIS layer 3.

Questionnaire

Question 1

<p><i>How is your national RIS and RoU data stored ? (multiple answers possible)</i></p> <ol style="list-style-type: none"> 1 Database 2 Spreadsheet (e.g. Excel) 3 Word 4 Other (e.g. old "paper" records) 	<p><u>RIS:</u></p>	<p><u>RoU:</u></p>	<p><u>Comments:</u></p>
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Question 2

<p>A. <i>If you do not have a national database for spectrum information, are you planning to have one?</i></p> <p>B. <i>If yes, when?</i></p> <p>C. <i>Will the database be capable of generating EFIS-compatible files (i.e. XML format)?</i></p>	<p><u>RIS:</u></p>	<p><u>RoU:</u></p>	<p><u>Comments</u></p>
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Question 3

<p><i>How is the national data exported to EFIS?</i></p> <ol style="list-style-type: none"> 1 Fully automatic upload (interface with login info incorporated) 2 "Semi-automatic" (XML file generated by national database, uploaded after manual log in) 3 Manual upload 	<p><u>RIS:</u></p>	<p><u>RoU:</u></p>	<p><u>Comments</u></p>
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Question 4

<p><i>How often is your data in EFIS updated (if new data is available)? (the current requirement in the EC Decision is to update data twice a year)</i></p> <ol style="list-style-type: none"> 1 Every three months 2 Every six months 3 On an ad hoc basis 4 Other <p>Note: please describe sufficiently what you are actually doing.</p>	<p><u>RIS:</u></p> <p><u>RoU:</u></p> <p><u>Allocations:</u></p> <p><u>Applications:</u></p>	<p><u>Comments:</u></p>
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Question 5

<p>A. Are you planning to update (and upload to EFIS) more frequently?</p> <p>B. If yes, when?</p> <p>C. And how often?</p> <ol style="list-style-type: none"> 1 Every three months 2 Twice a year 3 On an ad hoc basis 4 Other 	<p><u>RIS:</u></p> <p><u>RoU:</u></p> <p><u>Allocations:</u></p> <p><u>Applications:</u></p>	<p><u>Comments</u></p>
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Question 6

<p>A. Would (further) assistance from ECO help you update your national data more frequently or make it possible to do so?</p> <ol style="list-style-type: none"> 1 Yes 2 No <p>B. If yes, what kind of assistance?</p>	<p>Answer:</p>
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Question 7

<p>The Mandate foresees/mentions update of data every three months (or four times a year). Note: the delay of showing new RIS or RoU is meant to not exceed three months. This question ONLY refers to the existing RoU, i.e. those in the ECS bands and not to the whole range from 400 MHz to 6 000 MHz.</p> <p><i>If you are not already updating at this rate, please indicate whether it will be possible for you to do so, taking into account</i></p> <ol style="list-style-type: none"> 1 Cost (in terms of software etc) 2 Manpower needed <p>Please indicate (estimated values) for 1 and 2, if possible.</p> <p>Note: It is understood that this question only applies to RIS and RoU since allocation and application information is not updated so frequently.</p>	<p><u>RIS:</u></p>	<p><u>RoU:</u></p>	<p><u>Comments:</u></p>
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Question 8

<p><i>How do you consider update every three months as compared to twice a year Indicate why.</i></p> <p><i>Note: This question ONLY refers to the existing RoU, i.e. those in the ECS bands and not to the whole range from 400 MHz to 6 000 MHz.</i></p> <ol style="list-style-type: none"> 1 Of considerable benefit to users 2 Of some benefit 3 Not sufficiently beneficial to warrant extra cost/manpower 4 Other 	<p><u>Answer</u></p>
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Question 9

<p><i>Does your national RoU data already cover the whole spectrum range 400 MHz – 6 GHz?</i></p> <ol style="list-style-type: none"> 1 Yes 2 No 3 Partly <p>Please describe your national situation when considering the application of the RoU concept currently applied in EFIS for ECS bands to all uses in the whole frequency range 400 MHz to 6 GHz.</p>	<p><u>Answer:</u></p>
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Question 10

<p><i>How do you consider the benefits of providing national RoU data covering the whole spectrum range (400 MHz – 6 GHz)?</i></p> <ol style="list-style-type: none"> 1 Of considerable benefit to users 2 Of some benefit 3 Not sufficiently beneficial to warrant extra cost/manpower 4 Other 	<p><u>Answer:</u></p>
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Question 11

<p><i>For which frequency bands and/or services/applications is your national RoU/authorisation data not publicly available? Please state the reasons why.</i></p> <p><i>Possible reasons could be that</i></p> <ul style="list-style-type: none"> • <i>authorisations are not existent or needed for certain services,</i> • <i>specific authorisations are not bound to frequencies or specific applications,</i> • <i>or the information is not publicly available,</i> • <i>or any other constraint/national condition.</i> <p><i>Please describe your national situation when considering the application of the RoU concept currently applied in EFIS for ECS bands to all uses in the whole frequency range 400 MHz to 6 GHz. Note: it may be helpful to differentiate amongst the types of use, i.e. services/applications.</i></p>	<p><u>Answer:</u></p>
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Question 12

<p><i>What are the administrative and technical impacts, if any, that the proposal to provide all rights of use between 400 MHz – 6 GHz would cause your Administration?</i></p> <ol style="list-style-type: none"> 1 Additional cost (in terms of software etc) 2 Additional manpower needed 3 Other – e.g. requirement to change national legislation or licence terms, conditions or restrictions on publication of information, organisational/split of responsibility aspects <p><i>Please indicate (estimated values) for 1, 2 and 3, if possible.</i></p>	<p><u>Answer:</u></p>
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Question 13

<p><i>Please indicate also other ideas/ways to ensure that the relevant information is available in EFIS, taking into account the data needed relevant to Article 9 par.2 of the RSPP on spectrum inventory, and also drawing from experience.</i></p> <p><i>Note: It may in this context also be relevant to differentiate between RoU for ECS and other types of use.</i></p>	<p>Answer:</p>
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Question 14

<p><i>What are the administrative and technical impacts, if any, should additional information be required to provide in EFIS for RoU about</i></p> <ul style="list-style-type: none"> • <i>the geographical extent of RoU (e.g. precise definition of regional or local RoU geographical area/extent),</i> • <i>the technology deployed</i> <p><i>Please indicate if national conditions / restrictions apply with regard to making geographical information available in EFIS.</i></p> <ol style="list-style-type: none"> 1 Additional cost (in terms of software etc) 2 Additional manpower needed 3 Other – e.g. requirement to change national legislation or licence terms, conditions or restrictions on publication of information, organisational/split of responsibility aspects <p>Please indicate (estimated values) for 1, 2 and 3, if possible.</p>	<p><u>Answer:</u></p>
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ANNEX 3: LIST OF REFERENCES

- [1] Commission Decision 2007/344/EC on harmonised availability of information regarding spectrum use within the Community
- [2] Commission Decision 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community(Radio Spectrum Decision) (Radio Spectrum Decision)
- [3] Commission Decision No 243/2012/EU of the European Parliament and of the Council of 14 March 2012 establishing a multi-annual radio spectrum policy programme (RSPP)
- [4] CEPT Report 46: Report from CEPT to the European Commission in response to the Mandate on inclusion of information on rights of use for all uses of spectrum between 400 MHz and 6 GHz
- [5] ECC Report 180 on Guidance on the interpretation of the requirements of ECC/DEC/(01)03 on EFIS
- [6] RSPG Opinion on Spectrum Review
- [7] RSCOM12-35 Working document. Inventory under the RSPP and national rules on confidentiality and responses from Member States