

T-Mobile

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Radio Spectrum Policy Group RSPG Secretariat

Per email to:

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Apr 2, 2004
T-Mobile International Response on the public consultation on secondary trading of rights to use radio spectrum

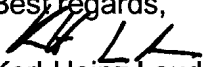
Dear ladies and gentlemen,

please find attached the response of T-Mobile International ("T-Mobile") on the public consultation of the Radio Spectrum Policy Group on secondary trading of rights to use radio spectrum. The comments are submitted on behalf of T-Mobile Austria, T-Mobile Czech Republic, T-Mobile Germany, T-Mobile Netherlands and T-Mobile UK.

Summarizing our comments on the questions raised by RSPG, we would like to emphasize that from T-Mobile's point of view future systems for secondary trading of spectrum using rights in Europe should be characterized by five main attributes:

- As harmonized as possible;
- Transparent and open;
- Implemented in a stepwise approach (with change of use at a later stage);
- Increasing the efficiency and flexibility of spectrum use;
- Evaluated for competition and technological effects with a case-by-case study.

T-Mobile is grateful for the opportunity to provide its view on this new instrument for spectrum management to RSPG. Do not hesitate to contact us in case of any clarification needed.

Best regards,

Karl-Heinz Laudan
(Vice President)


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(Senior Manager)

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To **RSPG Secretariat**
Date Apr 2, 2004
Page 2

Detailed issues submitted to consultation

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Executive Summary:

T-Mobile International is of the opinion that the public spectrum management regime has a number of merits especially concerning harmonisation of spectrum use and prevention of interference. But it allows a restricted amount of flexibility. Therefore, the introduction of spectrum trading could offer additional flexibility, and increase efficiency of radio spectrum usage.

T-Mobile emphasizes that in order to reach a net-benefit of specific spectrum trading processes, benefits and drawbacks have to be considered carefully for each case and sufficient experience needs to be gained before spectrum trading is mature for a broad introduction.

Therefore, T-Mobile argues in favour of introducing spectrum trading by a stepwise approach, i.e. change of use of spectrum should be considered only at a later stage.

General questions

1) Do you consider secondary trading of rights to use radio spectrum to be beneficial to consumers, businesses and radio users? why/why not?

T-Mobile International considers that there cannot be a simple answer to this question. Secondary trading of spectrum using rights can have several benefits for the demand side (e.g. private and corporate customers, service providers, radio users, etc.) and the supply side

To **RSPG Secretariat**
Date Apr 2, 2004
Page 3

of spectrum-based telecommunications and other services (operators of cellular mobile networks, PMR, PAMR, satellite, broadcast, and other wireless networks and applications). On the other hand, a number of potential adverse effects of the introduction of secondary trading for spectrum using rights can have huge consequences on the development of industry (operators and manufacturers), technology, quality of services, etc., if not adequately taken into account or prevented.

Beneficial effects and concerns about trading spectrum using rights

Proponents of spectrum trading have put forward a range of reasons why they believe that current (static) spectrum management could have adverse consequences for industry, customers, and users. They note that market entry would often be restricted; operators' spectrum resources would be illiquid and not flexible to use; allocation of specific spectrum would not follow market valuation for this spectrum (spectrum pricing by NRAs could not reflect market valuation or opportunity costs to society in case of possible spectrum use with public interest), industry consolidation could be managed more easily by using the spectrum trading instrument.

However, historic experience has shown that public (static) spectrum management has a lot of merits as it enables the efficient management of potential interference issues, which are particularly relevant in densely-populated Europe where the added complication of cross-border interference can have severe implications for quality and development of services. Public spectrum management supports the introduction of new technologies and services by providing internationally harmonised spectrum.

The introduction of a secondary market for spectrum using rights taking these important functions of public spectrum management into account could help overcome weaknesses and adverse effects of static spectrum management and increase the dynamism of spectrum allocation and efficiency of spectrum use. Benefits could be:

- the removal of the need for spectrum pricing;
- the removal of barriers to expansion and innovation (as long as trade is not in conflict with international harmonisation);
- the increase in liquidity of spectrum assets;
- a decrease of spectrum costs by avoiding "now-or-never" decisions at public spectrum auctions of scarce new spectrum;
- the facilitation of market entry and exit (consolidation of markets).

Concerns about trading of spectrum using rights

Whilst many of the above benefits may be helpful to the mobile sector in the long term, it is not clear that they will be helpful in the short term. T-Mobile has therefore concerns about even limited introduction of spectrum trading in the short to medium term. These include:

- the adverse effect on balance sheet values if spectrum is traded at below initial cost. In the case of 3G frequencies, drastic depreciation of frequency resources of UMTS licensees could lead to increased pressure on market players and collapse of weaker operators, possibly with consequences even in the 2G market;
- the above may lead to increased uncertainty in the mobile markets and to a reduction or postponement of investment in this sector which will have the effect of stopping or at least

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **4**

slowing down the development of the market, the intensity of competition and the introduction of new services;

- great care needs to be taken in the design of market-based spectrum management, to ensure that operators are correctly incentivised to use their spectrum fully and efficiently and speculation, spectrum hoarding, anticompetitive blocking by fragmentation of spectrum etc. are prevented. In particular the introduction of trading needs to take into account national conditions under which licensees currently operate as well as the appropriate transition process to a market-based spectrum asset management
- consolidation may arise at the expense of competition. This consolidation with the collapse of existing competitive mobile operators would not be the result of the increasing maturity of the mobile markets but the consequence of financial effects following market exits of UMTS license allocation failures. It would restrict the future potential for the development of dynamic, growing mobile markets in Europe and therefore counteract the general aim of the 1999 review;
- the potential for new entrants who may pay less for spectrum than was originally paid at the primary assignment stage. This could lead to unfair competition and require an intensive regulation to prevent this. Competitive instruments as market prices etc. would no longer function and sustainable dynamic development of the mobile markets questionable.

T-Mobile considers that benefits and risks vary with the different parts of spectrum, different markets and/or technologies concerned, and the specifics of the trading process and its implications. Therefore, potential benefits of secondary trading need to be assessed for each frequency band relative to the cost of introducing trading for that specific spectrum. Furthermore, it is extremely important that any risks are rigorously identified and mechanisms put in place to ensure that they are prevented or at least reduced, enabling an overall net-benefit. To ensure that trading is beneficial to consumers, businesses and radio-users, some basic guidelines (e.g. transparency, fairness and open processes, no distortion of competition, consideration of allocation mechanisms and prices paid for spectrum in the past) have to be fulfilled.

2) What types of transfer of rights to use radio spectrum (full, leasing, partial etc.) do you consider can be beneficial to consumers, businesses and radio users? why/why not?

First, various types of transfer of spectrum using rights have to be taken into account. The type of transfer that are appropriate for any particular band is going to be dependent on the specifics of the frequency band under consideration. In order to make the right decision, it seems once again of utmost importance, to take the above mentioned basic guidelines (transparency, fairness and open processes, no distortion of competition, consideration of allocation mechanisms and prices paid for spectrum in the past) into consideration.

3) What rights and associated obligations do you consider should be within the scope of secondary trading of rights to use radio spectrum?

The rights to use radio spectrum need to be accompanied by the obligation to use the spectrum in accordance with the technical standards associated with those rights. In order to

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **5**

prevent harmful effects to adjacent band users, the rights as defined must be consistent with the rights of such users of spectrum.

Those rights that are within the scope of secondary trading should include:

- Right to transmit
- Right to a maximum level of interference
- Licence term

Other obligations might be required if the original owner of the spectrum had obligations and these were being carried over to the purchaser of the spectrum. In order to prevent harmful effects for spectrum users, the possibility of public monitoring of spectrum use, and intervention in case of conflicts has to be given.

4) Would you want to see secondary trading of rights to use radio spectrum introduced in your country or in the countries of interest to you?

a) If yes – why, to what extent? when? frequency bands/services?

b) If no – why not, are there other tools that better suit your needs?

Given that most mobile network operators like T-Mobile work in an international environment and are established in more than one country, it makes sense that an appropriate spectrum management framework is introduced on a European level and is based on principles which are commonly accepted in the EU. Furthermore it seems to be useful to introduce such a significant change by a harmonized approach or at least within a short period to avoid different frameworks. The right point of time is mainly dependent on the consideration of the given situation. With regard to the different allocation mechanisms applied in the EU-countries at least an appropriate transitional period has to be in place to give spectrum users time to prepare for such situation.

Further limitations to spectrum trading are established by the European regulation, i.e. "Where radio frequency use has been harmonised through the application of Decision No 676/2002/EC (Radio Spectrum Decision) or other Community measures, any such transfer shall not result in change of use of that radio frequency". Furthermore, where spectrum allocation is efficient, T-Mobile does not see any need for trading. Especially, in the UK and other countries, fixed link spectrum licensing is very effective and results in few failed assignments that cannot be overcome by minor changes in the transmission network topology of an operator. This topology change is likely to be a far quicker and more cost effective option than trying to trade a licence(s) from other operators. Currently T-Mobile is able to obtain new links from the spectrum management authorities very quickly (e.g. one week in the UK); it is very difficult to see how this would happen in a trading environment. A result of this would be that network rollout would be slowed down; this would be to the detriment of consumers and the economy in general. The option of band managers could be considered in some countries, however, it is unclear what the advantages of this process would be for operators. Even if one band manager looked after all of the bands the process would not be more efficient than now and there would undoubtedly be costs associated with moving to and continuing to operate the band manager, which would need to be recovered in some way. If it were necessary for operators to make contact with a number of band managers this would only add further to the costs of the operators and of operating the system.

In addition, unlicensed bands should not be part of the spectrum considered for trading. In general, it seems efficient to trade spectrum rights of use in bands which are assigned to an exclusive user, trading rights of use in shared bands being submitted to more heavy constraints. However, considerable benefits should be gained by enabling civil radio applications in less used military and governmental bands (e.g. tactical radar, etc.)

Taking into account the 2G renewal processes beginning in several EU member states, the general liberalisation of spectrum usage could be advantageous by allowing telecommunication operators to increase the flexibility of using the radio spectrum which has been already assigned to them. For example, this should facilitate the transition from 2G to 3G.

5) What information and electronic communication facilities should be made available to facilitate implementation of secondary trading of rights to use radio spectrum?

In order to facilitate the before mentioned transparent, open and fair secondary trading process, a public database of information needs to be maintained. Determination of the information to be published in the public database needs to balance what is required for spectrum trading against security and commercial confidentiality considerations. An electronic database showing the frequency plan with information on the owner, restrictions in frequency use (technological as power emission allowed, guard bands, restrictions at borderline, service definition, license term etc.) and clear description of the regulatory framework including decisions by regulatory authorities or – if this should be the case – by courts which deal with frequency trading – could be included. Details should be discussed between member states and should be decided on an EU harmonised basis.

It has to be taken into account, that particularly in the case of mobile spectrum and associated fixed links, that if the network topology is revealed this would give rise to significant security as well as commercial issues. T-Mobile therefore is against the inclusion of the precise locations or frequency assignment details of fixed links contained in the public registry; however, the fact that T-Mobile has fixed links in for example the 38GHz band could be set out. With respect to T-Mobile's GSM and 3G licences, as these are national licences, it would expect high level national information to be provided rather than, for example, details relating to individual base stations.

Scope of trading – change of use, reconfiguration

6) Is the possibility to reconfigure rights important? If yes, what kinds of reconfiguration do you consider would benefit consumers, businesses and users of spectrum? (geography, frequency, time, other)

T-Mobile considers the main objective of spectrum trading to be to increase flexibility and efficiency of spectrum use and to ease the availability of radio spectrum according to spectrum user needs. In that respect, after controlling for harmonisation, competition, technological and interference aspects etc., it makes sense to allow the reconfiguration of licences and rights as needed. In particular, it is well known that depending on the population density, the use of a

frequency band can significantly differ in different geographical areas. The possibility to overcome these difficulties on a time, frequency or geographical basis should be allowed by the regulatory framework.

Another aspect is related to the use of a particular technology which is often attached to radio spectrum rights of use. The possibility to change this technology should be considered carefully and submitted to constraints in order to avoid interference. For example, the guard bands should be reviewed, in the event of a change of technology, to determine whether they would be appropriate or sufficient, considering the characteristics of the new technology. The change of use of spectrum could lead particularly in the case of mobile services to unfair competition and problems with regard to roaming, cross-border co-ordination, interference between different networks and with services in adjacent bands. Therefore, preliminary market and technology studies seem mandatory before allowing any change of use, but in case these studies are successful, the possibility to reconfigure rights of use accordingly should be welcome.

As a consequence, T-Mobile believes that change of use of radio spectrum should be considered as a second step after experience has been gained with trading of rights to use radio spectrum.

Taking historic licensing and spectrum allocation processes and subsequent huge infrastructure investments into account, T-Mobile also believes that, in most cases, any pre-existing licence conditions (such as "roll-out" obligations) should remain with the spectrum using right, and should continue to apply following the spectrum trade.

7) Is the possibility to use the spectrum in a flexible way important? If yes, what kinds of flexibility do you consider would benefit consumers, business and users of spectrum (service, technical constraints, other)

The degree of freedom – including all measures to establish the degree of limitation (if any) - will influence the value of spectrum and most likely will be reflected in prices for spectrum, if the market mechanism is set in an appropriate manner. T-Mobile emphasizes that especially in the case of mobile services, customers benefit from harmonized bands, and open standards across Europe, by subsequent roaming possibilities, lower terminal costs, flexibility to change provider, etc. Therefore, flexibility and competition should focus at the services level, and careful consideration of all implications is required as flexibility at the infrastructure level is desired.

Freedom - especially with regard to technology - requires specific requirements with regard to the protection of other users (guard bands etc.). Given that investment and planned technology are based on the freedom to use spectrum in a certain manner, frequency owners need planning security that no change of usage rights will dramatically change the spectrum value itself and will not jeopardise infrastructure investments based on certain assumptions for spectrum use.

Therefore, an appropriate degree of flexibility in the use of spectrum is important in the design of a spectrum trading environment. Flexibility might take the form of:

- Change of technology (for example GSM to UMTS)

T-Mobile

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **8**

- Change of market (which may have implications on the deployment of transmitters, in turn impacting adjacent users of spectrum)
- Change of service type (e.g. between a fixed service and mobile service)

However, change of use of spectrum carries the above mentioned risk of market distortion and risk of increased interference for users of adjacent bands, and the same band in adjacent regions. As a result it is vitally important that change of use is subject to clear guidelines and approval by spectrum management authorities, and subject to public consultation.

8) To what extent is the tenure an important issue in assessing secondary trading? (indefinite, rolling, fixed, annual, other)

Tenure is a very important issue for all owners of spectrum, because the duration of the usage right combined with obligations, specific conditions regarding technology choice, etc. significantly determines the value of the spectrum. Furthermore, the introduction of a certain technology and the involved infrastructure investments require a minimum time for planning security and the reinvestment period.

Taking into account that mostly huge investments are needed in mobile telecommunications, T-Mobile emphasizes, that license terms must be very long (> 20 years) or preferably perpetual. Accepting that spectrum management authorities will need to have the ability to revoke licences in certain circumstances by giving appropriate notice and compensation.

9) Should the same rules and regulations apply for the whole of the spectrum?

a) Is there a need for different rules and regulations for different frequency bands? geographical areas? services? users?

In general, regulation should be as homogeneous as possible, supporting the transparency of rules and helping to increase the confidence of the industry. But T-Mobile also recognizes that there are some areas which need special regulation as there is scientific and/or public (for emergency, tactical, and other use) interest in specific spectrum which cannot be based on market valuation of spectrum.

Furthermore, in the case of commercial use of spectrum, T-Mobile considers that different rules and regulations might be required as there are some frequency bands where – due to competition, market and/or technological reasons - it is completely inappropriate to permit change of use, whereas for other frequency bands (subject to appropriate interference constraints) change of use will be desirable.

Especially, if trading of spectrum using rights makes it possible to substitute those services and technologies which have been subject to high price frequency allocations (3G), then trading can lead to a distortion in the market and could damage the market structure. For this reason long transitional periods and appropriate rules have to be established.

b) If you see a need for different rules and regulations in question 8a above, please give examples

See above.

Competition aspects

10) Should there be specific competition rules in relation to implementing secondary trading of rights to use radio spectrum, or is general competition law enough?

Although in the mid and long run, mobile as well as other communications and media industries should be ruled by general competition law at the service level, it is inappropriate to switch over to such an environment at the infrastructure level leaving network effects aside and not planning an appropriate transition period. Due to the historic development and huge investment in infrastructures on the part of the licensees, a change in regulation at the infrastructure level could result in substantial harmful effects for the development of the whole industry and significant distortion of competition at the service level and for service users. In the longer run, existing European and national competition law together with market and technological analyses might provide sufficient protection as far as a particular trade is concerned. Specific rules should follow the basic guidelines mentioned above: transparency, openness and fairness. These rules should be proportionate in order to prevent hoarding and blocking of spectrum resources for competitive reasons.

The role of the spectrum management authority

11) What do you see as the main responsibilities for a spectrum management authority in regards to secondary trading of rights to use radio spectrum?

The main responsibilities of the spectrum management and regulatory authority after controlling for competition, market and technological implications of each specific trading case in order to ensure efficiency and flexibility of spectrum use are:

- To set up the trading framework
- Define transmission rights
- Publish guidelines on the level of interference
- Monitoring and control spectrum use in order to ensure generally interference free operation
- Publish available information on tradable spectrum and status of processes in order to maximize transparency of the process and certainty of market players
- Manage disputes between spectrum users in specific cases
- At a later point in time: to examine proposals for change of use

Transmission rights

In setting up the trading framework it may be necessary to define the right to transmit for each licensee. Each transmission has the potential to interfere with other transmissions. The right for a party to use frequencies for such transmission must therefore be regarded in context with the adequate rights of other parties, which can result in some conflicts. For this reason rights for transmission and the associated right for interference has to be set in an appropriate

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **10**

framework to create a balance between all user of frequencies and to allow the efficient continued use of frequencies with maximum benefits and minimal restrictions and interferences for each user.

The definition of transmission rights will however be complex, issues that need to be considered include:

- (a) Transmission rights must be consistent with the interference rights of adjacent systems. Where they are not, an increased level of interference disputes will occur due to a conflict of rights, increasing the uncertainty associated with the use of spectrum and increasing risk in the spectrum market. This will also increase the costs for spectrum users and spectrum management authorities.
- (b) Transmission rights should offer sufficient certainty and protection to allow the deployment of high cost systems with minimised risk of unintentional non-compliance with licence obligations.
- (c) Transmission rights should be clear and explicit in the rights and obligations they impose upon users of spectrum.
- (d) Consistency with adjacent systems is typically determined based upon technical studies. These studies rely upon assumptions regarding system deployment to ensure compatibility with the interference rights of the adjacent system. Such assumptions limit the practical deployment of the system that may occur without a conflict of rights with the adjacent system. As a result there should be consideration regarding whether such assumptions should be included within the transmission rights.
- (e) When defining transmission and interference rights for the trading environment the spectrum management authority should ensure that they are compatible with currently deployed systems and licences.
- (f) All rights should be defined in terms of practical and simple metrics. They should be defined statistically for measurements. They should not incur excessive costs on users of spectrum to ensure compliance.

Guidelines on the level of interference

It is vitally important to a service provider to be able to estimate the level of external interference imposed upon their system, to enable them to provide appropriate quality of service and capacity to the end user. The level of interference within a band is fundamental to the licensee's ability to plan its business, and to identify the value of spectrum. Without clarity on the interference rights of a licence, significant risks are imposed on the use of spectrum, potentially damaging the success of a market in spectrum.

T-Mobile views the issue of interference as being one of the most critical in setting up the trading environment. There will be significant challenges in defining the right to interference including:

- (a) Transmission rights must be consistent with the interference rights of adjacent systems. Where they are not, an increased level of interference disputes will occur, increasing the uncertainty associated with the use of spectrum and

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **11**

increasing risk in the spectrum market. This will also increase the costs for spectrum users and spectrum management authorities.

- (b) Interference rights should offer sufficient certainty of protection against undue interference created by other parties to enable the deployment of high cost systems with minimised risk of devaluation by the actions of others.
- (c) It should be clear that the guideline level of interference will not permit third parties to transmit within the band.
- (d) Spectrum management authorities should not tolerate the breach of transmission rights, even where guideline levels of interference are not breached.
- (e) All rights should be defined in terms of practical and simple metrics. They should be defined statistically for measurements. They should not incur excessive costs on users of spectrum to ensure compliance.

The spectrum management authority should also become involved where an interferer can be shown to be in breach of their transmission rights, not purely where the guidance interference level can be clearly shown to be breached. Any increase in interference in a user's band reduces the value of spectrum to the licence holder. Spectrum management authorities should not permit a gradual degradation of a bands value, and should not require a licensee to wait until interference is above interference guidelines when it is the result of a breach of transmission rights. In addition identifying that the interference level has been breached may be complex within deployed cellular systems.

In the case of fixed links, T-Mobile would have serious concerns if the frequency assignment and interference rules set out in published national Frequency Assignment Criteria were to be relaxed or otherwise compromised. These criteria have been produced in a quality manner based on ETSI specifications and consultation with users. They effectively provide a good level of confidence that link performance and availability will meet expectations which is essential for operational telecoms networks.

12) To what extent is spectrum management authority approval of trades a benefit or an impediment to the development of a market for secondary trading of rights to use radio spectrum? Under what circumstances do you consider it would be necessary for a spectrum management authority to refuse a trade?

Generally, approval is a benefit, as it makes valuations easier and increases planning security for spectrum sellers, buyers and other spectrum users in adjacent bands. The spectrum management authority must set appropriate rules, and – normally - should not take influence in trading itself or overrule the results of the trading process. It can be needed in case that pure hoarding, blocking or orther anticompetitive outcome of a trading case has to be prevented. For those cases the regulatory body must have the right for adequte measures in the market, but this should be only an exception. In addition, this should be understood as proof for a non-optimal trading framework as well, which has to be improved in consequence.

To RSPG Secretariat
Date Apr 2, 2004
Page 12

13) What specific measures could a spectrum management authority take to handle the issues if secondary trading is introduced? (ex ante approval procedures, ex post notification, competition aspects, limit change of use, interference aspects, other)

T-Mobile is of the opinion that clear procedures for approval, notification, interference, and - at a later point in time - allowable change of use have be implemented by a spectrum management authority to create clarity in the market what trades are allowed. This will limit uncertainty by spectrum owners and make it less risky for them to invest. At least in a first harmonized trading system in Europe, ex ante notification of trading cases should be mandatory, switching to ex post notification in a later phase as enough experiences have been made. At a later point in time, ex ante approval of in case of trades with change of use. In addition, it would be desirable if there were a process for obtaining informal guidance as to whether the spectrum management authority is likely to object to the transfer on competition/regulatory grounds; parties would wish to avoid incurring significant legal and other costs if the trade was unlikely to go through.

For change of use an application for change of use should include technical studies to verify that the proposed change of use will not cause any interference issues to any other spectrum users. There should then be a public consultation. The spectrum management authority would need to examine these studies and the results of the consultation to assess whether the proposed change of use would cause any interference or other concerns before deciding whether to accept or reject the proposal.

There should be a process for appeal of the decision by either the party applying or any other party who believes that the proposed change of use will cause them for example interference concerns.

14) To what extent should the national spectrum management authority actively facilitate secondary trading of rights to use radio spectrum?

The spectrum management authority should provide an online database of information and the framework for trading. That aside, the market should be left to develop in the way that is most appropriate for the market. There should be especially no trade without demand for the spectrum concerned (see German guidelines for trade of spectrum using rights in the draft new telecommunications law (TKG-E)). Any fees for public involvement in trading processes should be limited to administrative costs.

Community aspects

15) Do you consider that adoption of individual regimes by EU member states will cause problems for consumers, businesses and radio users? If yes, in what ways and to what extent?

The implementation of any instruments to enable the transfer of spectrum using rights is under the responsibility of European member states. But as emphasized by the NRF and the spectrum decision especially, harmonisation of the regulations in the various EU is of outmost importance for the development of all European economies.

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **13**

In addition, as most telecommunication operators are involved in different countries, and cross border competition is going to develop, it is beneficial for all operators and prevents further diversity of regulatory environments in Europe. Therefore, basic guidelines should at least be developed and approved by all member states. (see also our remarks on question 4)

16) Do you consider that the EU should take measures to facilitate the implementation of secondary trading of rights to use radio spectrum? If so, in what areas and to what extent?

As said before, the European Commission should ensure a harmonization of the way secondary trading of rights to use radio spectrum is implemented in the different European countries. In the short term, EU and CEPT should continue to discuss the issue and confront views and global experiences as well as former experiences with transfer of licenses and spectrum in some European countries.

As in the case of the introduction of auctions, a detailed analysis of cases (e.g. from New Zealand, Australia, and the US) has to be done to prevent mistakes in rule setting. This could also lead to a pre-contest of possible trading parties in which basic requirements for running public networks and using spectrum are checked.

17) To what extent is European harmonisation of frequencies an important issue in regards to secondary trading of rights to use radio spectrum?

See above.

Related experiences and examples of secondary trading

18) What are your experiences with the current spectrum management regimes?

A, CZ, D, H, NL, UK

The spectrum management regimes have mainly worked well, although the introduction of "technology neutral allocation" has increased uncertainty in markets (e.g. in case of 450 MHz spectrum). The connection of technological and market issues and regulation seems to be improvable. In general, we do not expect to see large volumes of trading when it is introduced.

19) What are your experiences of secondary trading of rights to use radio spectrum?

A

The first case of 3G spectrum transfer in Austria has shown that adequate solutions are hard to find especially in this market due to the high license costs paid previously. Therefore, T-Mobile is in favour of getting trading of 3G spectrum using rights implemented in a later step following the proposal of the German and UK government.

To **RSPG Secretariat**
Date **Apr 2, 2004**
Page **14**

UK

Ofcom, in the UK is in the process of setting up its trading framework, its consultation has closed in February 2004. There will be a number of further consultations in the UK, the key aspects of the proposed regime that we have concerns with are:

- The length of the rolling notice periods, which are too short for licensees that need to make very significant investment
- The proposals for trading of fixed links which do not seem workable
- The proposal to continue incentive pricing once spectrum trading has been introduced
- The proposals on change of use where we have concerns about future interference problems
- The issues of defining interference and transmission rights

20) Please describe specific scenarios in which you consider that the introduction of secondary trading of rights to use radio spectrum would be beneficial

Implementation of transfer of spectrum using rights can make sense, where:

- Two or more operators in the same service decide to trade or even share or exchange their underused spectrum resources in order to optimise the production conditions;
- Operators can take advantage of unused parts of radio spectrum to rollout mobile coverage in rural areas with a low density of population;
- Low-used spectrum assigned to defence or emergency services could be allocated temporarily or in certain regions to wireless telecommunication operators;
- Spectrum could be transferred to operators, infrastructure and terminal suppliers on a geographic or timely restricted basis for testing new technologies or for R&D purposes

21) Any other comments

Incentive pricing

As the key rationale for spectrum trading is to provide an economic incentive for the efficient use of spectrum, T-Mobile does not consider that a further tool aimed at the same objective is necessary.

T-Mobile notes that in some member states NRAs have concerns that public sector organisations do not necessarily treat opportunity costs and capital expenditure in the same way as operating expenditure. T-Mobile has not seen any evidence for this position and if it is assumed that this is the case it is not proportionate for public sector financing policies to result in costs for the private sector. This argument may be one for having different systems for the public and private sector; however, T-Mobile believes that this would also be difficult to justify economically, and in its opinion, contrary to the spectrum management authority's legal duties.

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To **RSPG Secretariat**
Date **Apr 2, 2004**
Page 15

If incentive pricing is to be retained during the phasing in of trading, there needs to be a sunset date for the application of pricing. The level of pricing prior to that sunset date also needs to be such that it does not deter trading. It is clear that the pricing impact is asymmetrical. If incentive prices are set too low, then it would encourage trading, whereas if incentive prices are set too high the result could be no trading at all. This means that an appropriate safety margin needs to be incorporated in the calculation so as to be sure that the incentive price is not too high and discourages trading. If it is decided to maintain incentive pricing (as opposed to reducing pricing to the level necessary to cover administrative costs of managing the spectrum), this issue will need to be considered in much greater detail.

T-Mobile, 2nd April, 2004