



**Bouygues Telecom's answer to the public  
consultation on secondary trading of rights to  
use spectrum**

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Sector : Mobile network operator

## **Introduction**

Bouygues Telecom welcomes the possibility to contribute to the public consultation on “secondary trading of rights to use radio spectrum” organised by the Radio Spectrum Policy Group.

As a first comment, we would like to consider the two ways to address secondary trading:

- Firstly, secondary trading is proposed by some countries, organisation or people, as a general mean to manage spectrum in an efficient manner (economic approach). This approach is contrary to the historical way of managing spectrum in Europe. In few countries, where the liberalisation is pushed to its far end, the wish to answer the difficult question of the increasing demand for spectrum and flexibility, secondary trading has been introduced as an important tool for managing spectrum.

When considering countries outside Europe (US, Australia, New Zealand), we cannot conclude that this approach is successful: there are in fact very few real examples of trading. The market does not exist or is very static. Europe has a long experience of spectrum management and the approach is constantly evolving to meet market and public goals requirements. We consider that it would be more efficient to improve the current framework rather than withdrawing almost every thing by introducing a completely new spectrum management tool.

- Secondly, Secondary trading can also be seen as a simple management tool, in complement of others. In that view, it is possible to study case by case, Service by Service, for different parts of spectrum, the interest or not to introduce this new tool with the view to improve the use of spectrum or to answer a realistic need of the market. We think it would be more realistic and more efficient to follow this approach.

<h2><b>General questions</b></h2>
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- 1) **Do you consider secondary trading of rights to use spectrum to be beneficial to consumers, businesses and radio users? why/ why not ?**

When considering secondary trading, we have to distinguish the case where change of use is possible and the case where it is not possible. The change of use is generally understood as the possibility to change the type of Service (with the Radio Regulation definition of Service). The current state of spectrum planning in Europe shows that in a given Service, the type of use (technology, market, ...) is often defined and harmonized. This approach aims at increasing the size of a market for manufacturers, reducing harmful interferences, facilitating the circulation of equipments... On a technical point of view, we consider that the change of definition of a given part of spectrum can be seen as a change of use.

## **Secondary trading without change of use**

Consumers are waiting for the industry and operators in particular to develop services which respond to their needs in an efficient manner at an affordable price. In the mobile telecommunication sector, operators need a certain degree of flexibility to elaborate value added services and implement required technologies. This flexibility is beneficial to innovation and therefore to the consumers. Regarding spectrum availability, each mobile operator has the goal/objective to have access to the needed amount of spectrum, taking into account : the capacity to invest in the network for improving used spectrum efficiency, the competitive status of the market in which it operates, the capacity of evolution and the introduction of new services.

On the French market, if secondary trading of rights to use radio spectrum were to be implemented, the benefit for consumers would not be obvious, for two main reasons: the current mobile operators have already access to the spectrum they need. During several years, 2G spectrum were available without any demand from new incomers. Today, 3G spectrum is still available for a new incomers in mobile business. A new harmonized band is also planned in Europe to respond to the foreseen needs.

The situation is quite similar for the fixed service.

## **Secondary trading with change of use**

If we consider the secondary trading as a way to exchange spectrum rights of use with change of use, it seems to us that a lot of work has to be done before, to harmonize spectrum regulation between Services (broadcasting, mobile, fixed, and the specific case of satellites ...). A lot of new services (commercial or public services) can be provided by using technologies which are nowadays part of different Services: broadcasting of multimedia contents, access to internet ...

We consider that it would be more urgent to think about how to ensure competition on these converging markets and for these technologies. As an example, the converging markets and technologies should be encouraged or associated with the harmonization of spectrum fees in order to reduce the current important differences. The complexity of the different laws governing those Services can also be seen as a factor against flexibility and innovation.

The case of spectrum trading with change of use in the same Service (Mobile for instance) is more complex to analyse and needs to be studied on a case by case basis. We consider that flexibility in this area still exists: there is licensed spectrum for a lot of different types of usage: public mobile networks, PMR, WLL, fixed links .... There is also unlicensed spectrum in which the introduction of new services is easily made with little constraints and no fees for spectrum use! Since the last WRC, 450 MHz of new spectrum has been identified in the 5GHz band.

When trying to imagine the benefits of secondary trading with this kind of change of use,

the case which is often put forward is the access to the lower part of spectrum which provides a significant advantage in terms of coverage. It is maybe possible to improve spectrum use by sharing more, but it is a fact that frequencies in lower parts of spectrum dedicated to radiocommunication are scarce, bandwidths are smaller, and that increase spectrum efficiency is the counter part of more investments in the networks.

## **Perspective**

The interest of such secondary trading with change of use can be beneficial for consumers, businesses ... in the very long term, in particular when new technologies (less spectrum and bandwidth dependent) will be available.

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

In Theory, the different forms of transfer can be of interest if the definition of property rights is clear enough clarified.

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

As we already explain, we are not convinced that a complete spectrum management policy by the market (economic approach) is desirable in the next future. As a tool (secondary trading) aiming at improving flexibility, the obligations or constraints which apply to a part of spectrum have to be very well defined. In particular as regard: power limitation, max interference level received, harmonization commitments, situation in border agreements, ... This goal is very difficult to achieve: for instance, some current users pay a lot of money to have access to frequencies in counter part they are granted an exclusive right of use, and the right to have this spectrum clean is also ensure. However, the authorization for technologies such as UWB or changes in the radio regulation through a world radiocommunication conference could reduce the value of the spectrum. It seems difficult to take this aspect into account in the scope of secondary trading.

### **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?**

At this stage, we do not see any advantage for consumers and operators to introduce secondary trading because we do not see any scarcity related to spectrum availability in the next future. In the mobile area, it has been decided by the French NRA (ART), after a public consultation to stay with 3 GSM operators who share the 2G spectrum on an equal basis.

As for 3G, a bloc of spectrum is still available.

A new band (2,6 GHz) should be made available between 2008 and 2010 depending on spectrum needs.

In the fixed service area, new bands are under study, the spectrum which has been attributed to WLL operators is partly available for new users after several bankruptcies.

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

No comments

<b><i>Scope of trading – change of use, reconfiguration</i></b>
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**6) Is the possibility to reconfigure rights important? If yes, what kind of reconfiguration do you consider would benefit consumers, businesses and users of spectrum? (geography, frequency, time other)**

In principle, the possibility to reconfigure rights might be interesting as it will enable disaggregation of spectrum. Theoretically, we can imagine that mobile operators need less spectrum in areas with low population density (rural areas for instance) so that the spectrum can be better used by other "users". This scenario imposes in fact that change of use is permitted, otherwise, all mobile operators have the same type of needs and consequently, there is no interest to exchange rights of use on radio spectrum in rural areas. As a consequence, we consider that the possibility to reconfigure rights is not important before change of use is possible.

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

Yes. For network and service providers, it is important to bring to the market, the right services at the right time. Before implementing very complex secondary trading procedures with change of use in countries where the current regulations between Services (broadcasting, mobile, fixed) are so unharmonized, it would be more efficient to increase flexibility in the way each operator can use its spectrum. Such policy could give more flexibility to the operators when choosing the technologies they need. In that way, we can loose in terms of harmonization but get more from innovation, competition on the market. This kind of flexibility is easier to introduce than secondary trading, in the sense that interference management, for instance, could be better managed by a single user using different kind of technologies.

During the WRC 2003, one agenda item concerned TWIMS (Terrestrial Wireless Interactive Multimedia Service), which is a way to address the question of convergence (between technologies and Services). It should be studied more in-

depth as it is a way to improve flexibility.

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

In a lot of cases, investments for the development of innovative services based on radio technologies require long term and renewable rights to use radio spectrum. The duration of 3 G licenses in France seems to be appropriate. It should also necessary to take into account the case of unlicensed spectrum for which the rights of use seems to be indefinite (until the end of life of the technology at least). Any disruption on competitive conditions must be carefully treated.

**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?**

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

It is difficult to foreseen at this stage the way the same rules and regulations should apply to the whole spectrum. The current situation shows fundamental differences in terms of regulation between mobile, fixed, broadcast and satellite services. Those differences concern : technical conditions for using spectrum, level of fees, related "obligations", Secondary trading, presented as a tool, cannot in itself solve all those questions . However, the spectrum management authorities have to bear in mind competitive conditions when defining new rules and regulations.

<b>Competition aspects</b>
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**10) Should there be specific competition rules in relation to implementing secondary trading of rights to use radio spectrum, or in general competition law enough**

Some actors consider spectrum as a common asset which should therefore not be subject to specific regulation.

However, as stated in the electronic communication framework directive, national regulatory authorities shall ensure that competition is not distorted as a result of any transaction regarding secondary trading of rights to use radio spectrum.

In order to preserve and promote competition, operators should be free to decide whether to accept or refuse to transfer their rights to use radio frequencies and the principle of equality (as expressed in France through the equal allocation of frequencies to the 3 existing mobile operators) should be respected. The operators should not in any way be compelled to accept secondary trading, especially with regard to dominant and/or pan-European operators.

We can observe that European spectrum resources are concentrated in the hands of a few actors. Consequently, it is of utmost importance to ensure that secondary trading does not become another tool for dominant and/or pan-European operators

to expand their position to the detriment of other less important operators.

<b><i>The role of the spectrum management authority</i></b>
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**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?**

Spectrum is sometimes identified as a common economic asset like any other natural resources or equipments. We do not share this view as spectrum in itself is quite a universal physical unit. Therefore, it is logical to discuss trading of rights to use spectrum rather than spectrum itself.

The main responsibility for a spectrum management authority should be to define clearly the rights and obligations deriving from the rights to use a certain part of spectrum. As provided in the electronic communication framework directive, the national regulatory authorities (including the spectrum management authority) should be informed of any secondary trading transaction in order to control the operator's compliance with the defined procedures and to ensure global coordination regarding national spectrum trading.

As the use of spectrum in an efficient manner is complex, very technical, with international interactions we therefore consider that it will be necessary for spectrum management authorities to keep a very significative role.

Hoarding is a also very important risk when introducing secondary trading. We often hear that the regulators will be preventing spectrum concentration .... It is unrealistic because it is impossible to pre-define what is the "acceptable" and/or "authorised", spectrum quantity for one operator: the amount of needed spectrum being too dependant of business planning, investments, technical value of the spectrum (lower or upper part of the spectrum, harmonisation of the used frequency bands ....). This risk has to be strongly managed by regulators but we think this question is so strategic and political that the advantages of flexibility and transparency which is sometimes associated to secondary trading are lost.

More generally, spectrum management authorities have to ensure the rights of use which are provided to users. This implies that : the level of interferences is controlled, the obligations attached to the rights to use are checked, the bands which have been usefully harmonised are not broken up ... The rolling out of complex systems (like GSM or UMTS) requires important investments which must be associated to a long term period of stability.

**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?**

No comment

**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, other)**

No comment

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

No comment

<b><i>Community aspects</i></b>
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**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 ?**

Generally speaking, there is an interest to harmonize as much as possible. But it seems to us obvious that those in favour of secondary trading are particularly interesting for various reasons: facilitation of new incomers, consolidation of industry, dogmatic reasons, economic approach, flexibility to get more spectrum ... It would therefore be more efficient to let each Member State, make its own experiments or find solutions for each specific (national) situation.

However, the question of border coordination may be important (for consumers) in the case when one country introduces secondary trading in front of another. This problem is even worst when change of use is allowed. This question remains important if all Member States were to introduce secondary trading at the same time.

**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 what extent ?**

As explained before, we think that secondary trading of rights to use radio spectrum can be studied as a complementary tool management for very few cases... These studies should be done at national level to better take into account the specific situations of the



markets, regulatory constraints, geography, industry ... Because spectrum is not a “transportable” asset, for terrestrial services, there is no European market for spectrum.

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

No additional comments

<b><i>Related experiences and examples of secondary trading</i></b>
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**18) What are your experiences with the current spectrum management regimes?**

When thinking about the adaptation of the current spectrum management regimes, we consider that the main goals should be:

- to introduce more flexibility in order to facilitate innovation while keeping advantages of harmonisation
- to better take into account the convergence of technologies and services
- to better balance spectrum fees between spectrum users

Otherwise, Bouygues Telecom which operates only in France, is satisfied with the current spectrum management regime for telecommunications which is flexible enough to make frequencies available at the right time and the right place.

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

We have no real experience of secondary trading of rights to use. But if we consider secondary trading as a tool for introducing flexibility, we can say that the way we get 1800 Mhz spectrum from the French ART after constructive discussions with Ministry of Defence and ANFR is a good example of flexible change of user with change of use without any formal “secondary trading procedure”. The negotiations between the three GSM operators and the French regulatory body to make possible, access to 900 and 1800 MHz for all operators is another good example of flexibility, change of users without formal secondary trading.

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

A lot of scenarios for which secondary trading is seen as a possible solution to improve the situation have already been proposed. We would like to comment some of them.

***1) Operators in the same service trade underused spectrum to meet peaks of demand.***

*The frequency planning of an operator for a coverage zone is optimized for the zone to be covered. It depends mainly on the geographical extent/dimension of this zone, the population density which has an impact on the expected traffic, the required Quality of Service, the geographical peculiarities of the zone (flat or highly fragmented terrain), or other technical constraints such as power limits or lack of frequencies due to cross-border coordination agreements. Establishing these frequency plans is a time consuming activity that cannot be done dynamically on an hourly basis. It has to consider sets of frequencies (as opposed to single frequencies), which are part of the frequency reuse scheme.*

*Following the negotiations related to GSM 1800 in France, involving the ART, Bouygues Telecom, Orange France and SFR, all three operators agreed to swap frequency blocs in the 1800 MHz band in order to simplify and optimize the frequency scheme. This swapping required the availability of some unused frequencies to start with, and each step had to be carefully planned. The switching was performed automatically and controlled by the Operations and Control Center of each operator, but some incidents still occurred. Some older types of base stations did not switch automatically, and needed the intervention of network technicians.*

*The swap activities were exclusively done at nighttime, when the traffic for each operator was at its lowest point. Still then, it required the interruption of some on-going communications, which had a negative impact on the perceived Quality of Service of the operator. The overall swap operations took place over a couple of month.*

*Dynamic swapping of frequency blocs also assumes that there is an hourly difference in the peak traffics between operators. Given the great number of customers per operator, a fundamental difference in the behavior of the customers from one operator to another is unlikely to appear.*

*This virtually excludes dynamic swap operations to be part of spectrum trading as the ones proposed in scenario 1.*

*This scenario also assumes that there are large parts of unused spectrum. Our own experience shows us that the spectrum usage is shaped to meet the local demand. In urban areas, the frequency reutilization scheme is first diminished from very large reuse patterns with up to 21 different frequencies, to very small patterns where each frequency is reused in each cell through a frequency hopping scheme. At the same time, the network is densified up to a certain point. The ratio of size between rural cells and dense urban cells is in the order of 200 to 400. This leads to a very homogeneous utilization of frequencies over the whole country.*

*An alternative to the trading of spectrum that is “underused” by one operator in order to meet a peak demand of another operator would be to allow local roaming. The customers of the congested network could then switch to a*

competitor's network. Such a local roaming is technically equivalent to international roaming, but it is generally prohibited by national regulators in order to incite network operators to enlarge their own coverage.

*In our view, local roaming is a more realistic scenario than the leasing of frequencies in order to meet peaks of demand.*

## **2) Swaps of spectrum at 900 MHz and 1800 MHz between licensees to enable them to accommodate wideband technologies like CDMA.**

*As in scenario 1), swap operations do not need spectrum trading to make them happen. If the operators keep the same amount of frequencies, or will have the same amount of frequencies at the end of the swap operation, there is no need for spectrum trading.*

*Such spectrum swaps do not by themselves create a fluid spectrum market, as they are performed only once (or a few times), in order to remedy some inefficient situation where operators have very fragmented spectrum assignments.*

*It has to be noted that the use of wideband technologies like CDMA within the same band as GSM (TDMA) requires relatively large guard bands. The compatibility between GSM and UMTS has been studied by 3GPP in the 1900 MHz and 1800 MHz bands. More recently, CEPT analyzed the compatibility between CDMA-PAMR and GSM around 900 MHz. The guard bands are in the order of 5 MHz to 10 MHz between TDMA and CDMA technologies. This yields an increased spectrum need for operators intending to accommodate wideband technologies along GSM in the 900 MHz and 1800 MHz bands.*

*In our view, the scenario of an GSM operator in the 900 MHz giving up completely its 900 MHz frequencies, in exchange of 1800 MHz frequencies concentrated in a smaller number of blocs is highly unlikely. 900 MHz frequencies are needed in both rural and urban areas. In dense urban areas, they improve significantly the deep indoor coverage.*

*In France, there is no distinction between rural and urban operators: all three mobile phone operators have a national license.*

## **3) Operators take advantage of unused parts of spectrum eg. to roll out mobile coverage or FWA in rural areas.**

*There are several possibilities to promote wireless in remote rural areas without any secondary trading procedures.*

*In the United States, rural cooperatives or small telephone companies have bought rural licenses to provide services for a niche market. The big carriers do generally not want to invest money into places with low return, but*

*businesspeople or communities in those areas sometimes do. These initiatives sometimes also benefit from government subsidies.*

*In France for example, the coverage of rural areas is equally important. However, the national regulator has chosen a different approach: in the framework of the renewal of the GSM licenses, the coverage obligations of Orange France and SFR have been set to 99% of the population covered by GSM in 2007. In addition, their UMTS coverage obligations have been revised to 58% of the population at the end of 2005. The coverage obligations that will apply to Bouygues Telecom at its own terms will be similar, if not equal, to the ones of Orange France and SFR. This means, that by the end of 2007, there will be less than one percent of the French metropolitan population that will not be covered by GSM/GPRS and possibly EDGE services.*

*One could consider that in rural areas not all frequencies are needed to meet the relatively low traffic requirements for GSM, and that a part of these frequencies can be used by other technologies such as WiMax that are seeking frequencies below 2 GHz.*

*We consider that the amount of frequencies that could potentially be released in rural areas is generally overestimated. In rural areas, the main objective of an operator is to provide very cost-effective coverage. There is generally a perequation between the profitable network operations in dense urban areas and the loss-generating network operations in sparsely populated areas. The operator often uses very large frequency reuse patterns, and uses a bigger amount of frequencies than for the same population in dense urban areas.*

*The leasing of frequencies to other services than GSM in rural areas also raises some difficult issues of border coordination between rural areas, used by WiMax, and urban areas, used by GSM.*

*Furthermore, the GSM900 and GSM1800 have been identified together with the 2500 – 2690 band for IMT-2000 at the World Radiocommunications Conference 2000.*

*In the public communication on the revision of the UMTS coverage obligations of Orange France and SFR, March 9<sup>th</sup>, 2004, ART wrote that the objective of providing access to the greatest number [of French citizens] has to be maintained. ART considers that in order to meet this objective, innovative solutions such as the use of lower frequency bands such as those currently used by GSM (900 MHz), can be studied, thus allowing the coverage of a larger part of the French territory at lower cost. Within CEPT (ECC/PT1) the spectrum issues of UMTS at 900 MHz and 1800 MHz will be studied in the 2004-2005 timeframe.*

*At the appropriate time, GSM operators will migrate their GSM networks in the 900 MHz and 1800 MHz bands to UMTS. They will then need more frequencies than will just be required for a single-technology network (GSM/GPRS/EDGE only*

or UMTS only), as there will be some dimensioning margins in both technologies. As discussed in scenario 2), there will also be a need for guard bands between the different GSM/GPRS/EDGE and UMTS blocs of an operator, or between two adjacent operators.

Thus, the leasing of frequencies in the 900 MHz and 1800 MHz bands to other services than GSM could hamper the migration from 2G to 3G in those bands, and thus the deployment of 3G services in rural areas.

**4) Parts of low-used defense or emergency service spectrum could be leased to commercial operators to permit time or geography-based sharing.**

With this type of proposal, it has to be ensured that the public interests of defence or public protection and disaster relief operations are maintained. It is not obvious how a temporary commercial use of this kind of spectrum can be automatically ceased in case of an emergency, eg, without interference to defence operations or public protection and disaster relief operations.

In France, we observed that the spectrum management authority in charge of telecommunication (ART) discuss on a regular basis with the Ministry of Defense, directly or in the ANFR group framework. These discussions are sometimes concluded by swap of frequencies between the two administrations in order to meet spectrum requirements for commercial purposes. We are not convinced that direct discussions between potentially new incomers and the Ministry of Defense could be more efficient than the current framework.

**5) Spectrum could be made available on a basis limited by time or geography for Test and Development**

In our opinion, spectrum trading is not necessary to get temporary licenses for test and development purposes as the current regulatory regime provides a framework for obtaining test and development licenses that are limited by time or geography.

In the higher frequency bands, there is no problem to assign free spectrum for such test and development licenses. However, below 3 GHz it is very difficult to find spectrum that is not assigned to some spectrum user. In this case, an arrangement has to be found with the current spectrum users — broadcasting, military, or commercial — but this arrangement does not necessarily yield in a financial compensation. During the annual 3GSM Congress in Cannes for example, the three GSM operators make available some amount of spectrum free of charge to the equipment manufacturers in order to demonstrate new technologies or services.

**21) Any other comments**

No comment