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Generalitat de Catalunya  
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i Societat de la Informació**

Response of Generalitat de Catalunya to the  
public consultation on the RSPG Opinion in  
preparation for the  
Radio Spectrum Policy Programme (RSPP)  
for the RSPG services

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## Introduction

At the Lisbon European Council of 2000, the EU was proposing to make Europe "the knowledge-based economy more competitive and dynamic of the world capable of sustainable economic growth with more and better jobs and greater social cohesion ". From that date, the Catalan society began a new debate on what public and private actions to be taken place in Catalonia in the knowledge society, to ensure the welfare of the citizens of our country and to encourage the impulse of our economy and its growth, both quantitative and qualitative.

The inclusion in the Information Society is one of the most important challenges of these advanced societies. The creation of a new future economy based on knowledge and information technologies (ICT) is of great strategic importance to Catalonia. Thus, networks and electronic communications are in the same way that roads, railway lines and power grids, basic infrastructure to achieve social and territorial cohesion of the country, and ensure the competitiveness of industry and economy. Since it could not be in other way, this growth must be sustainable and respectful of people and environment friendly.

The model of society in developed countries corresponds to an increasingly globalized society, but at same time more individual, a society that already fulfilled general objectives of the group, has tended in recent years towards to hatch out individual values, everyone personal values and his/her rights as a person, the right to personal independence, the right to the leisure, ultimately to be unique within the group, has caused, as a result of the need for communication and mobility of the individual, a real individual and collective explosion of a increasing use of the services offered by wireless electronic communications networks.

Thus, together with this society, a more agile and more dynamic society day by day, in short, a more mobile society, electronic communications could not be left out and therefore have experienced a trend towards mobility.

The electronic communications networks tend to converge, converging technology (architecture) while enhancing the mobility services (the first: mobilizing voice service, afterwards mobilizing the office, the personal e-mail, the entertainment, etc.). The forecasts point to an intensive use of wireless communications networks, particularly using mobility, and therefore we must have sufficient spectrum to meet this new demand while maintaining the services that have traditionally employed spectrum and new innovative services that may be planned.

The need to make efficient use of radio spectrum is mandatory, and planning it in a flexible way is also necessary as it is a scarce resource that must be handled with care and foresight of the future in order to accommodate the hatch out of electronic communications services based on wireless technologies, and also services that have traditionally used the spectrum, which are numerous and range from broadcasting through the radio navigation (nautical and aeronautical), public safety, remote control, radio astronomy, the radiolocation, and more.

There are many sectors of society that benefit directly or indirectly from technologies that use radio spectrum for their operation. As an example, consider the need for communication of a particular person (mobile telephony), or the need for airspace management (radionavigation), both needs employ technologies that use radio spectrum for achieve its goal, so both requirements can be met if and only if one does not interfere on the other, which leads us to



think about the crucial importance of the planning of radio spectrum to avoid harmful interference.

Therefore, we believe that a planned and efficient use of spectrum will provide the necessary certainty to industry that allow economies of scale, and also be a catalyst for innovative services to satisfy various needs of individuals and collectives of our society, not to mention the increase in machine-machine communications that means the "Internet of things". The intensive use of services will enable the growth of markets, leading to greater investment in R & D & I. This is the point where circle is closed, since greater research and development means more innovative devices and services, that finally means the market will grow further.

It is in this context that if we do well to plan the radio spectrum in an appropriate way, Europe can become again, as it was in the past, a world leader in innovative technologies and services based on the use of radio spectrum. The strengthening and creating new innovative electronic communications markets at the European level is reflected in new and better services for consumers that allow the growth of the European economy and social cohesion.

Therefore, without losing the focus that the goal must be a better service for European consumers, we also emphasize the importance of harmonizing the approaches of different member states in these global actions to ensure critical mass markets help develop innovative technology and services at European level with economies of scale.

In this sense, we consider very positive and successful the policy on common radio spectrum at European level as set by the Directive 2009/140/CE<sup>1</sup>, inserting Article 8bis to the frame Directive, based on close cooperation Member States with the Commission on strategic planning, coordination and harmonization of the use of radio spectrum in the European community, to achieve the objectives of the European agenda in 2020.

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<sup>1</sup> DIRECTIVE 2009/140/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 November 2009, amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services



## The digital agenda from the European regions perspective

### *Electronic communication infrastructures planning*

In 2004, when the Master Plan for Telecommunications Infrastructures of Catalonia was written (framed in the plan period 2004-2008) we were conscious of the cost required to bring electronic communications services into the territory. Given the available budget, and given the opportunity to solve more than one service over the same infrastructure it was decided to promote the radio communication infrastructure (communication towers).

Therefore, the Government of Catalonia launched the Catalonia Connect<sup>2</sup> plan which aims to provide broadband access, mobile telephony and digital terrestrial television, to all the population centres of 50 or more inhabitants in Catalonia, and broadband access and mobile telephony in all industrial estates before the end of 2010. To do so, we thought of a single infrastructure that can sustain multiple services, such as DTT, mobile telephony or broadband, while improving the coverage of emergency services based on TETRA networks, all these technologies are using radio spectrum. The plan starts from detailed knowledge of state services, the inadequacies, taking profit of existing infrastructures (site-sharing), and the planning of new infrastructures when necessary.

The management plan proposes several solutions taking into account the services and their regulatory regime. Thus, in the case of broadcasting, in particular the national channels (the Catalan Broadcasting Corporation), the action is based on public resources. For broadband services, the awarding of the rural network project for licensed operators method is used (of which currently only operates Iberbanda in the Catalan territory). Furthermore, for mobile services the method used is the collaboration agreement based on the willingness of licensed operators (Movistar, Vodafone, Orange and Yoigo) because we have no regulatory power over the market.

To make it possible have been necessary several agreements with the agents (operators) who are the true holders of the rights of radio spectrum use, the rights to act as an electronic communications network operator. During this close collaboration we have observed that while in urban areas a high degree of deployment of 3G networks has been achieved, not without some difficulties, some agents have not yet deployed mobile broadband in rural areas, they are waiting for an authorization of Spanish government<sup>3</sup> to use UMTS / HSPA in the 900 MHz band.

Once queried about why, the agents considered non-economically viable deployment of mobile broadband in rural areas based on the use of frequency bands 1.8 GHz, 2.1 GHz and 2.6 GHz, and therefore the authorization of the Spanish government for deployment in the 900 MHz frequency will be very welcome. Spanish government would like a consensus among the agents for sharing the 900 MHz band (spectrum refarming) avoiding

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<sup>2</sup> Catalunya Connecta plan: <http://www.catalunyaconnecta.cat/>

<sup>3</sup> Spanish Government authorization to use 900 MHz band for UMTS/HSPA will come via the Law of Sustainable Economy which is currently in draft and has just entered the Spanish Courts.



anticompetitive situation. The lack of radio spectrum available in the short term has led to complex and lengthy negotiations between the agents to reach a consensus on sharing the 900 MHz band. The Spanish government would like the agents to reach a consensus by themselves before implementing a solomonic solution, for which Spanish government is preparing a regulation: the new Law of Sustainable Economy, coming soon (setting up radio spectrum rules).

We believe that the emergence of wireless electronic communications, especially mobile communications, requires the allocation of more spectral resources at 800 MHz or 900 MHz for this purpose. As the digitization of terrestrial television allows more efficient use of spectrum, and thus the same TV channels or even more are broadcasted but using a smaller amount of spectrum, we fully agree that liberalized spectrum that represents the digital dividend is assigned to electronic wireless communications systems that allow general public and public administrations access to broadband services, regardless of their geographic location. We believe that this digital dividend should be used mainly to secure access to wireless broadband in rural areas, given its better propagation (more distance coverage).

Therefore, as we already said in the response to a public consultation issued by *Ministerio de Industria, Turismo y Comercio* of the Spanish government, *regarding the use of the frequency band from 2500 to 2690 MHz and possible new forms of exploitation of the frequency bands of 900 MHz, 1800 MHz and 3.5 GHz*, and also as we already said in the response to public consultation issued by European Commission *on transforming the digital dividend opportunity into social benefits and economic growth in Europe*, the Government of Catalonia agrees the use of the 790 to 862 MHz band to be allocated for wireless electronic communication systems.

However, we believe that the digital dividend created at the 800 MHz band (790-862 MHz) will be insufficient in the medium term, given that broadband services based on IMT-2000 or IMT-Advanced technologies group, although allow scalable channelization, will require channel bandwidths of about 20 MHz or more to offer high speed services. If we want a competitive market, it is clear that more spectrum will be needed, in other words, we must find more available spectrum below 1 GHz.

## *Spectrum management*

The harmonization of the 900 MHz band prepared by Directive 87/372/EEC was a vision of what would be successful trans-frontier services, or also called pan-European. Today nobody doubts that the frequency harmonization is necessary in order to enable the interoperability of terminals and networks, so that the user terminal and the network can connect regardless of the country of the owner of the country visited. Therefore it is necessary harmonization of frequency bands to be used in pan-European level to enable this interoperability to make seamless services available anywhere.

The flip side of the coin is the harmful interference, and we take the opportunity of this public consultation to emphasize that the country borders are a complex scenario in which electromagnetic waves do not stop. There are many services that may be affected by the complexity of the scenario on the country border, but, in the case of mobile communications is much more evident. Bear in mind that coordination between the agents that use the



spectrum on either side of the border is very important to minimize interference. In the case of mobile communications becomes more evident then a high level coordination is necessary so that the user does not suffer from interference resulting from the reuse of frequencies on either side of the border. It would be also nice the user could visualize very clearly which operator is offering the service at any time in his/her terminal (for billing issues in roaming situation). Our Secretary's Office of Telecommunications has received complaints from users who are roaming without having left the country and thus they have seen their bills increase, due to roaming of the phone-terminal or datacard.

As for mobile communications, we believe the border areas should allow a sort of "smart roaming", so that a user who lives within the area described geographically and enclosed (duly registered), is not punished with a roaming bill because his/her terminal was camping on a cell across the border without having actually crossed the border. In these cases, the user has used a service without knowing that it has been served by an operator on the other side of the border, as far as we know it happens in the trans-border area between France and Catalonia (La Cerdanya), and others.

If the scenario is the border between two Member States, we believe that harmonization of frequency bands (same frequency-use is allocated on both sides of the border), and coordination of agents, should mean less interference. In this case the "smart roaming" agreements should be possible between the agents to reduce the inconvenience to users.

However, if we consider as scenario the border between a member country of the European Union and non-member country of the Union, then the negotiations to reduce interference should be brought at the European Union level, between the Union and the non-member country.

### *Digital dividend*

We would like to talk about the size of the spectral band of what we call digital dividend. We believe that more studies are needed to be done to see if in the future more spectrum around 800 MHz would be necessary for electronic communications, ie, a portion exceeding 72 MHz obtained using the current approach (790-862 MHz). The main reason to think about it is the good radio propagation conditions that make these frequencies suitable for mobile electronic communications.

If we consider the 35 MHz (FDD) allocated at the current 900 MHz band for mobile communications, together with 30 MHz (FDD to be realistic) that may be allocated at 800 MHz band, all together makes a total of 65 MHz FDD, to be distributed among the agents operating in free competition. If we consider that the IMT-2000 and IMT-Advanced technologies could use up to 20 MHz FDD blocks to offer the highest speed, then we come up there will be a maximum of three real competitors in such scenario. Therefore, we believe that in the medium term these 65 MHz FDD will be insufficient. We think more available spectrum in bands below 1 GHz to provide broadband services with quality service will be necessary in the near future.

On the other hand, we should consider the effort that will mean to adapt the broadcast centres emitting radio and television signals as well as the reception systems, at citizenship



side. If the findings of studies concludes we will require more digital dividend in the medium term, this issue should be treated as soon as possible to coordinate the re-tuning of transmission centres and facilities for reception to end users, not to cause inconvenience to consumers.

Regarding harmful interference, the Government of Catalonia considers that the use of the band 790-862 MHz by electronic communications systems must guarantee the absence of harmful interference in television receivers systems. In other words, technical parameters must be set in the facilities of electronic communications base stations, capable of using the band 790-862 MHz in order to prevent the downlink of these facilities produce harmful interference in the receiver of TV households in the vicinity of the location of the antenna (the EIRP of a sector of a base station is much higher than EIRP generated by a user-terminal).

Regarding the obligations associated with spectrum usage rights, as we said in response to public consultation of MITyC<sup>4</sup> and in the response to the consultation of the European Commission on the digital dividend<sup>5</sup>, we believe that the allocation of spectrum should be linked to a real commitment to use the assigned spectrum, planning for marketing service, planning for deployments and investments. It is part of the responsibility of public administrations to be aware of the allocation of a scarce resource like spectrum and auction/awarding it under strict control of use in order to benefit the consumer with attractive and competitive offers that involve services that increase the competitiveness of the country as well as the state.

So, we would approve of allocating spectrum under some conditions of technology neutrality, but at the same time, accompanied by some mandatory plans: service plan, an investment plan with specific deadlines, and a deployment plan. However, another option would be to award it with several mandatory conditions related to deployment plan and service plan revisable during the period of concession (i.e., control formulas after four years, and reviews every two years until the end of the right). The spectrum trading should be used to recover the spectrum in case of non-viability of the business project, but not to make a speculative use, penalties should be considered when not having achieved the goals.

Finally, we consider the allocation of frequencies in the band of the digital dividend should mean very clear commitments for deployment in rural areas.

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<sup>4</sup> Public consultation issued by Ministry of Industry, Tourism and Trade of Spanish government, *regarding the use of the frequency band from 2500 to 2690 MHz and possible new forms of exploitation of the frequency bands of 900 MHz, 1800 MHz and 3.5 GHz.*

<sup>5</sup> Consultation document, *Transforming the digital dividend opportunity into social benefits and economic growth in Europe*



## Regarding social inclusion, services for citizens

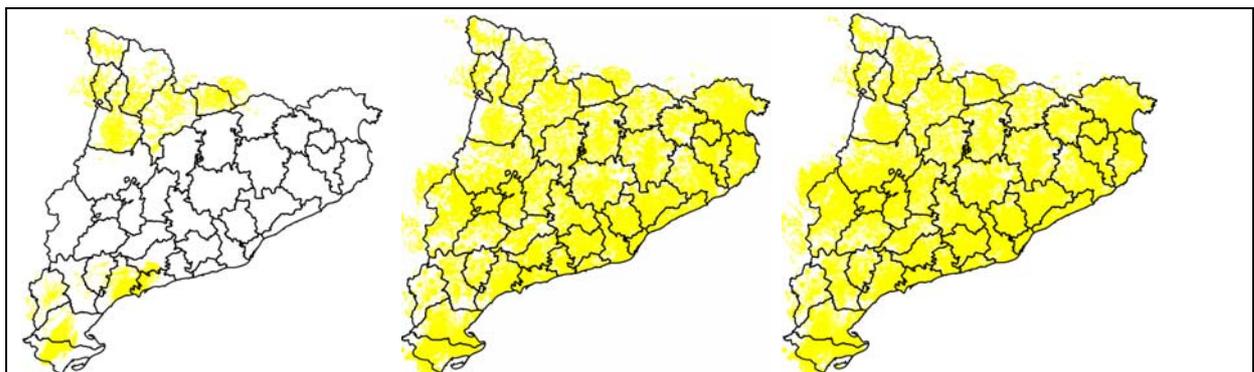
### *Bridging the digital divide in Catalonia*

We are convinced that the role of public administrations to reduce the digital divide is crucial. We also believe that collaboration between public administration and the agents (operators) is also a key factor. If we look at geographic areas that do not have broadband access, mostly rural, we will deduct that the technology bringing broadband access to that particular territory must be one of the following: cable (wired), terrestrial wireless or satellite. As the area covered is more complicated from orography point of view then cable is not feasible (not economically feasible), then the only option is technology-based wireless systems, terrestrial or satellite.

We will continue using the example of Catalonia. In 2004, the Government of Catalonia identified residential areas that did not have broadband access. In 2004 only 82.96% of the Catalan population had access to broadband, mainly cable. The Government of Catalonia launched the plan Catalonia Connect, which aims to provide coverage of broadband, mobile and digital terrestrial television, to all population centres with 50 or more inhabitants in Catalonia, and broadband access and mobile telephony to all industrial estates, before the end of 2010.

	2004	2008	2010
Population with BAR+ADSL			
Coverage (broadband)	5.918.999	6.560.832	6.978.032
% of population	82,96%	91,96%	97,80%

**Table 1.** Coverage of BAR<sup>6</sup> + ADSL 2004-2008-2010



BAR<sup>7</sup> 2004 coverage

BAR+ADSL 2008 coverage

BAR+ADSL 2010 coverage

<sup>6</sup> BAR: Banda Ampla Rural (Rural Broadband): using WIMAX (IEEE 802.16-2004).

<sup>7</sup> In the map of 2004 data is showing only BAR coverage, no data available from ADSL coverage



The results can be seen in Table 1 and also maps are showing the evolution of broadband coverage from 2004 until 2010. Catalonia Connect plan has improved the proportion of the population have access to broadband. The improvement has been achieved by using WiMAX technology (IEEE 802.16-2004) to provide wireless broadband access, which we called BAR (Broadband Rural). Digital divide has been significantly reduced by the direct action of the Government of Catalonia.

IEEE 802.16-2004 requires line of sight between the base station and the WiMAX user receiver. A block of 20 +20 MHz in the 3.5 GHz band is necessary to offer this service, the holder of this block is an licensed operator that has been awarded, with the aim of reducing the digital divide.

Having said that, we also would like to add that the current spectrum assignment for this operator is inadequate to provide mass access speeds exceeding 1 Mbps. However, in the same band there are other blocks of 20 +20 MHz that are not being used, since the current holder has not seen any business viability. This leads to a first conclusion: the need for efficient use of spectrum. Therefore, new regulatory mechanisms should be established for the spectrum bands that are not being used, either should be made available to the market by its current holder, or could be recovered by the public administration competent in management of radio spectrum to be placed again in the market.

At this point, the Government of Catalonia would consider the suitability of a certain spectrum assignment was granted to the autonomous regional governments by the competent authority of spectrum. The regional government, who would be the holder, would deliver it into operation through awarding it temporally (concession), the concession would be reviewed periodically, in order to review to goals: reduce the digital divide and look for territorial cohesion following the regional government criteria.

To finally answer the question, we think Europe and the Member States should promote mechanisms for collaboration and look for synergies between public administrations and market agents in order to reduce the digital divide, especially in areas where the market is not able to go, and therefore either there is no broadband coverage, or there is no a competitive scenario.

Finally, due to the better wave propagation for frequencies of current approach of digital dividend (790-862 MHz), these frequencies are of especially value for giving territorial broadband access, allowing high speed data transmission services in mobile scenarios, reaching territories where the service did not exist until now, thus increasing social cohesion in the region.

### *Spectrum for public services*

The European society establishes the universality of certain services such as social assistance, health assistance or education (in the obligatory stages, in middle stages and university). Even some of them are mandatory for citizens, i.e, the primary and secondary education (education under the scheme in Spain).



The provision of these services is through the use of various instruments as may be buildings (hospitals or schools), health personnel and teachers, and increasingly using information and communication technologies (ICT). As soon as these instruments are better and more efficient and provide more and better opportunities, universal provision of those services, some of them compulsory, benefits the citizen and the own administration, either directly or indirectly.

Nowadays, progress in electronic communications networks and their widespread availability (not absolute), especially with regard to broadband and mobility, are already widely used as an instrument for the provision of those universal services we talked about.

When it comes to the police and emergency Government of Catalonia's departments, they already employ digital technologies (TETRA) for their voice communications. However, the need for real-time data transmission between mobile units and central units let us conclude that more radio spectrum should be assigned to allow the police and emergency departments use mobile broadband connections.

It would be necessary to share with other Member States the common needs, so we can see points in common and therefore work towards spectrum planning, and collaborations taking into account all the stakeholders: government departments, operators and manufacturers, in order to allocate sufficient spectrum to ensure the universal services and public services.

Urgent actions are necessary to be taken for police and emergency departments of regional and local governments; we think they need spectrum allocation for wireless broadband mobile communications. Therefore, a frequency band for this purpose should be harmonized at European level.

## **New coming services**

Similarly we have already done with other services in the past, we must be able to make reservations of spectrum for new services, whether they are terrestrial or satellite based. In any case we will need a comprehensive study of which is the best spectrum band for a new service, if it is currently occupied by other existing services, should consider a reasonable transition period so that existing services can be migrated to a new band, or to use a technology that allows more efficient use of spectrum, thus the old service should be able to perform the same functions with less spectral assignment. In other words, either services must be migrated to other bands, or technological improvements must be introduced so that new spectrum dividend is generated allowing new service to be introduced using the spectrum released by the old service. In any case, the new introduced service should not generate harmful interference to existing services.

e-Health is a term widely known nowadays to denote how electronic devices can improve the observation / monitoring of our health. Some mobile operators have developed services and devices designed to increase monitoring of elderly people, especially developments about tracking systems that allow social services to track people with certain disabilities.



We know that companies are carrying out very important research-development-innovation (R & D & I) programs in the field of e-health due to it is considered a scope with a great projection in the near future for our society. The intercommunication of a sensor or a net of sensors to a data centre makes the use of radio spectrum necessary.

Moreover, there are devices for imaging based diagnostic using radio frequencies, such as MRI (Magnetic Resonance Imaging), which use radio frequency to obtain images of internal human body. We must understand that research in this field will continue to refine the technique, and therefore, the use of spectrum for scientific and medical equipment must be considered.

## **Regarding effective coordination at international level and negotiations with third countries**

Regarding the position of the EU towards the WRC, Europe must study in detail what is the best way for Member States to act in a coordinated way, defending the same position, to ensure that the EU objectives can be met.

The mechanisms that the EU can use to agree common positions must be studied, the positions must be favourable to the achievement of specific objectives of the Community, common positions must be debated internally and a consensus must be reached within the EU in order to each Member State to defend the same position during the WRC. Having said that, we must also consider which instruments that the EU may use to act as a single voice in international forums.

Due to there are third countries bordering the European Union, where use of the spectrum can impact so severely on the deployment of new services within the EU, and therefore, significantly affect the domestic market and the achievement of economic development objectives of the EU, will require negotiations between the EU and third countries.

In these cases, we believe the EU should be represented as a whole, in other words, the negotiations with third countries should take coordinated manner from the EU institutions with non-EU country.

## **Regarding refarming and competition**

### *Ensuring competition ensures innovation*

We must ensure the competition to ensure innovation, without competition there isn't innovation, without innovation there isn't progress, without progress there isn't leadership. Innovation is a sign of willingness for self-improvement. If we want the EU again lead innovation in the field of mobile communications, we need competition in the electronic communications markets.

As mentioned above, the digital dividend spectrum could represent an insufficient amount of spectrum to absorb the demand for medium-term real broadband necessities in certain scenarios where the capacity can not be supported in other frequency bands due to the fact that electromagnetic propagation is not suitable for the particular scenario. The agents who achieve an allocation in the 800 MHz band will have a unique (better) position to offer services in both urban and rural scenarios.

Moreover, in the Spanish case we consider it is necessary to take the opportunity of the 900 MHz band refarming process to introduce corrective measures to balance the allocation of spectrum between operators, currently unbalanced, and also allowing an assignment to existing operators that have a proven business plan but have no 900 MHz spectrum, in order to avoid distortions in competition.

When trying to implement the principle of technology neutrality implies studying the compatibility of different technologies when they are allocated in a nearby frequency or even they are adjacent. This compatibility study should lead to design and to innovate the best techniques that allow different wireless electronic communications technologies to be allocated in an adjacent spectrum band.

Many end-user services, especially those related to audio-visual content or even games, are delivered provided the existence of a broadband access, in many cases the access is desired in a context of mobility.

Spectrum-refarming implies the introduction of new radio technologies that enable mobile broadband over an already allocated spectrum band, so that the new technologies will have to coexist and to be compatible with other previous technologies, narrow band ones, following the principles of neutrality and flexibility to be applied to the allocation of spectrum. However, these broadband technologies need more bandwidth than already existing technologies need. Given that the current rights of use of the spectrum mean a right on a portion of the spectrum which is equivalent to a number of narrowband channels, that means some current spectrum owners/holders could not fit spectrum broadband channels in their current spectrum assignments.

Therefore, an unequal assignment of radio spectrum between competitors, with the introduction of wireless broadband technologies, will become an inequality more pronounced when mapping one broadband channel (or more) over the existing narrowband channels spectrum distribution. This situation would result in distortion of competition. An operator with more narrow-band channels allocated in the past, could now accommodate a greater number of broadband channels than its competitors.

Although there are some services for which large bandwidth is not necessary, the forecasts suggest that the new offered services will be based on mobile broadband. So if you want to preserve competition, disproportionate differences in spectrum assignment must be avoided and therefore measures to safeguard competition and balance the spectral distribution should be considered.



## *Spectrum trading*

Those bands of the spectrum not being used should be returned to the market again by the current holder, or be recovered by the competent radio spectrum administration. To do this, regulations are necessary in order to consider spectrum trading. In Spain, Royal Decree 863/2008<sup>8</sup> considers the secondary market for some spectrum bands, however, excluding mobile communications bands, i.e., 900 MHz, 1800 MHz, 2100 MHz and the band of 3.5 GHz are expressly excluded. However, the Law of Sustainable Economy, pending in the Spanish Parliament, amended this situation and enables the secondary market for these particular frequency bands.

We believe that authorization to use spectrum should be granted to viable business projects. The applicant project to obtain an authorization to use spectrum must be accompanied by a service delivery plan, an investment plan and a deployment plan with specific timeline. Do not discard to award the license associated with some deployment obligations or service obligations revisable during the concession period, enabling formulas of periodic monitoring.

The secondary market of spectrum would allow the market to recover a portion of the spectrum provided the owner/holder does not use it, regulatory mechanisms that prevent the hoarding and speculation of spectrum must be established. In case of non fulfilment of commitments made during the awarding process, a penalty could be considered. Similarly, in order to prevent hoarding of spectrum, there could be a maximum allocation quota of spectrum.

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<sup>8</sup> Royal Decree 863/2008, 23rd of May, for which the regulations regarding the development of Law 32/2003 for the aspects relative to the use of radio spectrum are approved. Law 32/2003, 3rd of November, is the Law General of Telecommunications.



## **Regional spectrum awarding for electronic communications**

The Government of Catalonia considers that there may be a regional market for electronic communication (targeting lower area than the country size), in this case radio spectrum allocation at regional level for electronic communication purposes would be necessary. Provided there is economic viability for the project, and the market is also interested in, a regional operator of electronic communications whose target is a certain region of the country could be established and awarded with spectrum.

It is possible that some regions have the interest in awarding spectrum, and others not, for the same country, however the capacity must be offered to all regions and wait and see the number of interested applicants. It is possible that there is a business case working for such a case, the project could be a region size, could be even bigger or even smaller, but in any case is smaller than country size. Every autonomous region in the country should have the right to award spectrum for electronic communications purposes. In the case of regions where there is market interest, the regional government may award the spectrum to a company. However, if there are no applicants to get the award, then, as a second round, the reserved spectrum should be offered to the agents operating at country level in order to use it anyway.

Viewing the evolution of the European market, the concentration of operators with the capacity of investment and economies of scale, it doesn't make sense these new entrants would compete with pan-European operators, so new entrants should show a business plan adapted to the targeted region, which would show their viability, investment commitments and associated deployment plans, and confirm the commitment of these obligations with appropriate penalties to avoid spectrum speculation.

Since we do not believe that the goal of these new entrants targeting regional areas is going to compete at country level nor pan-European, spectrum awarding should be accompanied by a commitment of the country level agents to give regional agents cost oriented carrier services, to help them ensure their plans and enable the seamless service at national and international level. Economic conditions should be better than the single negotiation as mobile virtual network operator (MVNO).

Specifically, we should establish, as in other occasions, a time frame during which the existing agents serve the new entrant meanwhile their own network is deployed. In the other hand, and looking for synergies, due to the new entrant's business model is based on the deployment rural network, there should be obligations for regional operator to provide roaming service to existing country operators that has not own infrastructure at rural level (rural roaming).

Therefore, the possibility of new entrants targeting regional scope should consider more ambitious regional deployment and regional coverage requirements compared to the requirements asked to agents targeting the country level. Regional spectrum awarding may be an instrument for autonomous regions in order promote broadband access and mobile

broadband services at rural areas where the country scope operators don't offer their services.

## **Citizens' perception of risk regarding radio-communications base stations**

The public has enjoyed wireless communication systems throughout the 20th century, as a consequence it has inevitably been subjected to exposure to electromagnetic fields (EMF). In recent years there has been an increase in the number of wireless communications networks, especially for mobile telephones. In order to bring their services to the public, radiant systems (antennae) have been installed close to inhabited areas, which has aroused concern in some people over the electromagnetic fields, as an environmental factor, on the people's health and over the visual effect on the landscape. This growing trend of public concern over EMF is recorded in Electromagnetic Fields, Special Eurobarometer 272a in which a significant increase is observed in the people concerned, when the survey made in 2002 is compared with the survey made in 2006.

The proliferation of opinions, often not accredited, on the "possible" effects of what is sometimes defined as "electromagnetic smog" or "electromagnetic pollution" on people's health has led some people to transmit this concern to the local councils, which have been disorientated and lacking sufficient information to give an appropriate answer. In some cases this situation has led to the paralysing of files for environmental licences for mobile telephone stations, which has worsened the situation even more, as it has led the public to consider that these installations were not "properly" legal.

Faced with this situation, some local councils have prepared specific regulations to "control" these installations. It is in this context that the Government of Catalonia prepared Decree 148/2001, of 29 May 2001, on environmental distribution of mobile telephone installations and other radio communication installations, which laid down the maximum permitted levels of exposure to EMF for individuals, a regulation which was inspired in Council Recommendation 1999/519/EC. Notwithstanding this regulation, in many cases the environmental and town planning files for installations remain paralysed by local councils and the feeling among the public is that they are not sufficiently informed.

On the other hand, internet and wireless communications, especially mobiles, have brought numerous benefits to our society and the environment, in particular in facing climate change, as is pointed out in point 7 of the European Parliament Resolution: Health Concerns associated with electromagnetic fields 2008/2211(INI), and as set out in the McKinsey report . The use of mobile telephones to access the pan-European emergency number 112 is of remarkable general benefit.

Having arrived at this point and considering the Commission report on the application of Council Recommendation 1999/519/EC (COM(2008) 532 final) where it is stated that there is no scientific evidence that EMF of radio frequency (RF) and intermediate frequencies (IF), when below the reference levels of the Recommendation, are damaging to human health; following the indications of the Recommendation itself to monitor the levels of exposure of



the public to EMF; and following the recommendations of the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) in observing the distribution of the public's exposure to EMF; the Government of Catalonia proposes to control this situation with the coordination of environmental and electronic communications policies, making a continuous evaluation of the EMF generated by radio communications installations and, in this way, contributing to the objective of action 13 of the "European Environment and Health Action Plan 2004-2010": Follow developments regarding electromagnetic fields through the contribution of data relating to the levels of EMF measured and evaluated in Catalonia.

It is in this context that the Government of Catalonia defines **Radio-electric Governance** with the principal objective of coordinating the Government of Catalonia's electronic communications and environment policies in order to improve access to wireless communications networks for the public in general, and for their social and economic activities in particular, by encouraging their ordered and sustainable deployment, respectful of people and environmentally friendly, thus ensuring that the general public and public administrations obtains the maximum benefit from the Information Society.

After finding that the regulation established did not lower social concern, we began to take measurements of EMF at particular points (spot measurements), using portable probes at those places where the perception of risk was highest, with the objective of checking whether the installations complied with the regulation and to demonstrate this to the people living close to the antenna. At that time we became aware of the importance of measurement in assessing an invisible physical phenomenon and to be able to offer objective data to the citizens. As the people mistrusted the owners of the installations (operators), arguing that they could have reduced the power of their emissions while our agents were present, we designed a pilot test for continuous measurement using EMF probes which were permanently installed in locations close to mobile telephone base stations. At present there are 134 probes in operation and 72 projected which are being installed. Using criteria of territorial equality, the pilot test considered placing these 206 probes in such a way that each district would have at least two of them (in Catalonia there are 41 districts).

Up till now, these probes have functioned as a pilot test, and we did not have a policy of disseminating specific results to the population. However, we have noted that the value of the EMF measured is increasing slightly, week by week. At present, and with the great experience accumulated around this subject, together with discussions held with all the stakeholders, the Government of Catalonia is designing this new policy (**Radio-electric Governance**) in order to govern this situation and we are presenting it as a proposal to the LIFE+ 2009 Environment policy and Governance under the title of: *Radio-electric Governance: environment and electronic communication policies for deployment of radiocommunication infrastructures.*