



Telefónica Group response to consultation on draft RSPG Opinion on "Cognitive Technologies"

General comments

Telefónica would like to thank the Radio Spectrum Policy Group (RSPG) for giving stakeholders the opportunity to comment on their draft Opinion on Cognitive Technologies (CT). We consider this to be an important long term issue that is complementary to the previous RSPG Opinion on aspects of a European approach to the collective use of spectrum and a natural progression from the earlier RSPG Report¹. As we noted in our response to the consultation on the final draft RSPG Report, Telefónica continues to agree that cognitive technologies have the ***potential*** to play an important role in enhancing spectrum management by increasing the efficiency of spectrum usage, and to increase the opportunity for innovation in spectrum using industries, and it is therefore appropriate in our view for this Opinion to address the prospects for implementation rather than attempting to impose any particular solution on individual Member States for the sake of uniformity.

Telefónica also continues to believe that one of the most important considerations when assessing the potential of Cognitive Radios (CR) is the need for a global perspective. Not only are there significant economies of scale to be reached when technologies with global applicability are developed, but there are important lessons to be learnt for the business and regulatory environments in Europe from the experiences gained in other regions. We therefore welcome the inclusion of reference in the draft Opinion to the ongoing ITU work on Cognitive Radio (CR) and the section on "Work outside Europe", in addition to the review of work within the CEPT and ETSI.

The increasing demand on new electronic communications services and applications by users requires an increasingly efficient management of resources, including the radio spectrum. Within this context, Telefónica still believes that CR/CT should not be seen as a stand-alone issue, but as complementary to the current and future spectrum management regime, especially as we move in Europe towards greater flexibility/neutrality in spectrum usage. CR/CT can indeed assist in the move from relatively static spectrum management to a more flexible and efficient dynamic spectrum access management, as envisaged by the Radio Spectrum Policy Programme (RSPG). However, the development and implementation of CR/CT is still at a nascent stage. We consider that a gradual and evolutionary approach should be adopted in Europe, through close cooperation between industry stakeholders, regulators and other relevant institutions, before specific implementation proposals are made.

¹ RSPG10-306 Final, Radio Spectrum Policy Group Report on "Cognitive Technologies", February 2010.

Regulatory Implications

Telefónica agrees that the revised European regulatory framework currently being transposed into national laws and regulations is sufficient to support the introduction of CR/CT. We also agree with the assumption that the essential requirements of the R&TTE Directive fully apply to CR devices and do not need to be amended.

CR/CT allow devices to access both licensed bands and licence exempt bands. In addition there are two situations, which overlap to a large extent with these two licensing models, that use different sharing arrangements, vertical sharing (where there is a single primary spectrum usage rights holder) and horizontal sharing (where there is some or total sharing of usage rights). As we noted in our response to the public consultation on the draft RSPG Opinion on the collective use of spectrum (CUS), CUS complements individual usage rights, and we noted that with the definition of CUS adopted by the RSPG there are some instances, such as the private commons, where CUS is achieved within an individual authorisation. However, Telefónica considers that most services currently being provided over radio spectrum need individual rights to be granted in order to ensure an appropriate quality of service by avoiding the threat of harmful interference, and that this puts limits on the applicability of the hybrid (private commons) approach. It is our view that this requirement for guaranteed quality of service will also limit the applicability of CT in many licensed spectrum bands, especially where there is a primary rights holder, although we acknowledge that there may be exceptions (for example, the use of "white spaces" in terrestrial broadcasting bands). In addition, some CT are more applicable to shared bands, and others may be applicable only to licence exempt bands. Due to the different implications in each case, Telefónica believes that there is a need for a case-by-case, evolutionary approach to the introduction of CR/CT.

The greater degree of liberalisation in spectrum use that comes with the introduction of CR/CT implies more flexibility in the technical conditions associated to such use. Telefónica supports change of use in principle as a way to favour a more efficient use of spectrum, but believes that this must be accompanied by the introduction of a spectrum trading regime to gain the full benefits of a liberalised use of radio spectrum. The introduction of trading will, in particular, facilitate the potential use of CR/CT where there is a single primary rights holder. In addition, we consider it to be important to ensure that the detailed technical issues and international harmonisation questions surrounding liberalisation are resolved; this includes a detailed consideration of the implications of CT, otherwise there is a risk that interference problems surpass the potential benefits of greater flexibility in general and CR in particular.

Cognitive Functionalities

Although Telefónica agrees that cognitive technologies have the potential to play an important role in enhancing spectrum management, by increasing the efficiency of spectrum usage, we believe that further work is needed to examine different CR/CT functionalities (sensing, CPC, databases, or any combination thereof) before specific implementation proposals are made. The RSPG itself acknowledges² that:

- "Sensing is a technology that is still under development".
- "CPC as a concept is still very much in the equipment research phase."
- Even the database concept that appears to be favoured currently by the RSPG "will have to be further studied by administrations".

² RSPG10-348 Draft Opinion on Cognitive Technologies, November 2010, p.4, 5, 6.

RSPG Opinion

Although Telefónica agrees with the RSPG that the revised European regulatory framework is sufficient to support the introduction of CR/CT, we also agree that it might be beneficial for guidance to be developed within the CEPT regarding the use of databases (accreditation or certification, population and maintenance).

Since Telefónica believes that further work is needed to examine different CR/CT functionalities before specific implementation proposals are made, we also support the recommendation to consider the creation of a European platform to allow researchers, academia, industry and regulators to coordinate research activities. This platform, in our view, should also assist in the definition of requirements that may need to be provided to the CEPT and/or ETSI as they continue to develop their guidance and harmonised standards respectively.

Conclusions

Telefónica believes there is a need for further debate and engagement among spectrum stakeholders, including industry and regulators, before the widespread introduction of CR/CT. We support the ongoing studies and initiatives regarding CR/CT, in particular within the ITU, CEPT and ETSI. Further European R&D, for example through the JRC, should also be considered in order to address the challenges foreseen.

A harmonised approach, both at an international as well as at EU level, towards CR/CT is considered by Telefónica as the right way to move gradually forward in the implementation phase. Stakeholders need to consider technological, business and regulatory issues; in particular, business models are critical for success.

The significant amount of work still needed in the field of CR/CT confirms our view that careful management of the introductory phase is needed, to ensure an appropriate transition to the use of CR/CT within current spectrum usage and alignment with basic regulatory principles.

Experiences with pre-cognitive technologies need to be taken into account. Opportunities for further experience/trials in certain specific bands and applications (with lower demand) would seem to be appropriate. In particular, Telefónica supports the pursuit of the use of white spaces in the UHF band for CR.

The widespread use of CR/CT is still seen by Telefónica to be a medium-to-long term issue. Any steps taken should consider current spectrum users and uses, in order to avoid any potential disruption to their ongoing operations. There is a need for confidence to be maintained in the regulatory approach to spectrum management.