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EBU comments
on the RSPG Report on 'Cognitive technologies'
Final draft - 14 October 2009

The European Broadcasting Union[1] (EBU) welcomes the opportunity to present its comments on the Radio Spectrum Policy Group (RSPG) Report on 'Cognitive Technologies'; Final Draft - 14 October.

The RSPG Report on Cognitive Technologies is important because its provides an overview of the relevant technical and regulatory aspects related to the introduction of cognitive radio (CR) systems, including the experience with pre-cognitive radio technologies. The Report also helps to understand the possible regulatory approaches and identifies the relevant stakeholders.

The EBU Members follow with interests the developments in cognitive technologies and are interested in exploiting the benefits potentially offered by CR systems.

UHF band

We note that special attention in the Report is given to enabling cognitive access to the interleaved spectrum in the broadcasting UHF band (the so called 'white spaces'). This subject is of a particular interest for the EBU and our Members.

We share the RSPG view that the CR access to the white spaces in the UHF band shall be subject to the 'vertical sharing' approach where '*The cognitive radio is only allowed to utilize frequencies within the band as long as the existing user(s) is not affected, i.e. the cognitive radio must not cause harmful interference to the existing users. Depending on the spectrum rights of the primary user(s), the conditions under which the CR devices can operate are to be defined in advance by the regulator or could be left to the primary user.*' In the broadcasting UHF band the existing users to be protected are terrestrial television (DVB-T) and PMSE services.

We agree with the RSPG conclusion that *'receiver parameters of the victim services have to be known in order to be able to protect existing users*'. Given the large number of DVB-T receivers in use (e.g. 100+ million in Europe) and currently available on the market, the compatibility studies to define operational conditions for CR devices should be based on the parameters of these existing receivers.

The EBU is actively involved in the work of the ECC WGSE PT43 on 'defining technical and operational requirements for the operation of CR systems in the 'white spaces' of the UHF broadcasting band (470-790 MHz) to ensure the protection of incumbent radio users/systems and investigate the consequential amount of spectrum potentially available as 'white space".

Furthermore, potential disturbance to cable TV reception and other cable-based services (e.g. high-speed data services) should be considered when operational conditions for CR devices are defined.

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[1] The EBU is the world's largest professional association of national broadcasters, whose Active Members are public service broadcasters in 56 countries corresponding to the ITU European Broadcasting Area, which includes all European countries, Central Asia, North Africa and the Middle East. Associate Members include broadcasters from Canada, the USA, Japan, Mexico, Brazil, India and Hong Kong, as well as many others.

The EBU's purpose is to serve and support the interests of its Members, promote cooperation between broadcasters and facilitate the exchange of audiovisual content. The EBU works to ensure that the crucial role of public service broadcasting, which is central to Members' activities, is recognised and taken into consideration by decision-makers.

The organization provides services to the broadcasting community at large, along with expertise specifically to Members on legal, technical and programming issues. It also conducts economic and market analyses and offers targeted training programmes. For more information about the EBU: www.ebu.ch

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The amount of the 'white space'

Concerning the amount of the 'white space' potentially available for cognitive access technologies, we would like to stress the following:

- The interleaved spectrum in the broadcasting bands is already extensively used by wireless microphone systems and similar applications. These applications are essential for broadcast production and special events. Their importance has also been recognised by the recent EC Communication COM(2009) 586/2 on *'Transforming the digital dividend into social benefits and economic growth'*.
- In the light of the above, we welcome the RSPG conclusion that *'the concept of 'unused spectrum' should be managed carefully taking into consideration the relevant radio spectrum usage of a given frequency band. Assessment of the availability of 'unused spectrum' needs to take into account the various spectrum usages in a given band'*.
- Furthermore, the amount of 'white spaces' in the UHF band is considerably reduced by the digital switch-over and the allocation of the band 790-862 MHz to electronic communications services.

Future development of incumbent services

The deployment of CR systems must not block the technology and service development of the incumbent services. We note that this issue is briefly mentioned in §4.3 and §5.3 but has not been included in the conclusions of the Report.

For broadcasters it is particularly important that the evolution of terrestrial broadcasting and PMSE technology is not hindered by the introduction of CR systems in the UHF band. This is especially relevant in the case of license-exempt operation of CR systems.

Furthermore, we believe that this issue is important not only for the white spaces in UHF band but also for any frequency band where CR systems are to be introduced. It is therefore proposed to include a statement in the conclusions of the Report to the effect that CR devices must not hinder the evolution of the incumbent radio systems.

Assessment of the overall benefits

The Report asserts that *'Cognitive radio technologies are expected to be a key driver of innovation, resulting in significant increase of overall spectrum efficiency, by increasing sharing opportunities between applications, to solve at least part of the spectrum shortage problem in the future.'* It is further mentioned in §5.3 that *'the regulator's decision to allow cognitive access will take into consideration various factors including the potential benefits of new applications incorporating cognitive radio technologies and to facilitate innovation as well as weighing the risks of potential sterilization of spectrum and evolution of incumbent service'*.

In that respect, it would be useful to establish some general criteria and guidance for assessment of the overall benefits. Furthermore, appropriate performance indicators of CR systems would need to be identified and the associated requirements defined. This would help the industry when developing equipment and services and would assist administrations in making necessary regulatory provisions. In addition, well defined assessment criteria would add transparency in evaluating different deployment scenarios and sharing models on a case by case basis.

Finally, it is our view that cognitive radio systems, if successful, should be deployed in other suitable frequency bands i.e. beyond the broadcasting spectrum.