

TDF Group comments on the Radio Spectrum Policy Group report on Cognitive Technology

TDF Group always looks with attention at the opportunities given by new technologies and presently by Cognitive Radio. TDF Group thanks the RSPG for providing us the opportunity to comment on the report on Cognitive Technology.

General considerations

TDF Group would like to underline that this report on Cognitive Technology provides an interesting and awaited perspective to spectrum users. It provides fundamental principles on technical and regulatory issues that future work might be based upon.

Concerning this important issue, TDF Group believes that there are still a considerable amount of investigations to be carried out before introducing such a promising technology. TDF Group would like to underline that there are for example various studies on compatibility issues are still ongoing within the CEPT.

In the US, FCC has concluded that the detection of the surrounding spectrum environment is clearly an issue and made mandatory the usage of a database linked with GPS detection. This question is currently open in Europe and one may find pros and cons for the different options:

- Geo-location linked or not with a database of spectrum usages may not be sufficient e.g. for indoor locations. It may also be confronted with difficulties in the case of temporary usage of spectrum: regular updates of databases can solve the problem of registered authorisations (Special events) but cannot cover the secondary usages that are not subject to detailed authorisation as PMSE in the UHF band, e.g. in France or in Germany.
- Beacon channel also mentioned appears as a costly and not spectrum efficient approach

TDF Group is of the opinion that a very important coordination process is needed between ETSI and CEPT to properly specify the generic characteristics of Cognitive Radio devices. TDF recognises that this process has been started with a potential introduction of White Space Devices in the UHF band, and that detailed investigation on regulatory impact and on potential technical characteristics to be applied on devices based cognitive technologies is under way.

Nevertheless, TDF recognises that potential opportunities may exist from this technology for Broadcasters as future PMSE should be based on Cognitive Radio with an opportunistic approach in selecting their operating frequency.

White Space Devices in the UHF band

The EC issued a mandate to CEPT on Cognitive Radio for the usage of interleaved spectrum in the UHF band in 2009. Within CEPT, SE 43 group got the task to develop a report on technical and operational requirements for the operation of cognitive radio systems in the "White Spaces" of the frequency band 470-790 MHz, first results will be published mid 2010.

TDF Group shares the RSPG opinion that CRT has to operate on a non-interfering basis, but also suggests that these technologies use the spectrum on non-protecting basis. This is necessary for not jeopardising the future of broadcasting services, as the technology in this field and consequently the spectrum usage in the UHF band are evolving and will continue to evolve in the coming years with the switchover. The densification of DTT networks as occasional usage of spectrum should not suffer from the presence of CRT. The definition of interleaved or free spectrum and the regulatory package has to take into account this evolving situation.

TDF Group underlines that the regulatory measures for the protection of the existing services should take into account the different technical constraints they have to deal with. For example, the renewal of TV receivers is slower than those of mobile services. Consequently, even if better receiver performances are always targeted, the existing park has to be taken into account. Furthermore, WP 6A on its last meeting in Geneva (November 2009) realized that the TV receiver industry is already undergoing a major technology evolution.

The challenge of CEPT SE43 resides in the fact that it has to define limits for CR systems which are not specified at this stage (e.g. modulation, bandwidth, signal characteristics in the time as well as in the frequency domain) and will simply be supposed. Furthermore, potential usage scenarios as well as potential interference scenarios have to be assumed in order to derive all technical parameters which would be needed in order to guarantee an adequate protection of the incumbent services.

TDF Group is active in this group, its members already contributed, actively participated in several drafting groups and they will provide simulation results and detailed studies on potential limitations that would be needed in order to guarantee the protection of the existing services (primary as broadcasting or secondary as PMSE).

The mandate and the very short time schedule of CEPT SE43 appear to be a real challenge.

Considering the size of the market for White Space Devices, it is clear that the national situation and the importance of DTT platforms will impact the potential development of such devices. The decision on the 790-862 MHz sub-band will also limit the potential development of CRT in the UHF band.

Conclusion

As underlined by RSPG, CRT appears as a promising technology. Nevertheless, its introduction has to be carefully managed as it represents a real challenge on the technical as well as on the regulatory levels in increasing the efficiency of spectrum usage, without interfering with the existing users.

Therefore, TDF Group thinks that before any conclusions on CRT introduction, RSPG should insure that all the necessary measures are in place to prevent any damaging effect on existing services.