



BT RESPONSE TO RSPG REPORT ON COGNITIVE RADIO

24TH DECEMBER 2009

BT welcomes the opportunity to contribute into the RSPG Report on “Cognitive Technologies”. In principle, BT believes that Cognitive Technologies, in particular Cognitive Radio systems, will facilitate innovative solutions that will allow opportunistic spectrum access without interfering with existing users. Service providers and citizens will thus gain dynamic access to spectrum that is matched to their applications and services. At present we see the initial opportunity in the interleaved TV spectrum, and we are supportive of research and development into the efficacy of techniques in that spectrum including the use of geo-location databases, spectrum sensing and cognitive pilot channels (or beacons).

In our view the section of the report addressing regulation (Section 5) could be clearer. Some of the discussion around the models for sharing is highly speculative and may not be practical. Since the models and the discussion around horizontal and vertical sharing are common to many technologies and markets we are unsure whether this section is adding value to this document with regard to Cognitive Technologies. In any case the application of horizontal sharing to either model requires much more discussion in Europe and we suggest that this point is clearly indicated, or the related text is deleted. BT believes that the description of the application of vertical sharing to spectrum access by Cognitive Radio is inherently quite complex and we have sought to show what we believe to be the position pictorially in the diagram below. In this diagram, row 1 (in blue) applies where a single licence holder has been given the exclusive rights to use the band (e.g. following a licence auction), in which case the use of the band by CR devices would be by negotiation between the CR operator and the licence holder. Row 2 (in green) applies where licences have been issued by the national regulator, or similar body, for each individual station/link in a band. In this case, the body which issues the licences could allow CR devices to be operated, subject to appropriate technical and/or regulatory provisions.

band licensing	access options	operator options	sharing options
band with existing spectrum licence owner	CR devices access band under commercial agreement (e.g. trade)	Single CR operator	
		Multiple CR operators	CR systems share equitably No protocols for sharing between CR systems
band with existing licensed stations	CR devices access band on licence-exempt basis		
		Multiple CR operators	CR systems share equitably No protocols for sharing between CR systems

Regulatory scenarios for Cognitive Radio systems

We would recommend that any statements about regulatory measures that might need to be made should be kept general, with specific text limited in application only to the interleaved TV spectrum, since it is too soon to be able to speculate on what regulation would be needed should Cognitive Technologies be deployed outside the interleaved TV spectrum.

We have a specific text suggestion regarding Section 5.4.3, page 18, where in line 5 of the second paragraph there is a mention of dynamically informing devices about changes to regulations over time. Our studies have indicated that a geo-location database could assist in this role. We suggest that the text, "CPC could inform CR devices...", is changed to "CPC or a geo-location database could inform CR devices...".

We note with interest the potential new applications discussed in Section 8.1. In terms of commercial applications we envisage that cognitive technologies will play an important role in the provision and expansion of next generation mobile broadband, and in the delivery of broadband services to underserved areas and rural communities.

BT is supportive of the general conclusions of the RSPG report and is pleased to see that emphasis has been placed on facilitating early harmonised access to interleaved TV spectrum in the UHF band by CR devices. We welcome the opportunity to continue to participate in this debate and in the formulation of suitable regulations.