



## **Response to the Radio Spectrum Policy Group's public consultation on the digital dividend**

29 June 2009

The Open Spectrum Alliance (OSA), welcomes this first opportunity to engage with RSPG on a topic of such rare and historic importance. Founded in Vienna in May 2009,

“The Open Spectrum Alliance is a coalition of companies, organisations, and individuals working to unlock the potential benefits of bandwidth for all.

“Current methods of spectrum regulation are based upon the assumption of scarcity reflecting the technologies of the early 20th Century. ‘Smart’ radio technologies support far more efficient and productive methods of spectrum management.

“The Open Spectrum Alliance is united by the goal of realizing the potential social and economic benefits of this underutilized natural resource by promoting innovative public policies.”<sup>1</sup>

A list of the founders, current partners and supporters of the Alliance is given at the end of this document.

OSA's views on the draft RSPG “Opinion on the Digital Dividend” are shaped by the fact that the propagation characteristics of UHF make it the radiofrequency band best suited for achieving the first objective of the Commission's *i2010 Communication*<sup>2</sup>: that is to say, providing “affordable and secure high bandwidth communications, rich and diverse content and digital services” throughout the European Union.

Beyond what the Member States do individually, Commission decisions can and should attempt to increase the affordability and availability of bandwidth released by the switchover from analog to digital television, and increase the diversity of services which emerge in this band. Experience has shown that exemption from licensing does more to boost the affordability of bandwidth and the diversity of service offerings than any other measure.

### **General comments**

The benefits of license exemption are increasingly recognised but still underestimated. Consider the unprecedented success of technologies like Wi-Fi and Bluetooth: their versatility and proven ability to stimulate innovation – with new applications appearing constantly in health care, public safety, recreation, robotics, telephony, environmental sensing, building management, geo-location, etc. – make it impossible to put an upper limit on their benefits to society.

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<sup>1</sup> Open Spectrum Alliance mission statement - <http://www.openspectrum.eu>

<sup>2</sup> “i2010 – A European Information Society for growth and employment” SEC(2005) 717, Commission of the European Communities, Brussels, 1 June 2005 - <http://eur-lex.europa.eu/LexUriServ/exUriServ.do?uri=CELEX:52005DC0229:EN:NOT>

In comparison, the benefits produced by the traditional spectrum management tool of licensing may be easier to estimate, but they are often overstated because opportunity costs are ignored. Exclusive access to the radio spectrum is one way to support quality of service. However, the price is underutilised bandwidth, since regulators must plan for the moments of heaviest demand and accept the fact that channels lie fallow at other times. This creates an “artificial scarcity” of spectrum for other potential users. Given the rapid developments in cognitive radio and mesh networks, exclusive channel assignments are no longer the only – nor always the best – way to guarantee quality of service. Thus, exclusive frequency assignments should be made sparingly, and limited to a reasonable time horizon. We believe that the commercial interests of electronic communication network operators – who need a certain amount of time to recover the cost of developing a particular market – must be balanced against the public interest to ensure that radio spectrum use is optimised. As Commissioner Reding put it:

“Most ‘valuable’ does not mean only the most ‘profitable’ services. We need to think in terms of optimisation of spectrum in a wider sense, integrating social, cultural and economic aspects. As the European Commission also stressed in our recent *Communication on the Digital Dividend*, there is a necessity to shift our focus from technical spectrum efficiency to an optimisation in terms of the value to society of the services underpinned by the spectrum.”<sup>3</sup>

We were pleased to see the draft Opinion which is the subject of the current consultation also quoting the Commissioner’s source (on page 14, **Annex A**, Row 5), noting that “technical and legislative options involved in the switchover should not be determined by economic factors alone but ought also to take account of social, cultural and political factors”. The draft Opinion adds: “This conclusion is still valid”.

Since the outcomes of radio license auctions depend almost entirely on economic factors – especially when they are service- and technology-neutral – the Commissioner and the RSPG seem to be cautioning Member States not to rely exclusively on auctions to distribute the digital dividend – unless, perhaps, social, cultural or political factors are used to qualify bidders, or some significant part of the digital dividend is awarded by other means. If that is what is meant, it is wise counsel. But it might help Member States if RSPG indicated *how* to take social, cultural and political factors into account – suggesting, for example, how much of the digital dividend ought to be awarded by methods other than auctions. Some license-exempt bands – 2.4 GHz, for instance – achieve an extraordinary degree of service- and technology-neutrality without reflecting only economic factors.

The traditional approach to licensing tends to “lock in” assumptions about the demand for particular services. Newer media like the Internet, portable game consoles and “smart phones” may already be reducing the public’s appetite for television, digital or analog. Meanwhile, experts predict that demand for new types of mobile service (including some that cannot yet be imagined) will grow during the next decade. Unfortunately, the relatively long duration of television broadcasting licenses will slow the adjustment of channel assignments to future levels of demand. Even if an aftermarket for broadcasting licenses developed in Europe, it would be extremely difficult for a non-broadcast ECS/ECN operator to re-purpose a TV channel – or an array of channels, in the case of a TV network. Much as been written about the problem that a proliferation of license exempt devices allegedly poses for the “re-farming” of spectrum. But in fact, the need to negotiate with and perhaps “buy out” licenseholders is no less a problem.

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<sup>3</sup> “The Wireless Growth Potential: the Economic Case for an Ambitious Reform of Spectrum Management” (SPEECH/08/117) by Vivian Reding, Member of the European Commission responsible for Information Society and Media, at the joint dinner of the European Regulators Group and the Radio Spectrum Policy Group, Gothenburg, Sweden, 27 February 2008 – [http://ec.europa.eu/commission\\_arroso/eding/docs/speeches/2008/gothenburg\\_20080227.pdf](http://ec.europa.eu/commission_arroso/eding/docs/speeches/2008/gothenburg_20080227.pdf)

We therefore recommend that significant amounts of spectrum across all bands be made available under a general authorisation regime, either on (co-)primary or secondary basis, while licenses explicitly reserve the right to secondary cognitive use when assigned channels are not used by the licenseholder or are not assigned to a license holder.

Meanwhile, we applaud the RSPG's *Aspects of a European Approach to 'Collective Use of Spectrum'*<sup>4</sup> (19 November 2008), particularly the conclusion that "there may be opportunities to exploit the relatively low opportunity cost of high frequency spectrum [e.g., over 40 GHz, for collective use] as well as sharing opportunities across the entire frequency range for very low power devices."

### Comments on the draft Opinion's title and Introduction

Before considering the Opinion itself (i.e., **Section 7** of the draft), a few points need to be made about the text preceding it.

The title – "Opinion on the Digital Dividend" – suggests an Opinion of much greater scope than is offered. As presently drafted, the Opinion concerns only the spectrum above 790 MHz and dismisses the digital dividend below 790 MHz in a way that suggests those frequencies should not be considered for the development of electronic communication networks and services other than broadcasting. The second paragraph of the **Introduction** states:

"This RSPG Opinion focuses on that part of the digital dividend which may also be used for electronic communication networks (ECN) and electronic communication services (ECS), other than broadcast transmission networks and services, i.e., the sub-band 790-862 MHz (the 800 MHz band)... It is presently foreseen that in bands below the 800 MHz band, i.e., 174-230 MHz and 470-790 MHz, the digital dividend will be used mainly for the development of new enhanced broadcasting services which will also bring significant benefits to society in terms of the value to the industry and consumers. At a national level some Member States may also use the digital dividend below the 800 MHz band for ECN and ECS, other than broadcast transmission networks and services. However, this is not studied in this RSPG Opinion."

If ECN and ECS, other than for broadcasting, may also develop below 790 MHz, then the Opinion's focus on the band above 790 MHz cannot be due to the expected development there of ECN and ECS other than for broadcasting. If non-broadcast ECN and ECS can develop both above and below 790 MHz, this is not a differentiating factor. We suspect this Opinion focuses on the 800 MHz band because of the allocation changes agreed at the 2007 World Radio Conference, and because the Member States are closer to consensus on the value of harmonising non-broadcast uses in that band.

It is also a problem that no explanation is given for the Opinion not considering the implications of ECN and ECS, not related to broadcasting, in the spectrum below 790 MHz. Indeed, the broad title of the draft Opinion, as well as the ambitious "objective" stated in the **Introduction**'s third paragraph, suggest a summing up, a final pronouncement – leaving the controversy surrounding non-broadcast uses of "white space" unaddressed. It may be beyond the RSPG's ability to resolve that controversy, but that does not mean it should be ignored. We would suggest there is scope for publishing a future Opinion on that topic.

And if at least one more Opinion on the digital dividend is possible and the current draft Opinion is not revised to broaden its scope, the RSPG should consider giving this Opinion a narrower and more accurate title, such as "Opinion on the Digital Dividend at 790-862 MHz".

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<sup>4</sup> [http://ec.europa.eu/information\\_society/policy/ecomm/radio\\_spectrum/\\_document\\_storage/other\\_docs/rspg08244\\_finalopinion\\_collectiveuse.pdf](http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/_document_storage/other_docs/rspg08244_finalopinion_collectiveuse.pdf)

The “key objective” might be stated more modestly, too, to reflect the limits of what the Opinion actually addresses.

A knowledgeable reader might guess that the reason for focusing on 800 MHz is the RSPG’s waiting for a further CEPT report on cognitive access to DTV “white spaces” while in the meantime, too few Member States have developed a position on this question for the RSPG to respond. However, without a clear explanation – even a brief one – for the draft Opinion not considering ECN and ECS, not related to broadcasting, in the bands below 800 MHz, one could leap to the conclusion that the RSPG wants to discourage that development. The phrase “new enhanced broadcasting services which will also bring significant benefits to society in terms of the value to the industry and consumers” also points in that direction, suggesting that other services and networks will *not* bring significant benefits to society. In fact, there are other content rich applications that could bring equal if not greater benefits.

So far as we know, only the United Kingdom has stated its desire to authorise cognitive access to the DTV “white spaces”, although our contacts with regulatory authorities in other Member States indicate others are seriously looking at that option. Any hint of encouragement or discouragement from the RSPG would surely influence those still “sitting on the fence”. For that reason we urge the RSPG to add a section to the draft Opinion addressing issues that must attend regulatory decisions to authorise the use of DTV “white spaces” by services other than those related to broadcasting – even if the RSPG feels obliged to remain publicly neutral on the question of whether cognitive access *should* be authorised. Particular attention should be paid to areas likely to benefit from international coordination and harmonisation, e.g.

- cooperation between Member States in setting up geolocation databases to “backstop” cognitive detection of systems which must be protected from harmful interference (information about stations near the border of a neighbouring country should be accessible to cognitive devices on the other side of the border).
- steps needed for the development of common European standards for RTT&E certification of cognitive radios, as well as a summary of points of consensus and disagreement on the way toward a common European position on those aspects of cognitive radio expected to be discussed at the 2012 World Radio Conference.
- common standards for interference rejection by DTV receivers.
- the costs and benefits of a coordinated DTV migration to Single Frequency Networks (SFN). The spectrum available for new services and networks at 174-230 MHz and 470-790 MHz could be increased quite significantly with some policy guidance and economic encouragement. However, the cost would also be great. On the other hand, the social value of the additional freed spectrum may be greater than the cost of SFN migration. In that case, rules governing the possible compensation of broadcasters from an increase in consumer surplus could be put on the table.

This list is only illustrative; it is far from complete.

### **Cognitive support for PMSE and other networks and services**

We agree with the RSPG that a sustainable solution needs to be found quickly for Program Making and Special Event (PMSE) systems operating in the UHF band. We suggest that a harmonised approach is taken to allow PMSE manufacturers and users to benefit from a common market for devices, even though the frequencies available for PMSE are likely to vary from location to location, from time to time, and from Member State to Member State.

In light of this variability, we suggest adding a sentence to the second paragraph of **Section 4.1** noting that cognitive radio techniques could help mitigate the problem of frequency

sharing between PMSE services and other services and networks. The US Federal Communications Commission has tested prototype “white space devices” for their ability to detect nearby wireless microphones and television signals. It has not tested the ability of PMSE systems with cognitive capabilities to detect and avoid the active channels of other services. The size of most wireless microphones seems to preclude the addition of cognitive capabilities based on today’s technology, but that is not true of the base stations to which the microphones transmit. There is much wider scope for using cognitive techniques than to solve band sharing problems between wireless Internet access and television-related networks.

In this connection, we should point out that while we generally support the principles of service- and technology-neutrality, we do not support geographic neutrality. The second half of **Section 4.4** clearly emphasizes the value of location specificity, as it recommends sub-national availability and clustering. Wider use of cognitive radio techniques will give regulators more flexibility in setting power limits for license exempt devices which vary according to their location, deployment density and the surrounding signal environment – permitting longer-range links in sparsely populated rural areas, for example, as the UK Office of Communications proposed in 2006.<sup>5</sup> It is no accident that “short-range device” is now used as a synonym for “license exempt device”. That need not be the case in future.

Therefore, we encourage the RSPG to add a sentence or paragraph to **Section 4.2** indicating that cognitive radio techniques could mitigate the problem of Member States taking “a unilateral approach” to the 800 MHz band, thereby fragmenting “channelling arrangements and technical conditions...”

### **Relaxing the principle of service neutrality in specific regions**

We likewise encourage RSPG to make explicit reference in their Opinion to the fact that while the propagation characteristics of the 800 MHz band are suitable for the development of mobile networks and services, the band is uniquely and especially well-suited to the development of lower cost wireless Internet access in sparsely populated rural areas. In light of the *i2010 Communication* and many other statements by the Commission about the necessity of closing the “digital divide” and ensuring the inclusion of all European citizens in “the information society”, the development of affordable rural broadband must be a priority – even if it means relaxing the principle of service neutrality in specific regions. Without a regulatory framework that actively promotes universal service in currently underserved areas, there is a real risk that licensees will only use the 800 MHz band for providing indoor coverage in highly profitable urban areas.

### **Comment on “The Opinion of the RSPG”**

While we take issue with a few aspects of the discussion leading up to **Section 7**, the Open Spectrum Alliance applauds the summary statement of the RSPG’s Opinion in **Section 7** as a useful and important step in the transition to a new policy regime for the UHF band, and we support it wholeheartedly.

### **Summary**

On other occasions, the RSPG has shown great interest in new techniques of spectrum sharing and “white space devices” so we recommend these will be the subject of another digital

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<sup>5</sup> Consultation document: “Higher power limits for licence exempt devices – Understanding the Scope for a Power Increase at 2.4 and 5 GHz”, UK Office of Communication, 12 July 2006 – <http://www.ofcom.org.uk/consult/condocs/powerlimits/>

dividend Opinion. Alternatively, the current draft Opinion could be amended to enlarge its scope and make it more consistent with its ambitious stated objective. OSA encourages the RSPG and other European bodies, as well as NRAs, not to ignore the possibilities of ECN and ECS, not related to broadcasting, developing in the spectrum below 790 MHz and the benefits to society that might bring. That is an important opportunity for innovation friendly SMEs and for Europe's economy as a whole.

### Founders of the Open Spectrum Alliance

Aaron Kaplan  
 Alexander List  
 Armin Medosch  
 Christoph Schindler  
 Georg Erber  
 Joseph Bonicioli  
 Juergen Neumann  
 Malcolm Matson  
 Michael Haberler  
 Ramon Roca  
 Robert Horvitz  
 Rupert Nagler  
 Sascha Meinrath  
 Tano Bojankin  
 Vic Hayes  
 Xavier Carcelle

### OSA Partners and supporters

