

**RESPONSE TO THE EUROPEAN COMMISSION
CONSULTATION
ON TRANSFORMING THE DIGITAL DIVIDEND OPPORTUNITY INTO SOCIAL BENEFITS
AND ECONOMIC GROWTH IN EUROPE**

Dell, Google and Microsoft welcome the opportunity to comment on the European Commission's consultation on the Digital Dividend. We support the work the European Commission has carried out on the Digital Dividend to date, and are grateful for this opportunity to provide input to the process.

In the context of this consultation, it is important to highlight the benefits that can be realised by moving quickly to enable the Europe-wide use of 'white spaces' for delivering broadband services. We agree that the Digital Dividend presents a unique opportunity to contribute to economic recovery, and we further agree with the importance that the European Commission places on broadband coverage. We look forward to working with the Commission to achieve the 100% broadband coverage set out in the Economic Recovery Plan. Moreover, it is our view that the European Commission should take a lead in compiling and circulating the economic benefits that can be gained from increased spectrum efficiency in the UHF television bands. Establishing a regulatory regime that enables white spaces in the UHF band is a vital first step that will, in time, enable a greater degree of spectrum efficiency across the continent. Commission action on this issue will contribute to the quality of the debate within the European Union on the use of 'white spaces', and will also assist in allowing European consumers to enjoy the benefits of increased broadband connectivity – especially in un-served and under-served regions. Ofcom in the UK, and several regulators in other countries, have already taken important steps towards providing a regulatory framework for the utilisation of 'white spaces', and it is important that the Commission become involved in shaping policy at this stage before different national standards are developed within the Single Market¹.

This activity also falls squarely within the domain of the Commission, not simply as a matter of developing the Single Market, but also by virtue of the benefits it will deliver to the regions: considering that there is approximately 100 MHz to 200 MHz of white space, compared with, for instance, the 72 MHz available in the UHF mobile sub-band, a regime enabling white space devices (WSDs) will particularly benefit rural areas that need enhanced Internet connectivity the most.

With regard to point 4.4 of the Roadmap, Dell, Google and Microsoft are concerned that the Commission believes there is still a need to prove the case for 'white spaces'. Use of white spaces for Internet access and other applications will clearly help meet the Commission's Information Society and Economic Recovery goals. White space devices (WSD), particularly when permitted to operate on a licence-exempt basis, can provide much more affordable internet connectivity over a significantly wider area than current wireless broadband

¹ Devices will have multiple radios operating at various frequencies and under various regimes (e.g. licensed vs. license-exempt). White space operation complements the 2.4 and 5 GHz bands by improving coverage. Once communications have been established in white spaces, higher frequency radios can be used for high throughput. Similarly, license-exempt applications can provide traffic offloading for licensed networks. Therefore, the two access regimes are not mutually exclusive.

networks operating at 2.4 GHz and 5 GHz. A high-power access point such as a base station operating at 1W in urban markets could reach 300 meters or more, while low-power WSDs (100mW) could reach 150 meters or more – a significant improvement over the typical 60 meters available through a 2.4 GHz network. This means more users, at faster speeds, lower costs and possessed of greater functionality.

WSDs can enable other applications in addition to internet access. Even at low power, they can provide peer-to-peer wireless sensor networks and device-to-device media sharing. For example, a farmer will be able to deploy WSD sensors across their farms to manage irrigation and fertilising to maximise the farm's productivity. An operational limit of 50mW on such devices in the open field means a broadcast range of approximately 200 meters, whereas a limit of 100mW yields about 250 meters when operating in UHF spectrum. Media playback devices will use white space for media exchange, communication and internet access, and will experience range improvements similar to that enjoyed for internet connectivity. Smart devices such as smart phones, automobiles, and game machines will be able to operate as clients of the white space-based internet access, but the devices will communicate with each other rather than back to the Internet, using a low power mode. For example, they will be used for voice and data exchange, and messaging, and could be used in remote locations, including for outdoor recreation.

The Commission also requests comment in paragraph 4.5 on ways to ensure the continuity and further development of wireless microphone applications and other secondary uses of the UHF spectrum. Such secondary uses include existing white space applications. Prior to the development of sophisticated real-time management techniques, wireless microphones constituted use that was appropriately licensed. But given the widely-recognised need for more spectrum for wireless applications such as broadband, spectrally efficient use is paramount. Databases providing lists of available channels (and any attendant technical restrictions) would allow a scalable *ad hoc* coordination of many operations that could include wireless microphones. This is the kernel of the geolocation approach to opening white spaces, which provides effective protection of existing services without the need for spectrum sensing and maximises potential capacity for new applications.

Our representatives welcome opportunities to meet with the Commission to discuss these applications (and their benefits) as we put forward the case for pan-European authorisation of WSDs. We offer that an efficient way for the Commission to conduct its work is for a mandate to be sent to the Electronic Communications Committee (ECC) to set out how 'white spaces' can be made available for mobile broadband and other valuable applications such as home networking and those addressed above. This Mandate should not be purely investigative in nature, rather, reports that the ECC is asked to produce should be channelled directly towards an EC Decision in the RSC that will mandate how 'white spaces' will be made available in the EU.

Dell, Google and Microsoft look forward to working further with the European Commission and are available to answer any questions that arise from our response. White spaces, accessed through geo-location technology across the range of uses, allows a technology-based coordination that promises a new level of efficiency for Europe.