

The digital dividend: market challenges and public-interest goals

The UK experience

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The UK's digital dividend

What is it?

- **368 MHz** of spectrum in UHF Bands IV and V (470-862 MHz) is currently used by analogue terrestrial television in the UK
- This could be carried in **40 MHz** by digital terrestrial television (DTT)
- But the UK Government decided in 2003 to reserve **256 MHz** for six DTT multiplexes, expanding the coverage and capacity of DTT after digital switchover
- The UK's core digital dividend is the remaining **112 MHz**, available for new uses following switchover
- With the release of 16 MHz currently used by aeronautic radar and radioastronomy, the UK's digital dividend comes to **128 MHz**

21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66	67	68
69											

DTT
 Cleared
 PMSE

Why does it matter?

- Value to the economy very uncertain but estimated to be **€6-11 billion** (net present value over 20 years)
 - Excludes public value – also potentially significant
- Spectrum below 1 GHz so rarely becomes available – existing framework dates from 1961



When is it available?

- Digital switchover starts in 2008, finishes in 2012
- No need to wait for spectrum to be cleared before new rights can be awarded, though some extra constraints on use of spectrum likely until switchover complete
- So new uses might start in some regions before 2012, subject to constraints



Key

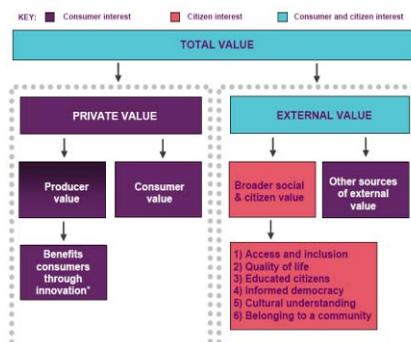
- Switchover completed by 2010
- Switchover completed by 2012

Potential uses

- Mobile broadband
 - More DTT (standard or high definition)
 - Mobile television
-
- Wireless microphones and other applications for programme-making and special events (PMSE)
 - Other low-power applications, like hubs to distribute content around the home or using ultra-wideband technologies
 - Fixed broadband wireless applications
 - Public protection and disaster relief
 - Cognitive radio
 - Community radio
 - Digital radio
 - Communication with medical professionals and educational institutions
 - New services for people with disabilities
 - Amateur and/or university use
 - International and cross-border uses (e.g. an international public-protection channel)
-
- A nationwide broadband wireless network
 - Digital public-service teletext to match the analogue service
 - User-created networks (e.g. employing mesh technology)
 - Home networks, including automation and control
 - Business networks
 - Community and campus networks
 - Municipal Wi-Fi
 - Internet-connection sharing by multiple households
 - Industrial monitoring and automation
 - Agricultural monitoring and automation
 - Rural broadband provision
 - Ubiquitous wireless networks
 - Sensor-based networks
 - Remote patient monitoring and healthcare

Objective and approach

- Objective to maximise the total value to society that using the digital dividend is likely to generate over time
- Market-led approach – minimum constraints on uses within international framework
 - Public value realised by direct funding
 - Greater value from licensed than unlicensed use
- Clear benefits
 - Allows use to change with technology and demand
 - Gives innovative services the chance to use the spectrum
 - Promotes competition, choice and lower prices
- Do not believe in trying to pick winners



The digital-dividend awards

- Cleared spectrum
 - Licences technology- and service-neutral and fully tradable
 - Packaged in a way that enables the widest possible range of uses
 - Award by auction
- Interleaved spectrum
 - One or two 8 MHz packages suitable for local television in 25+ geographic locations
 - Award by auction
 - Single package of remaining interleaved and other spectrum allocated to PMSE
 - Award via beauty contest to a band manager required to meet reasonable demand
 - Other use allowed so long as PMSE obligations met
 - Unlicensed cognitive access
 - Needs to protect licensed users (including DTT and PMSE) from harmful interference

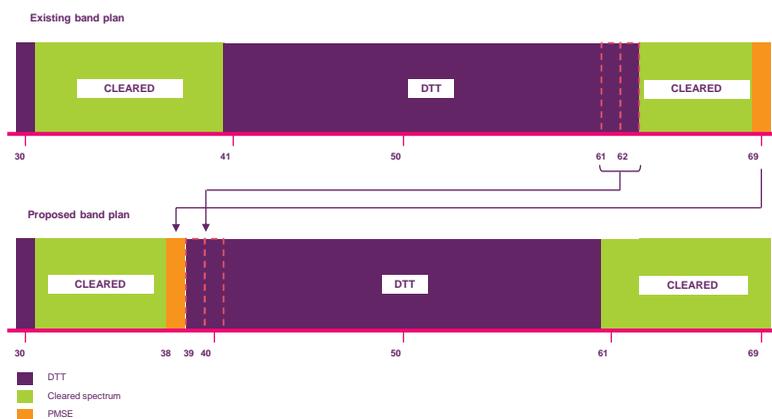
Alignment with Europe

Europe is now focusing on the 800 MHz band

- Sweden and Finland had already announced the 800 MHz band as their digital dividends
- France and Switzerland followed suit toward the end of 2008
- Other European countries are likely to follow
- A potential market of almost 500 million consumers, enabling economies of scale in equipment manufacture
- Having played the pivotal role in Europe in making the case for a digital dividend, the UK now needs to decide whether to realign its own with those of other European countries whose plans are different



Our proposals



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Benefits and costs

- Benefits include:
 - lower equipment costs
 - fewer restrictions on spectrum use
 - more valuable spectrum made available
 - increased competition
- Costs include:
 - less cleared spectrum in the 600 MHz band suitable for UK-wide DTT
 - moving existing and planned authorised users from channels 61, 62 and 69
 - impacts on citizens and consumers, including DTT viewers and PMSE users

Net incremental benefit of clearing channels 61, 62 and 69 lies conservatively in the range of £2-3bn (NPV over 20 years)

Category	Value (£bn)
Benefits	~3.2
Costs	~0.8

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New objectives

- Clearing the 800 MHz band would be a large and complex process
- Direct impact on two categories of existing and planned authorised users
 - DTT in channels 61 and 62
 - PMSE in channel 69
- We have therefore proposed two new, subsidiary objectives
 - Minimise disruption to existing and planned authorised users of the 800 MHz band after DSO
 - Proposed that funding be made available to cover costs of moving to alternative spectrum that are reasonably, efficiently and legitimately incurred
 - Ensure the timely award of this spectrum so citizens and consumers can benefit from new services as quickly as possible

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What next?

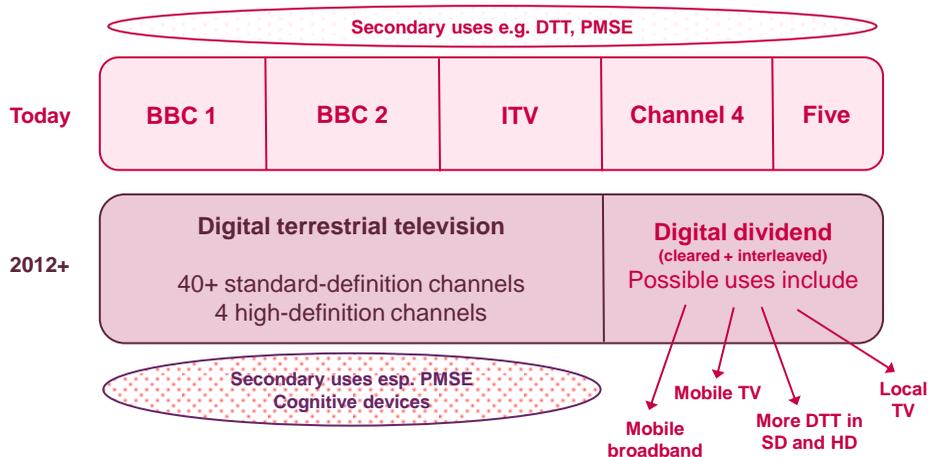
Cleared spectrum

- Extensive work continues
 - Negotiations with neighbouring countries
 - Policy discussions in the European Union
 - Technical discussions in the European Conference of Postal and Telecommunications Administrations
- Statement in summer 2009 setting out our decisions on the 800 MHz band
- Consultation(s) later in 2009 on proposals for award structure, packaging, auction design and licence conditions
- Statement, draft regulations and auction to follow in 2010

Interleaved spectrum

- Geographic-interleaved awards
 - More in due course
 - Dependent on the outcome of international negotiations to clear the 800 MHz band
- Band-manager award
 - Consultation on outstanding issues in the spring
 - Invitation to apply in the autumn
 - Appointment in spring 2010
 - Operational summer/autumn 2010
- Cognitive access
 - Dependent on consultation responses and European developments

A brave new world





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