

UK Spectrum update

Steve Kennedy

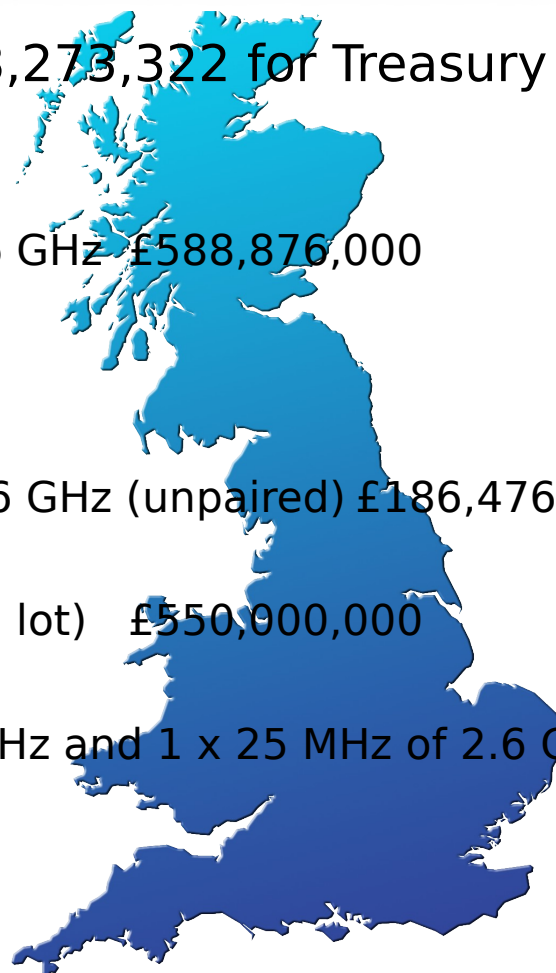
NetTek Ltd



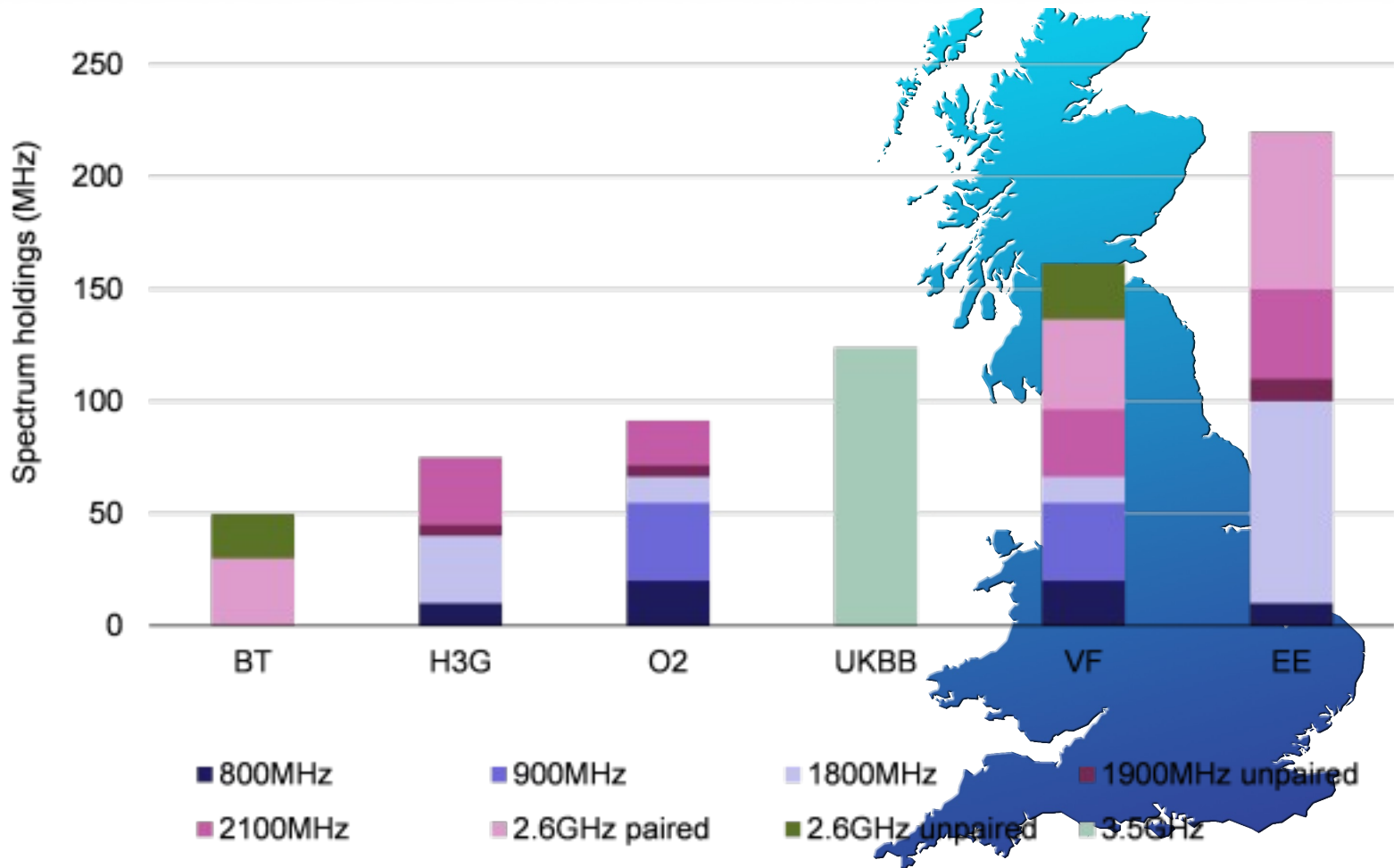
STRATEGY : VISION : COMMUNICATION

800MHz / 2.6GHz

- Spectrum auctioned and raised £2,368,273,322 for Treasury
 - Below the £3.5bn wanted
- Everything Everywhere Ltd
 - 2 x 5 MHz of 800 MHz and 2 x 35 MHz of 2.6 GHz → £588,876,000
- Hutchison 3G UK Ltd
 - 2 x 5 MHz of 800 MHz £225,000,000
- Niche Spectrum Ventures
 - 2 x 15 MHz of 2.6 GHz and 1 x 20 MHz of 2.6 GHz (unpaired) £186,476,000
- Telefónica UK Ltd
 - 2 x 10 MHz of 800 MHz (coverage obligation lot) £550,000,000
- Vodafone Ltd
 - 2 x 10 MHz of 800 MHz, 2 x 20 MHz of 2.6 GHz and 1 x 25 MHz of 2.6 GHz (unpaired) £790,761,000



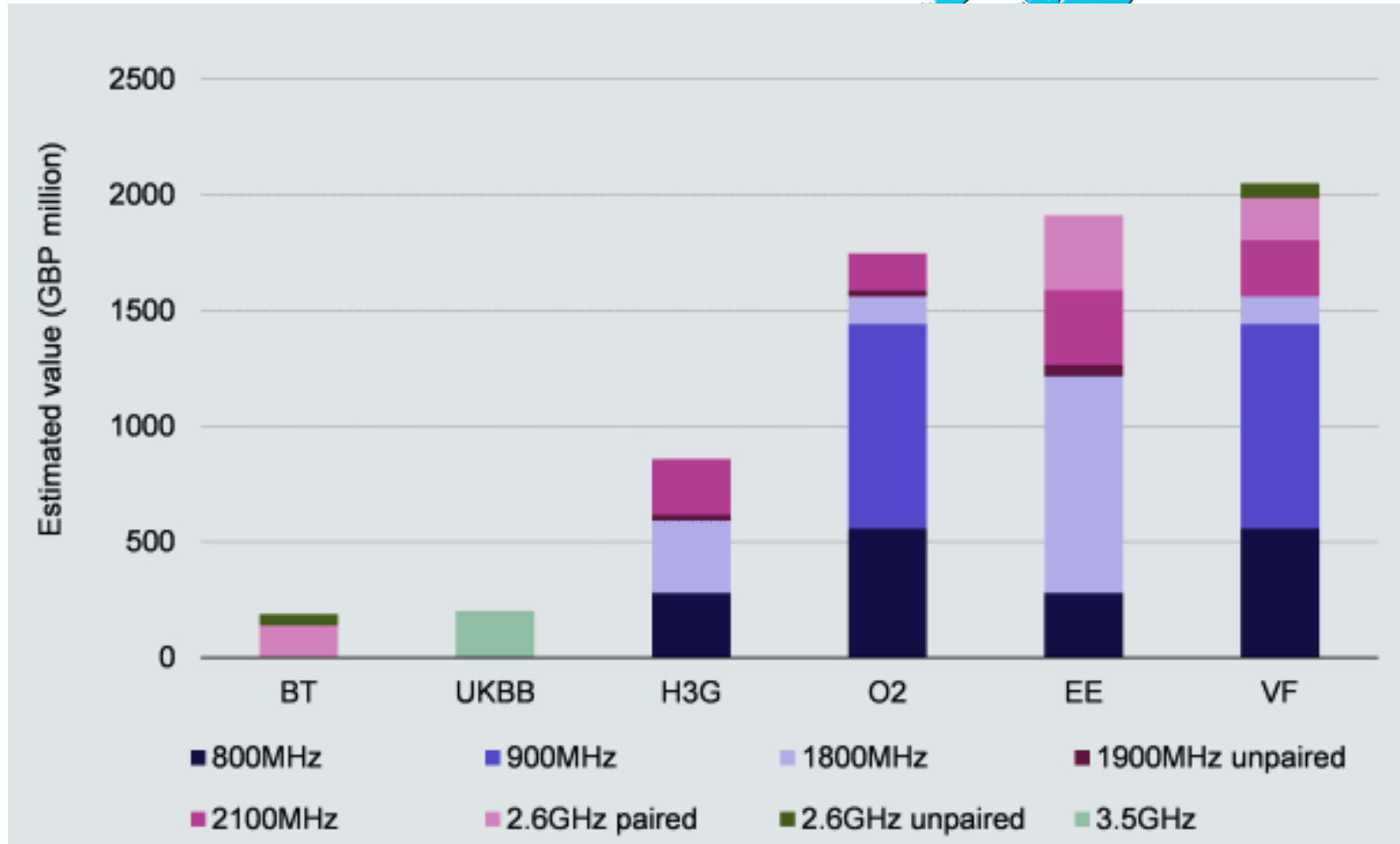
800MHz / 2.6GHz



Source: Analysys Mason



800MHz / 2.6GHz



Source: Analysys Mason



800MHz / 2.6GHz

Share of all mobile spectrum, pre and post auction

Everything Everywhere



Vodafone



O2



Three



BT



SOURCE: OFCOM



800MHz / 2.6GHz



National Audit Office



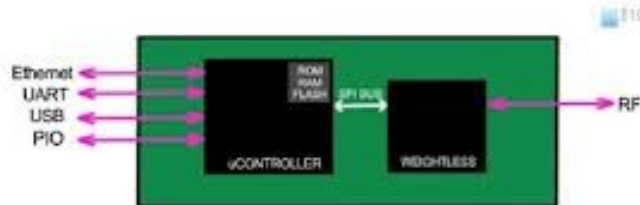
Ofcom



STRATEGY : VISION : COMMUNICATION

Whitespace

- Trials underway
- No centralised Ofcom data
 - No real roll-outs
 - Ofcom has specified the types of queries and responses, but not how they're implemented as this would be down to the market to implement
- Neul have now produced s
 - Icenl - works from 470 - 790
 - 6 or 8MHz channels



Less than \$2 Weightless chip, less than \$5 module
More than 10 year battery life from a primary cell
More than 10km range



Zigbee more Internet friendly

- IEEE 802.15.4
- Now supports IP Direct Connect
 - automatically meshes
 - 6LoWPAN
 - IPv6
 - PANA
 - RPL
 - TCP
 - TLS and UDP
 - end-to-end encryption



Range Networks support

commercial GSM

- Based on OpenBTS
- Currently 2/2.5G
 - 3G WCDMA and LTE networks
- Core GSM network for less than \$100,000
- Basestation for around \$30,000



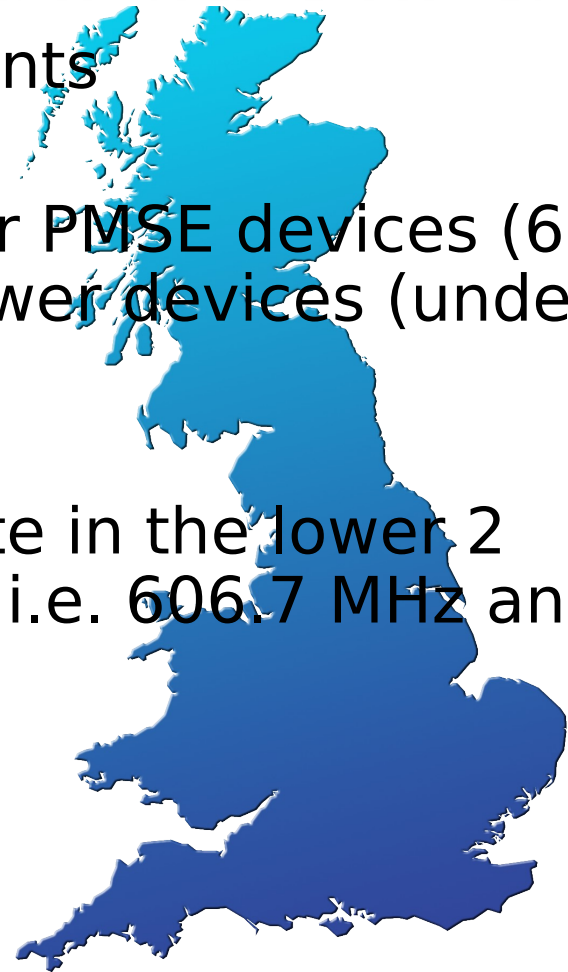
Short Range Devices to move

- Ofcom mandate
- Moves from 10.675 to 10.699 GHz to 10.575 to 10.6 GHz
- License Exempt
 - Needs WTA change (SI)



PMSE supports high power

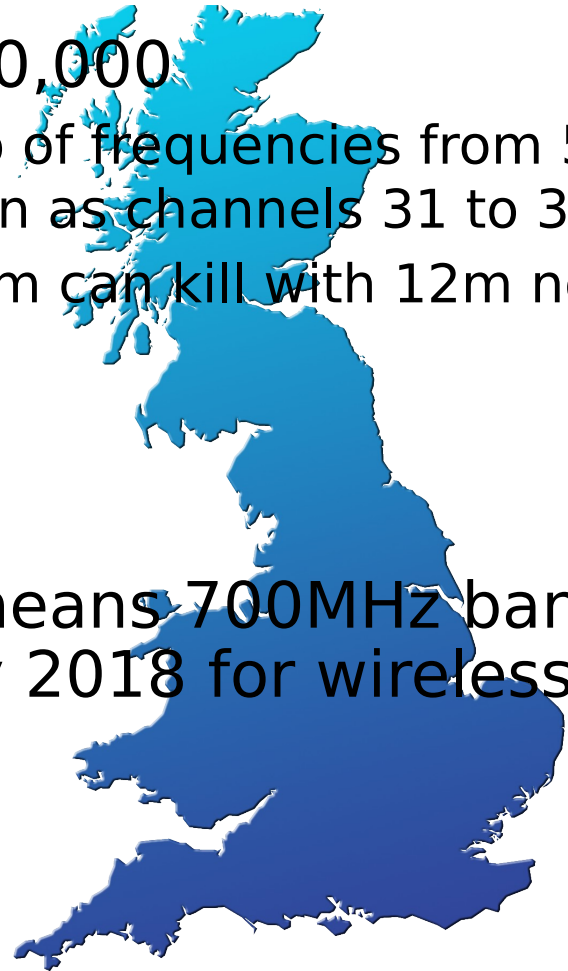
- Programming and Special Events
- Old regulations Channel 38 for PMSE devices (606 - 614 MHz), but only for low power devices (under 50mW EIRP)
- Now up to 10W EIRP to operate in the lower 2 channels (within channel 38), i.e. 606.7 MHz and 607 MHz



New DTT Multiplex available in

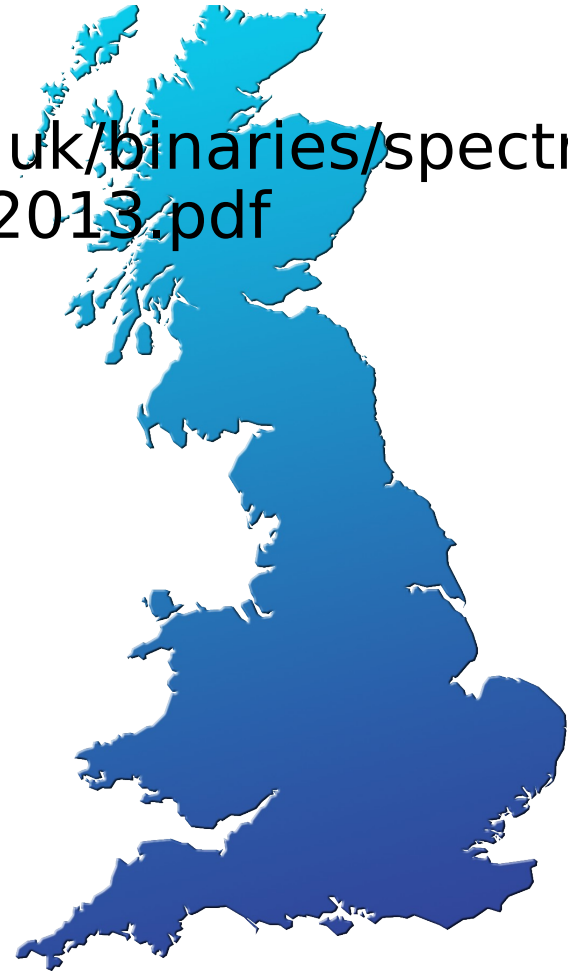
600MHz

- License available now for £180,000
 - 600MHz band is actually made up of frequencies from 550-606 MHz in 8MHz channels (known as channels 31 to 37)
 - License lasts until 2018, but Ofcom can kill with 12m notice
- DVB-T2 and MPEG4
- EU spectrum harmonisation means 700MHz band (current DTT) to be cleared by 2018 for wireless broadband use



Ofcom FAT available

- It's a LONG document
- http://stakeholders.ofcom.org.uk/binaries/spectrum/spectrum-information/UKFAT_2013.pdf



Thank you for listening!

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