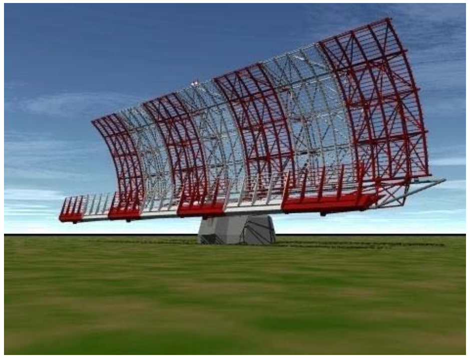
Media event

800MHz and 2.6GHz spectrum auction

Ofcom

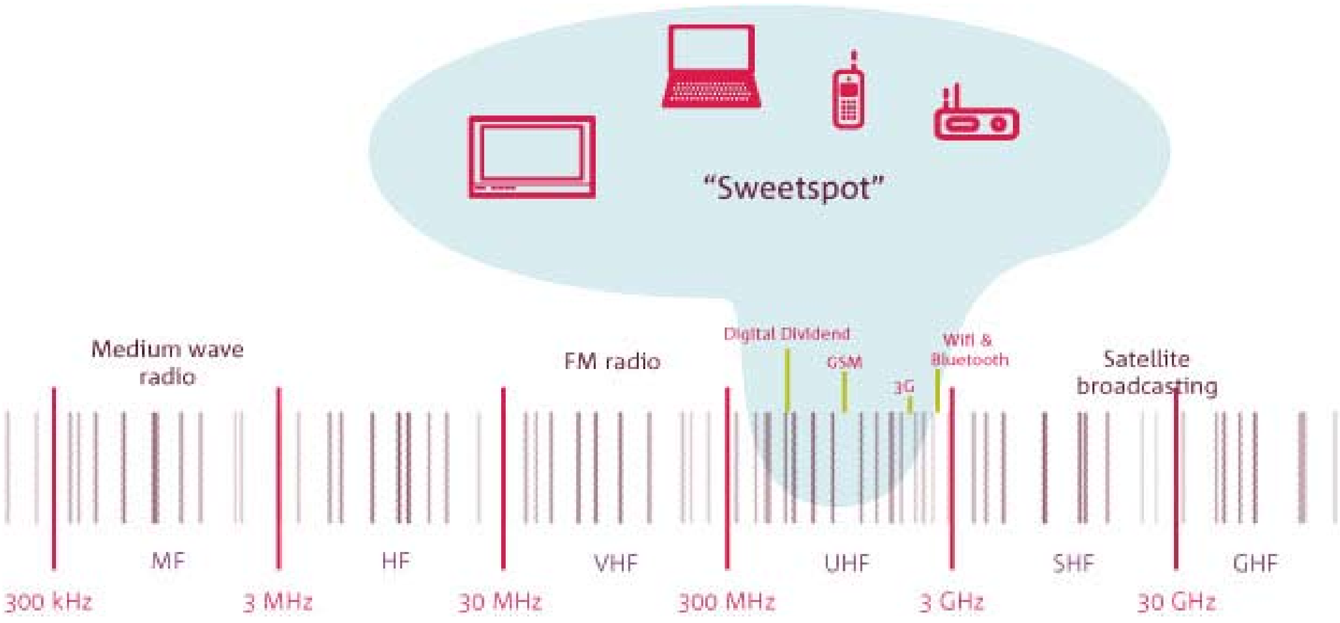
What is spectrum?

- Spectrum is the airwaves on which all wireless communications rely
- It has become essential to modern economies but it is also limited in supply, which makes it highly sought after



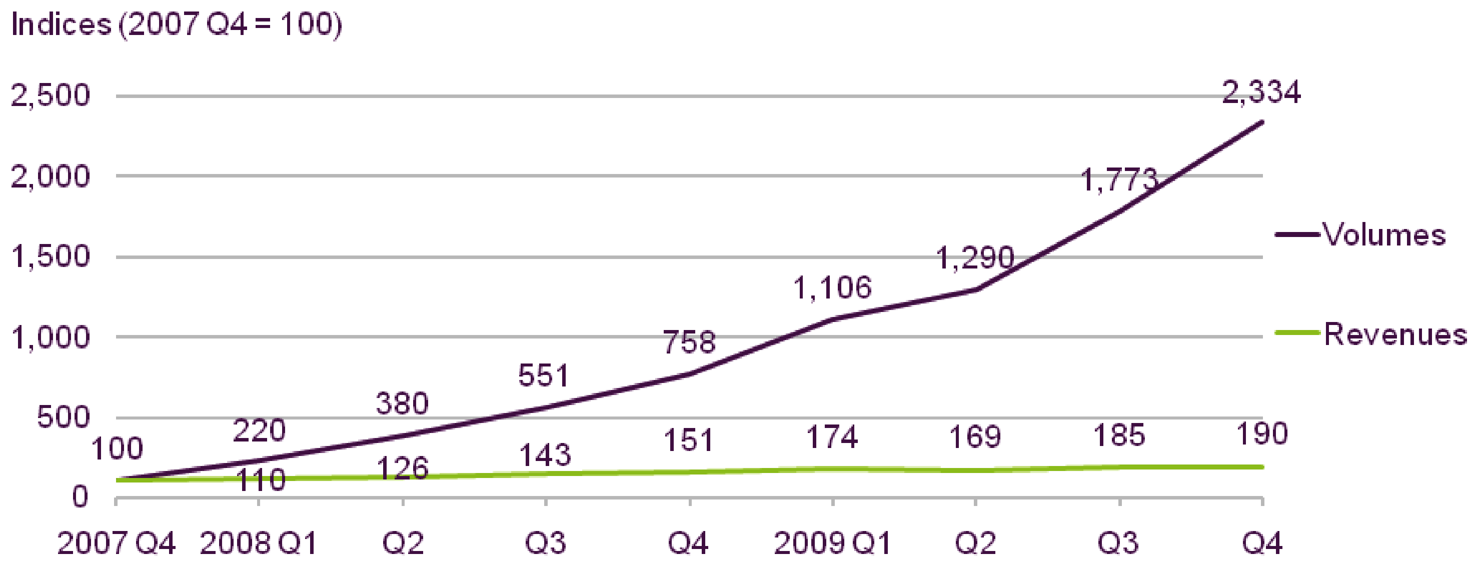

Spectrum is not all the same

- Lower frequencies travel much further than higher frequencies but cannot carry as much information
- The frequencies in greatest demand are between 300 MHz and 3 GHz. It is considered to be prime spectrum, or the ‘sweetspot’, because it is suitable for a variety of applications



Growth of mobile data usage

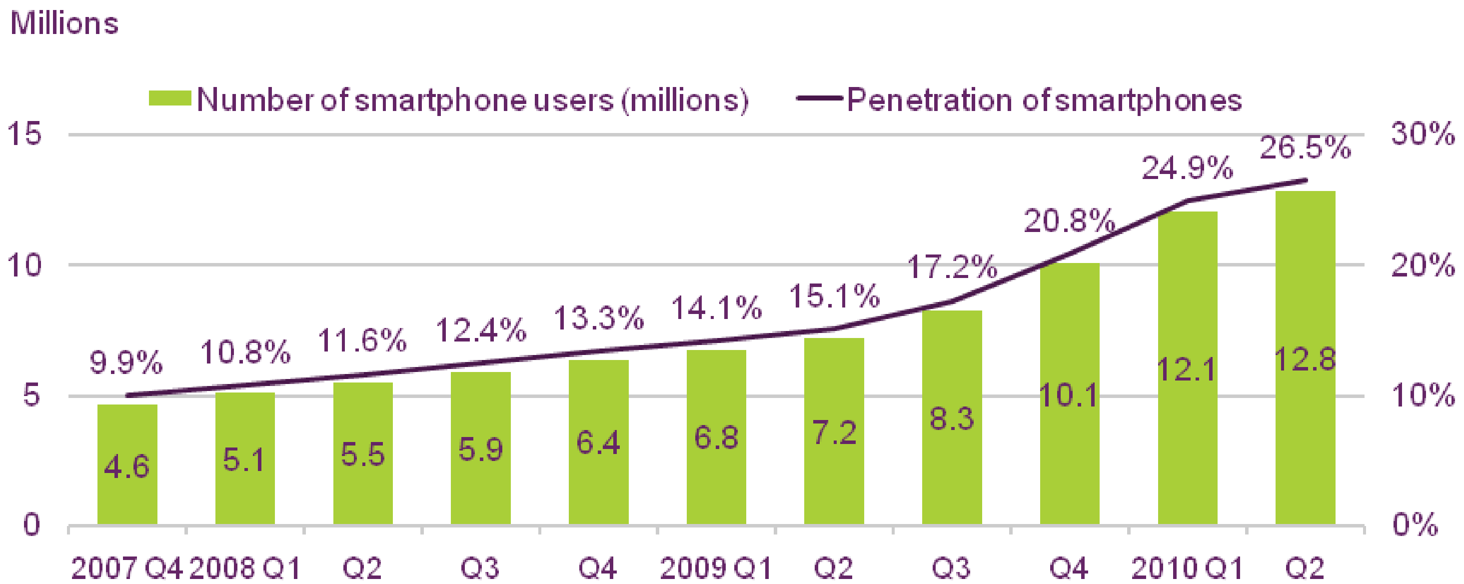
- New mobile spectrum is essential



Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; data revenue is likely to be understated as it excludes any data element included within standard pay-monthly tariffs.

Growth of smartphones

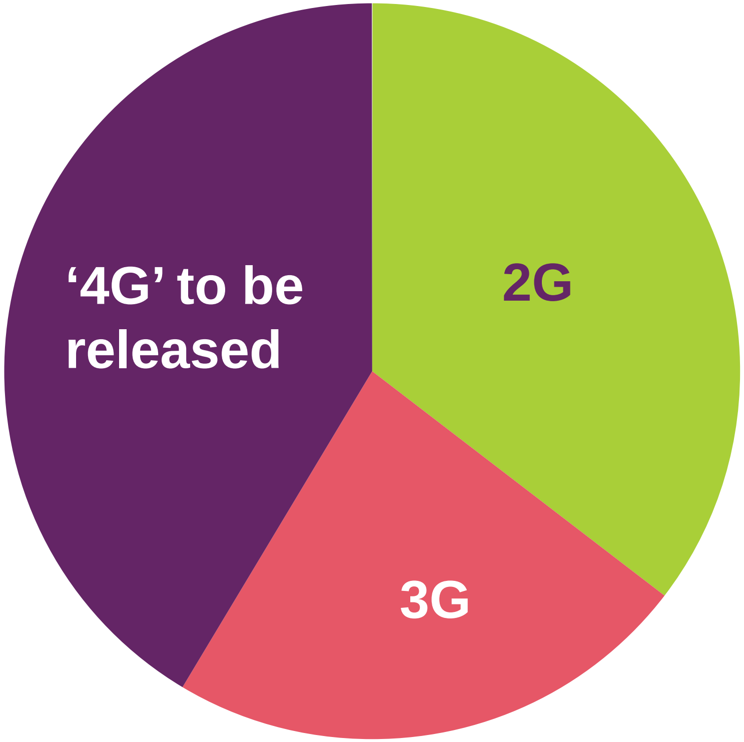
- Number of UK smartphone users and penetration of smartphones



Source: comScore, Mobilens, December 2007 - May 2010

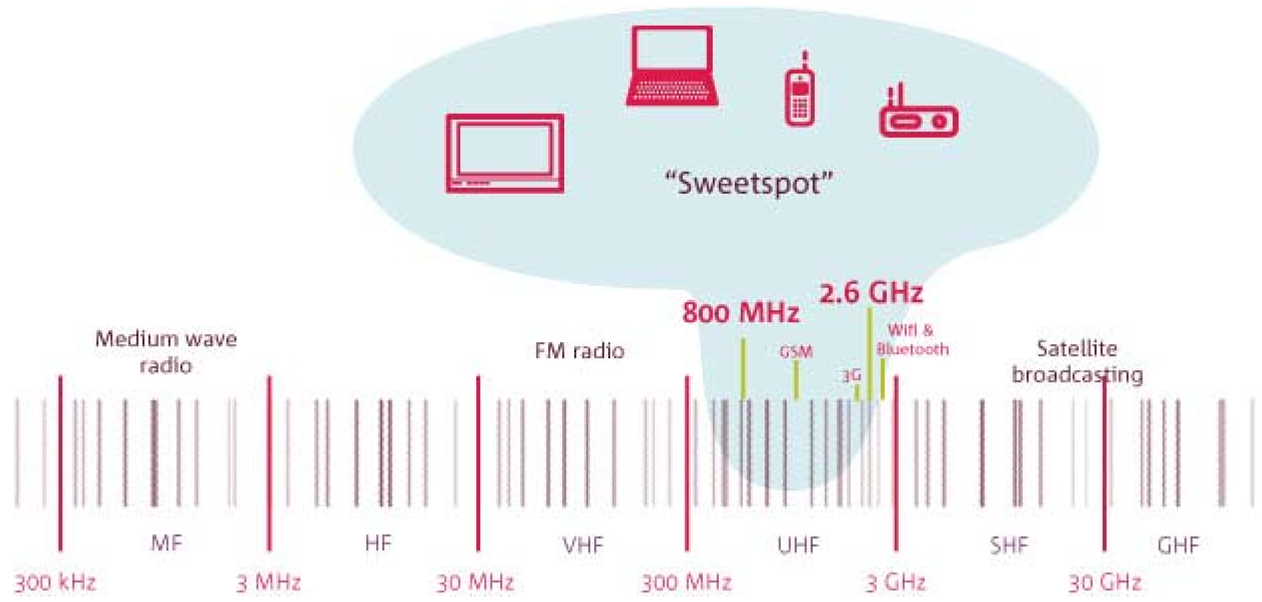
How much spectrum is being auctioned?

- We're preparing to auction two significant spectrum bands - 800 MHz and 2.6 GHz
- It is equivalent to three quarters of the mobile spectrum that is in use today
- And 80% more than the 3G auction of 2000

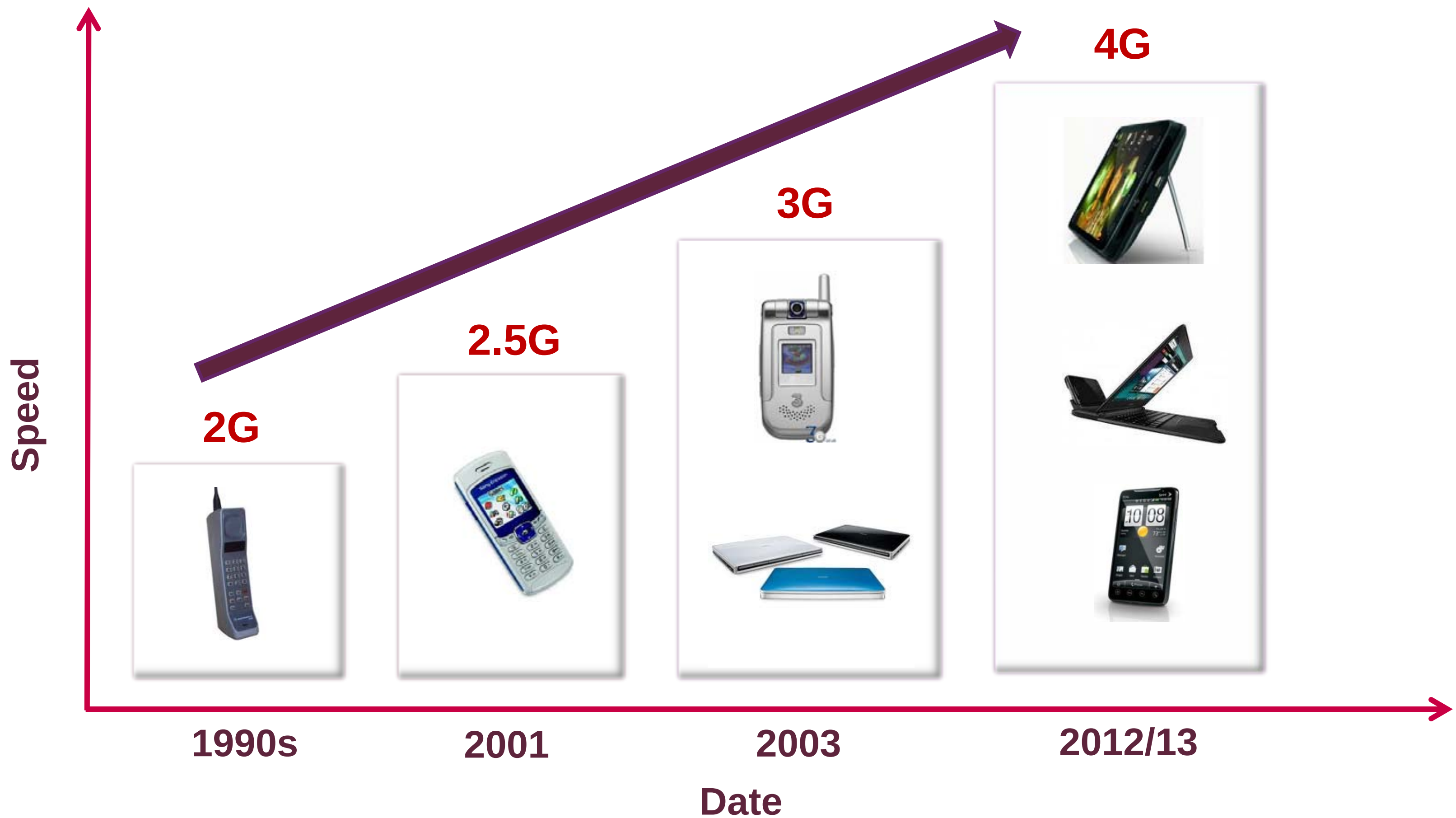


What is so good about these bands?

- Both lie within the ‘sweetspot’ and are internationally harmonised for next generation mobile broadband use.
- The combination of low and high frequency spectrum creates the potential for good capacity as well as wide coverage.



Evolution of mobile



Source: Ofcom.

What can we expect from 4G?

- 4G is ideally suited for wide bandwidth data services
- Speeds will be nearer to what you currently experience with home broadband
- Typical speeds might be 4Mbit/s upwards, compared to typical average ranges for current mobile broadband speeds via ‘ dongles’ of between 500Kbit/s to 2Mbit/s.

Promoting competition and coverage

- Our role is to secure the best use of this spectrum for the benefit of UK citizens and consumers
- Our objective is to encourage investment, promote competition and deliver wide coverage of services
- Achieved through a combination of measures to promote competition and ensure good future mobile coverage

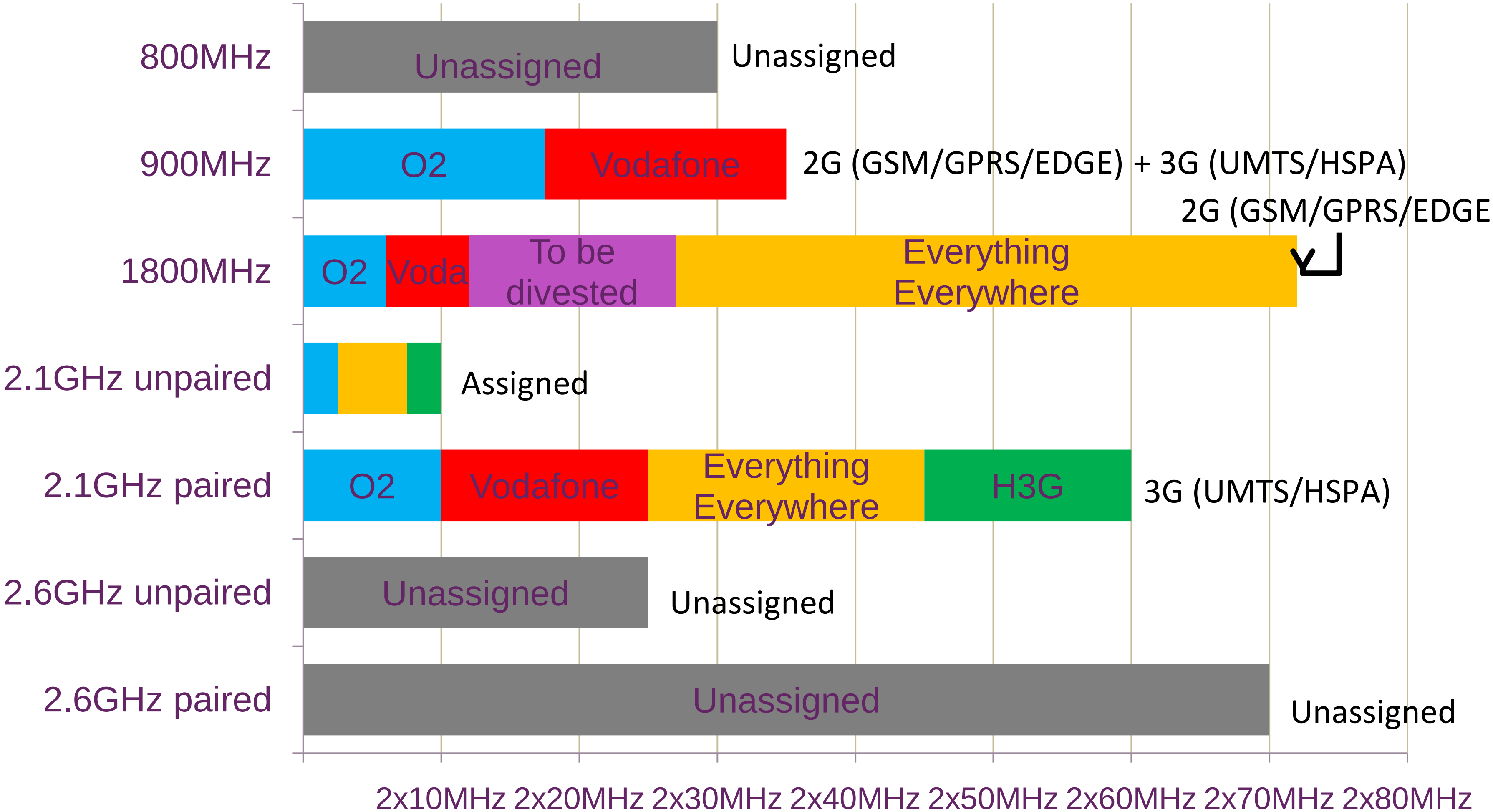
Conclusions of assessment

- Risk to future competition if bidding is unrestricted
- Competition at the national wholesale level is essential to future competition
- Fewer than four national wholesale competitors would present a significant risk to national wholesale competition
- Potential additional consumer benefits from the development of competitive sub-national networks
- Do not see a need for regulated wholesale access provided that there are at least four national wholesale competitors

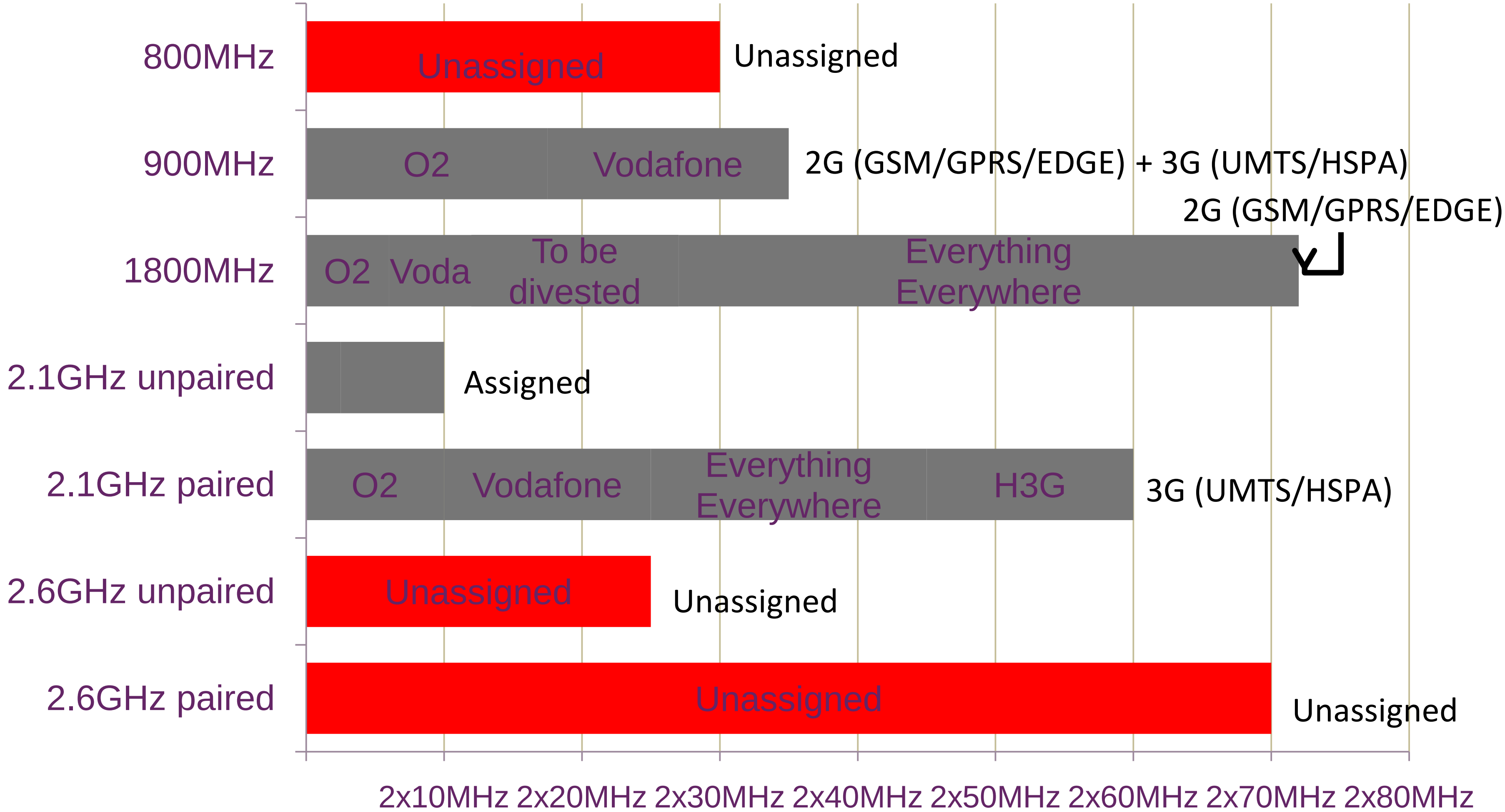
What does this mean for the auction?

- **Spectrum 'floors'**: To ensure that at least four parties each hold sufficient spectrum to be credible national wholesalers
- **Safeguard 'caps':** On both sub 1 GHz and overall mobile spectrum holdings
- **Spectrum for sub-national network operators:** Rules to facilitate bidding by potential sub-national network operators for part of the 2.6GHz band, to be used on a shared low power basis
- Consulting on option of **reserving** spectrum for this purpose

Existing spectrum holdings



New spectrum



'Floors' to promote minimum 4-player wholesale market

- Rules guaranteeing that at least four licensees each hold at a minimum one of the following spectrum portfolios after the auction:
  - 2x5MHz of sub-1GHz spectrum plus 2x20MHz or more of 2.6GHz
  - 2x5MHz of sub-1GHz spectrum plus 2x15MHz or more of 1800MHz
  - 2x10MHz of sub-1GHz spectrum plus 2x15MHz or more of 2.6GHz
  - 2x10MHz of sub-1GHz spectrum plus 2x10MHz or more of 1800MHz
  - 2x15MHz or more of sub-1GHz

Why are we consulting on these amounts?

- Competitors need access to some sub 1GHz spectrum to be credible national wholesalers
- If only hold a small amount of sub 1GHz spectrum also need access to a quantity of higher frequency spectrum
- If hold more sub 1GHz spectrum then don't need so much higher frequency spectrum
- Would no doubt prefer to hold more than 2x5MHz of sub 1GHz spectrum, but doesn't appear to us to be essential
- Full opportunity to bid for more in any case
- And reserving more would mean that outcome of auction would be more a product of regulation than competition

Safeguard caps

- To mitigate the risk of future distortions of competition arising from extremely asymmetric holdings of spectrum amongst licensees, proposing safeguard caps on sub-1GHz and overall spectrum holdings in the auction:
  - sub-1GHz cap of **2x27.5MHz** (800MHz and 900MHz spectrum)
  - overall spectrum cap of **2x105MHz** (800MHz, 900MHz, 1800MHz, 2.1GHz paired, 2.6GHz paired and 2.6GHz unpaired spectrum)

Total spectrum holdings by operator				
(MHz of paired spectrum)	Vodafone	O2	Everything Everywhere	Three
900MHz	2 x 17.4	2 x 17.4	-	-
1800MHz	2 x 5.8	2 x 5.8	2 x 45*	-
2.1GHz	2 x 14.8	2 x 10	2 x 20	2 x 14.6
Total	**2 x 38.0**	**2 x 33.2**	**2 x 65.0**	**2 x 14.6**

*NB This assumes EE has divested 2x15 MHz as required by the European Commission

Safeguard caps

- To prevent operators from acquiring more spectrum than needed
- With at least four operators with sufficient spectrum we do not see a strong need to set tighter caps
- Tight limit could impede quality, capacity and speed of roll-out of services

Shared low power use of some 2.6GHz spectrum

- Rules to enable up to 10 smaller bidders to bid collectively for shared low power use of 2.6GHz – in competition with high power users
- Most likely for 2x10MHz, but possibly for 2x20MHz
- Consulting on option of **reserving** spectrum for this purpose
- Benefits of additional competition from alternative mobile broadband service models versus costs of restricting access to spectrum for traditional high power use

Ensuring widely available mobile broadband services

- Proposing to include a coverage obligation in one 800MHz licence:
  - a minimum 2Mbps downlink service
  - covering 95% of UK population
  - by end of 2017
- Recognise this still will not deliver coverage in some more rural areas
- Therefore also consulting on additional obligation to address specific rural challenges

Next steps

- Consultation runs until 31 May
- Make decisions and publish final statement in the autumn
- Invite applications in Q1 2012 with auction starting shortly after
- Anticipate auction ending in Q2 2012 with licences issued shortly after
- Plan to consult on revised annual licence fees for 900MHz and 1800MHz licences reflecting full market value as soon as practicable thereafter

- We expect mobile operators to start rolling-out 4G networks from the start of 2013, and to start offering 4G services to consumers perhaps later that year. We would expect 4G services to be widely available across the UK a few years thereafter

Annex

Government Direction to Ofcom (December 2010)

- Liberalise 2G spectrum
- Vary 3G (2.1GHz) licences
- Revise annual licence fees for 900MHz and 1800MHz licences
- Make spectrum tradable
- **Assess future mobile competition and make proposals for combined award of 800MHz and 2.6GHz spectrum**
- Hold the auction

Assessment of likely future competition

- Careful consideration of need for measures in the auction to promote competition
- Based on assessment of future competition at a number of different levels in the value chain
- For a range of possible auction outcomes