

Lets look back..

- **70's – 80's...** 450, 850, 900
 - Analogue – phones don't need wires!
 - Different national standards

- **80's...** 850, 900
 - Telecoms is going digital
 - I should be able to use my phone in another country – GSM
 - GSM
 - D-Amps (TDMA)
 - CDMA
 - PDC

- **80's /early 90's**
 - UK "phones on the move – phones for people not places"
award of 1800 – PCN becomes GSM at 1800MHz spectrum –
standard came after spectrum award!

- **90's.... up to 2GHz**
 - Mobile multi-media – 3G.
 - Bit of a fight over standards (W-CDMA / CDMA 2000)

- **00's**
 - "IP" based mobile, faster something that can evolve; global
standard – LTE
 - Digital dividend and less than 4GHz

2010's – 5G

- What is the problem we are solving?
- Is not just very fast mobile?
- It's experience, applications and services
- Need to engage a wider community in developing the standards

But it's not just speed that matters!

- Ensuring the user has the capacity and capability they need at the time they want it
- MIMO on steroids
 - And so how can it fit in the device in your hand
- New air interface - even more frequency bands
- Building on what we have today – experience. Evolution not revolution
- Ensuring users always get the best

Spectrum

- Delivering “ultra fast” services
- 4G uses carrier aggregation
- But for 5G we talk about wide bandwidth channels
 - Various frequencies between 28 – 100MHz are already being proposed
 - Low/high frequency spectrum
- We need to contemplate how we fully leverage the traditional mobile bands

For 3G – had a mobile vision

- Set up 3GPP
 - Do we need a group – pulling together a much wider range of participants
 - Mobile industry
 - Application developers
 - Use the wider development community.
 - How about the wider standards community?

...5G is not just about mobile!

Thanks