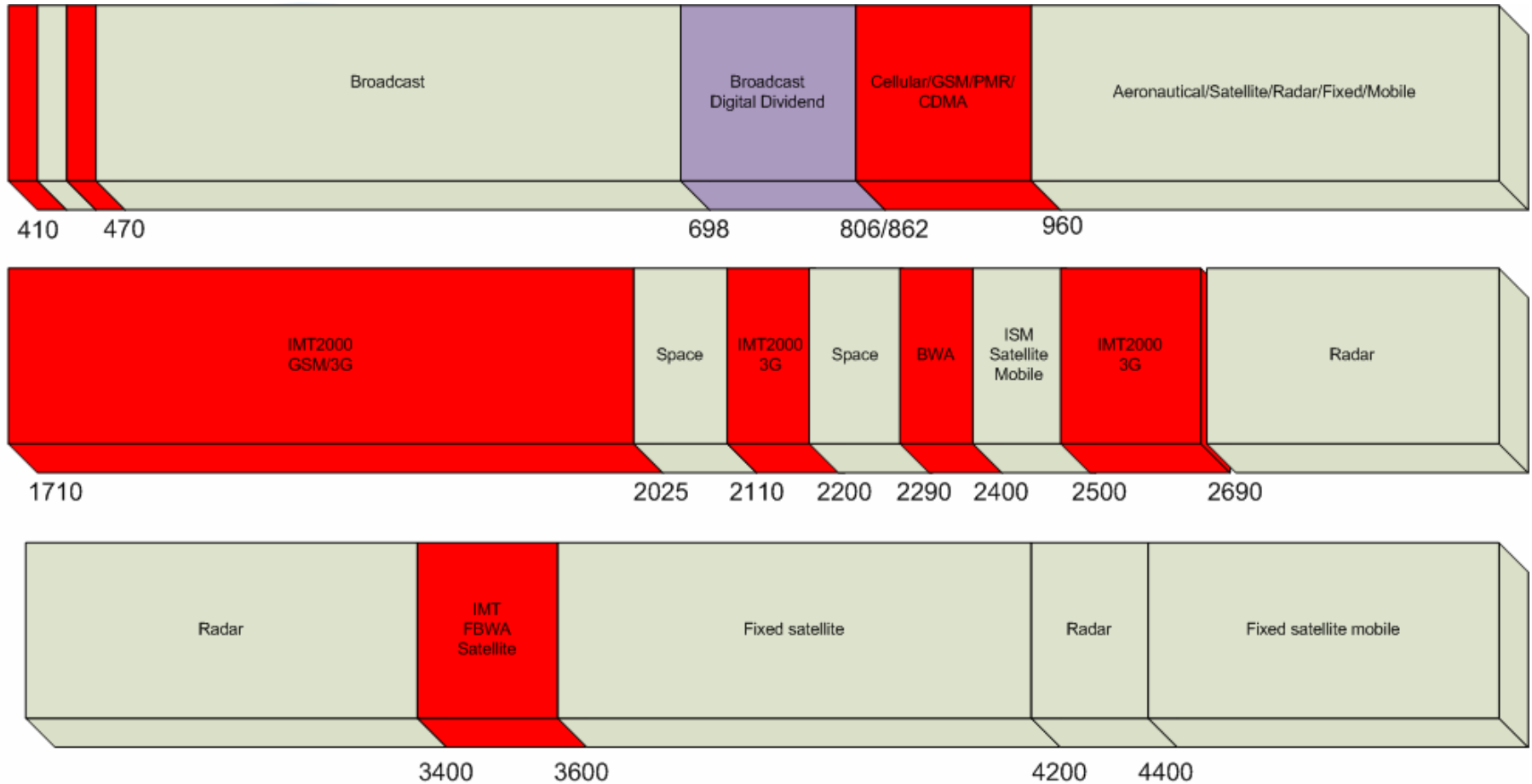


# Global view of Spectrum for Mobile BWA including IMT



# Mobile Spectrum of Interest

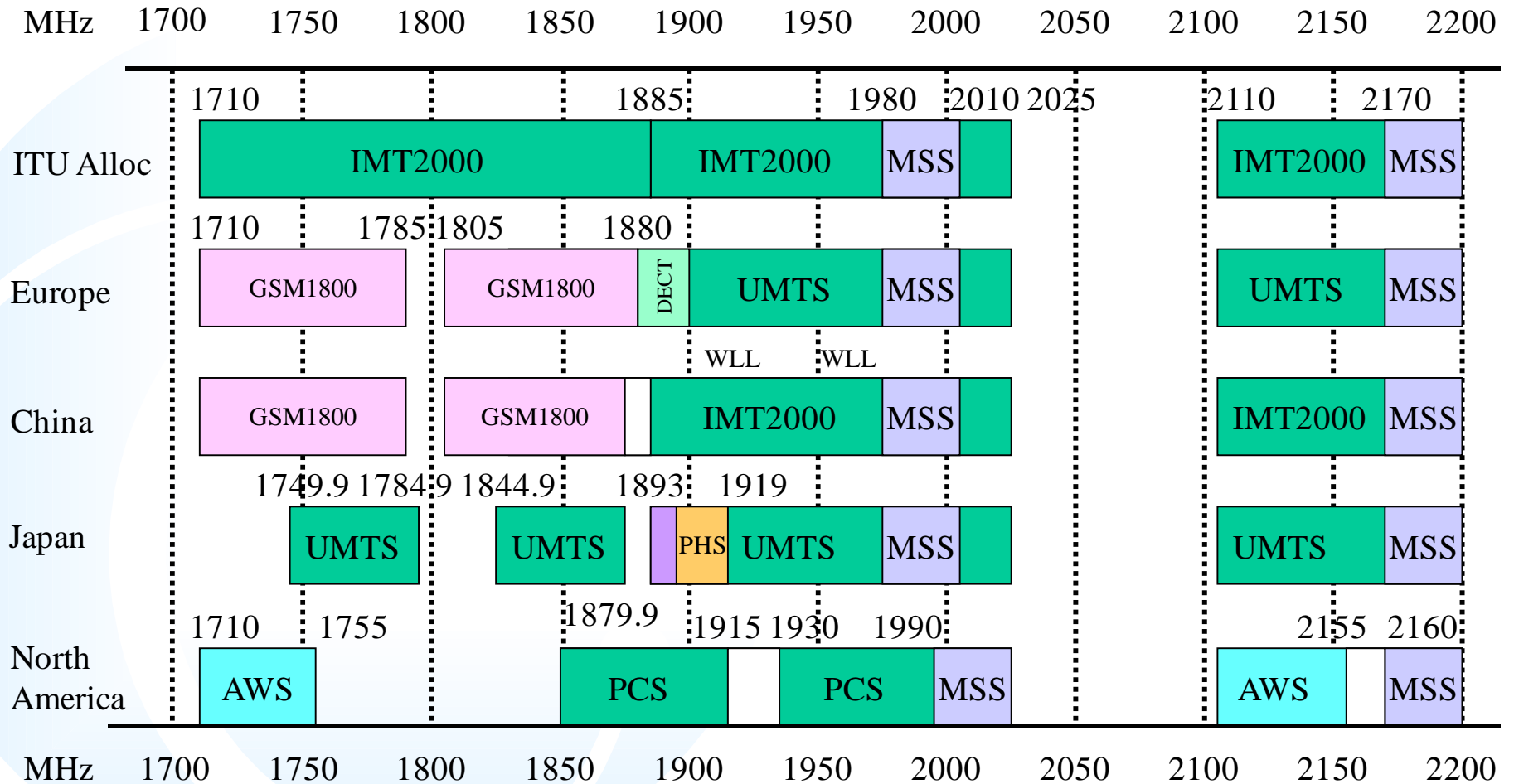


# 800/900 MHz

- Europe GSM – could be refarmed for 3G
  - 880-915 paired with 925-960 MHz (ignoring GSM-R)
- US
  - Cellular: 824-849 paired with 869-894
  - SMR: 806-821 paired with 851-866
- Japan
  - Cellular: 940-956 paired with 810-826: plans to offer 905-958 MHz in 2012
  - CDMA: 830-840 paired with 875-885

- Main Terrestrial 3G allocations in ITU Regions 1 & 3
  - 1920-1980 paired with 2110-2170 + unpaired eg 1900-1920 and 2010-2025
- Europe GSM – could be refarmed for 3G
  - 1710-1785 paired with 1805-1880
- US
  - PCS: 1850-1915 paired with 1930-1995
  - AWS: 1710-1755 paired with 2110-2155
- Asia
  - Japan: 1750-1785 paired with 1845-1880 for 3G
  - Korea: 1740-1770 paired with 1830-1860 for 3G

# 1700-2200 Mobile Allocations



# 400-470 MHz

## ● Europe

- Ex NMT spectrum and Tetra
- GSM450; cdma450
- Generally 5 MHz paired bands, in the ranges:
  - 410-420 paired with 420-430
  - 450-458 paired with 460-468

## ● US

- Much of the lower part of the band is for Amateur and radars
- Some public safety/industrial/transportation narrow channels

## ● Asia

- Some GSM450/CDMA450 systems

- TV Broadcasting occupies most of 470-806/862 MHz
- Transition from analogue TV to digital offers increased spectral efficiency
- Once analogue is switched off, spectrum will be released, perhaps for mobile use
- USA has already auctioned 700 MHz spectrum.
- Ofcom is consulting on Digital Dividend in UK
  - May award 550-630 MHz and 806-854 MHz in 2009, plus other interleaved spectrum
  - CEPT TG4 recommended making 790-862 MHz available
- Japan will offer 730-770 MHz for mobile after 2011

# 2300-2400 MHz band

- US: WCS 2300-2310 paired with 2350-2360 in two 5 MHz paired blocks + 10 MHz of unpaired spectrum
- Korea: 2300-2400: WiBro
- China: 2305-2390 MHz: Seventeen 5 MHz blocks to be released



# 2500-2690 MHz

- Fixed spectrum used for program making and special events
- Previously used for fixed links
- Used by satellite broadcasting
- This spectrum is identified for IMT, and is assigned to mobile in all ITU Regions.
- Auctioned already in US, Norway, New Zealand ...
- Auction underway in Sweden
- Auctions expected in UK, Germany ...
- In Japan, 2545-2575 is for XG-PHS while 2580-2625 is WiMAX

- 1452-1492 MHz imminent auction in UK: 9 qualified bidders
  - 17 lots of 1.7 MHz and 1 lot of 12.5
  - Interest for Broadcasting, Satellite broadcasting, could use for BWA
- Japan: 1429-1453 paired with 1477-1501 migrate from 2G to 3G
  - Plus 1463-1468 paired with 1513-1516
- US: 1392-1395 paired with 1432-1435 plus 1390-1392 unpaired

# 3400-3600 MHz

- 3.4 – 4.2 has a FIXED and FIXED SATELLITE allocation in all three regions. Mobile primary and secondary allocations are also used. Parts of the 3.4 – 4.2 GHz have been used for fixed wireless access systems, and some of these have been extended to cover nomadic use. There is considerable pressure from operators to allow fully mobile use.
- In many countries (~80) throughout the world, 3.4-3.6 GHz has been allocated to mobile and identified for IMT.
- The fixed satellite service uses this band, especially in Russia and the tropics. There are thousands of TV receive only stations which are open to the whole band – deployment of IMT and BWA systems in such areas may be difficult.

# Conclusion

- Significant amounts of spectrum could be used for broadband mobile wireless access to achieve high data rates:
- Cellular and 3G Bands
  - 800/900 MHz, 1800/1900 MHz and 2.1 GHz
- 450 MHz, 700 MHz and digital dividend
- 2300-2400 MHz
- 2500-2690 MHz
- 3400-3600 MHz

# Any Questions?

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