WHY DIGITAL?
WHY A NEW PLAN?

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ANALOGUE BROADCASTING

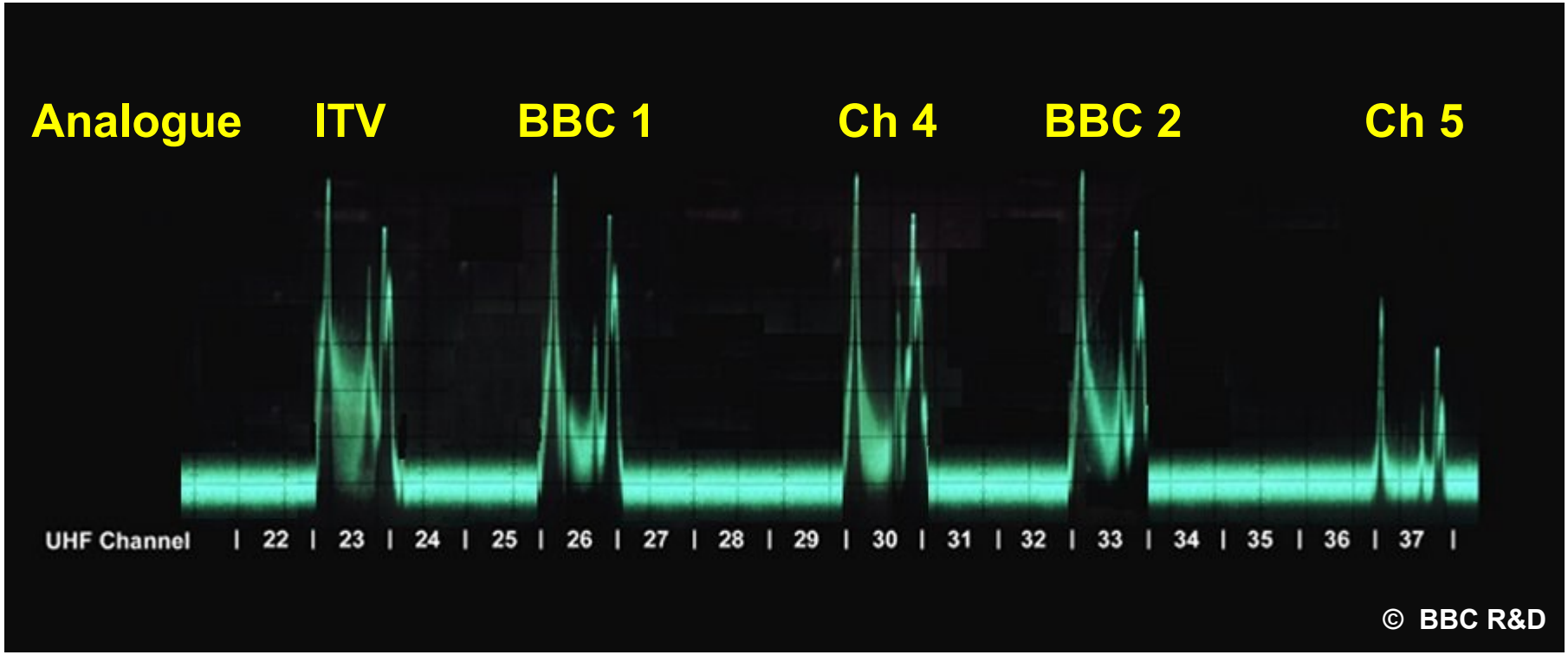
- Analogue broadcasting has been very successful
  - AM radio is now in decline in developed countries, but it is still used by billions of listeners every day
  - FM is now the principal delivery mechanism for radio in most countries, but there is insufficient spectrum to accommodate the growing demand for new radio services
  - Analogue terrestrial TV was dominant for many years, but expansion was severely restricted by spectrum availability

BACKWARDS COMPATIBILITY

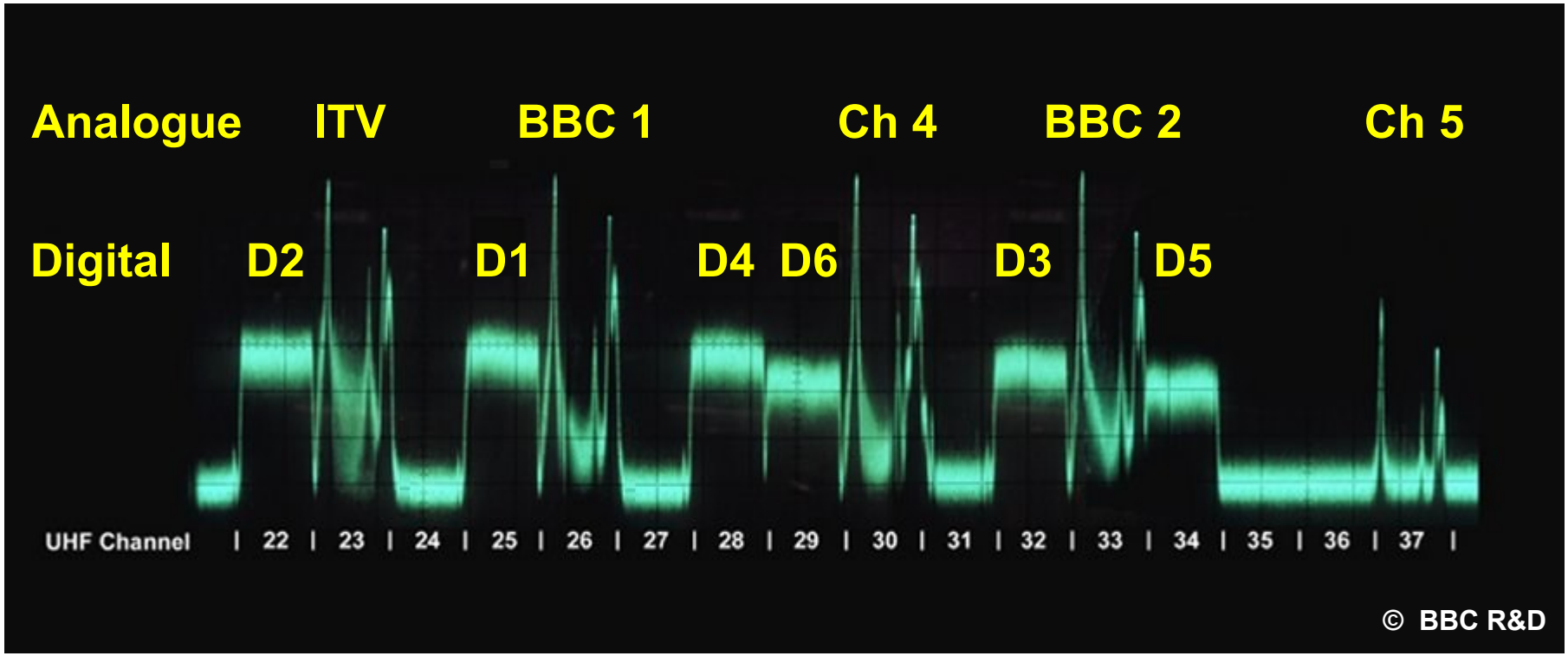
- Broadcasters enhanced their services
  - FM radio: stereo sound, RDS
  - TV: colour, digital stereo sound, teletext, subtitles
- All of these enhancements were constrained by the need for “backwards compatibility”
- In essence, the basic standards have been unchanged for many years
  - AM radio since the 1920s
  - FM radio since the 1950s
  - TV (625/50 or 525/60) since the 1940s

ABANDON BACKWARDS COMPATIBILITY

UK: ANALOGUE TV (1998)



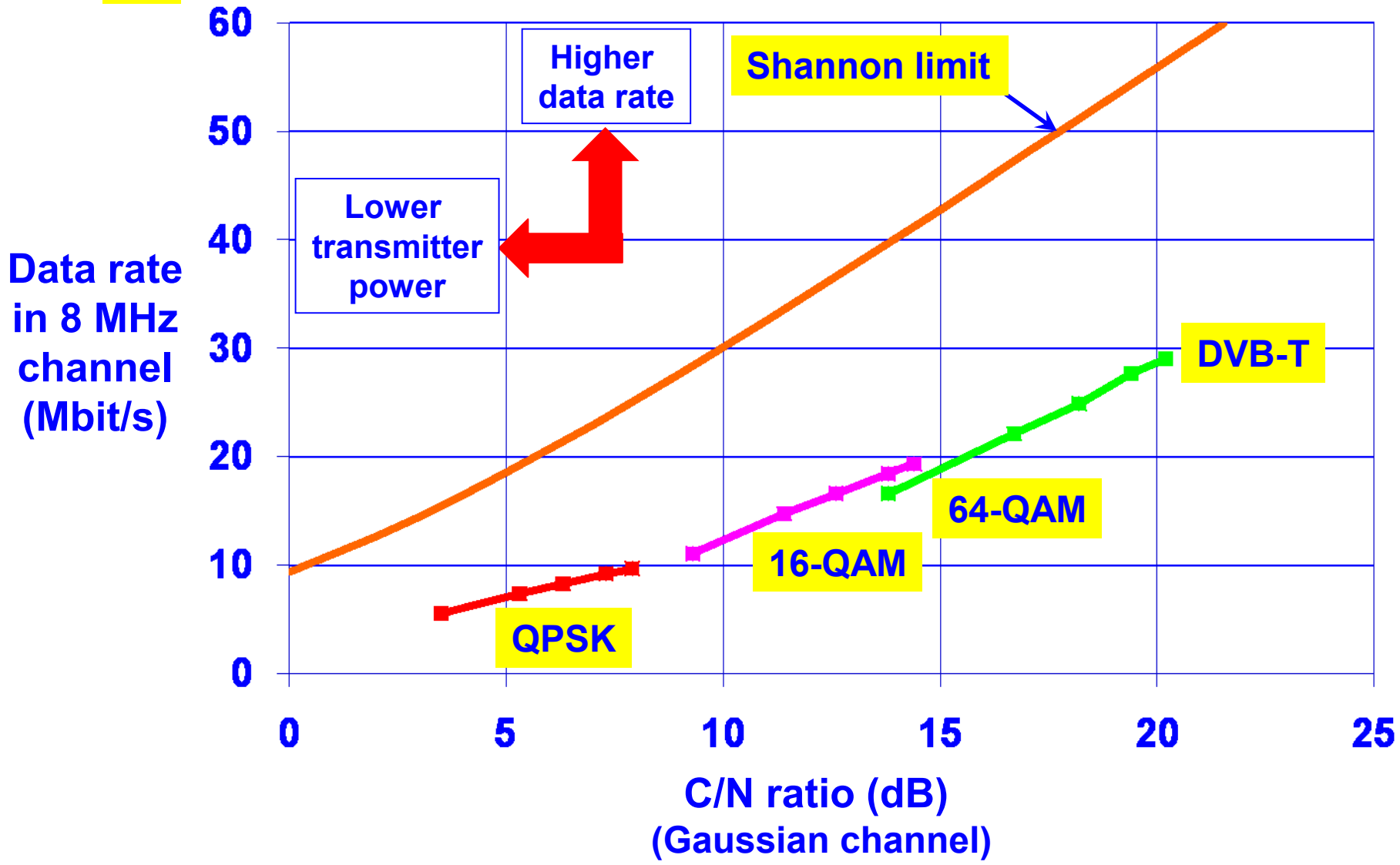
UK: ANALOGUE TV & DIGITAL TV (1998)



Digital services transmitted at lower power than analogue

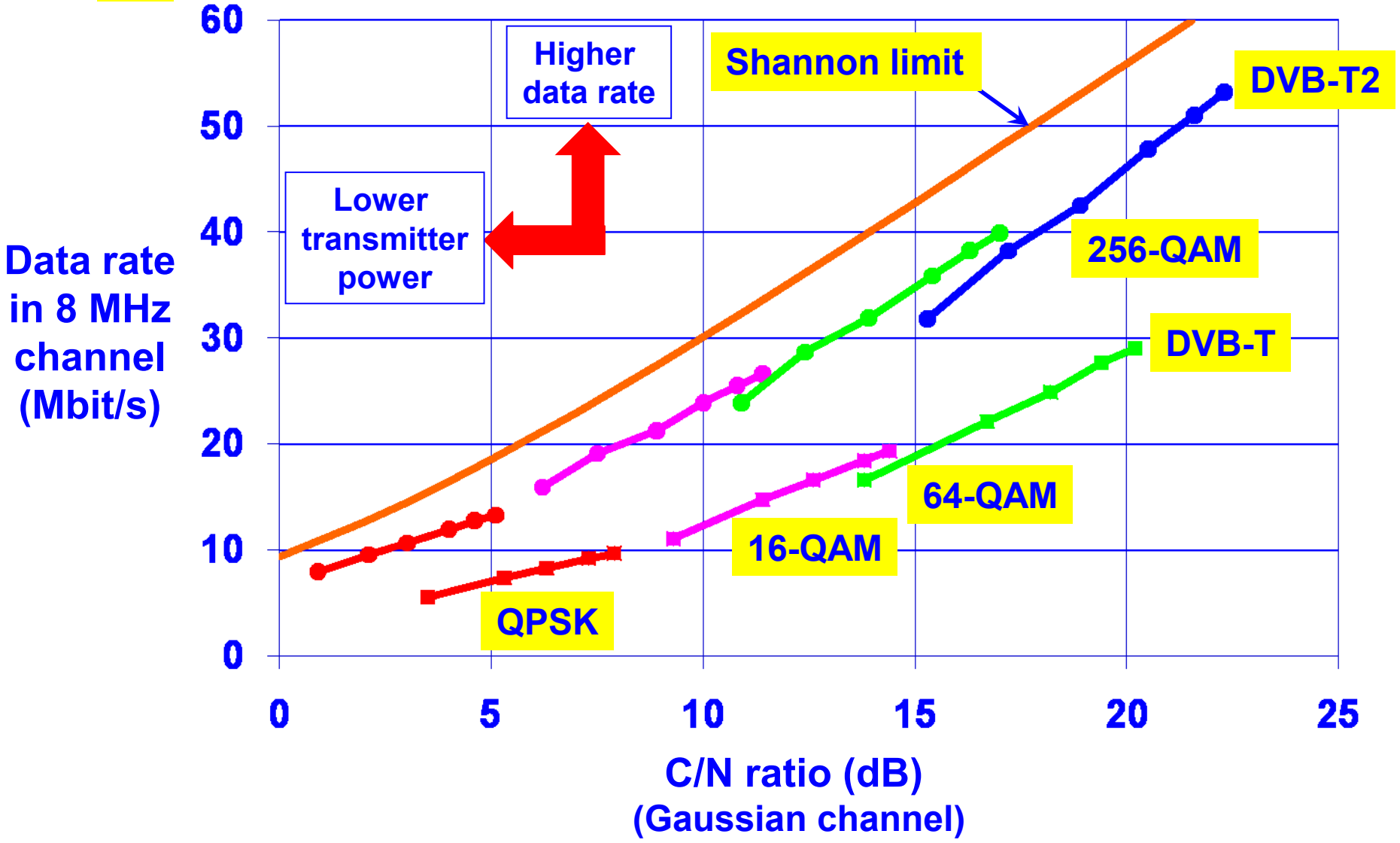
Each digital transmitter delivers several SDTV services

DVB-T



DVB-T data from Table A1 of ETSI EN 300 744 V1.6.1.

DVB-T & DVB-T2



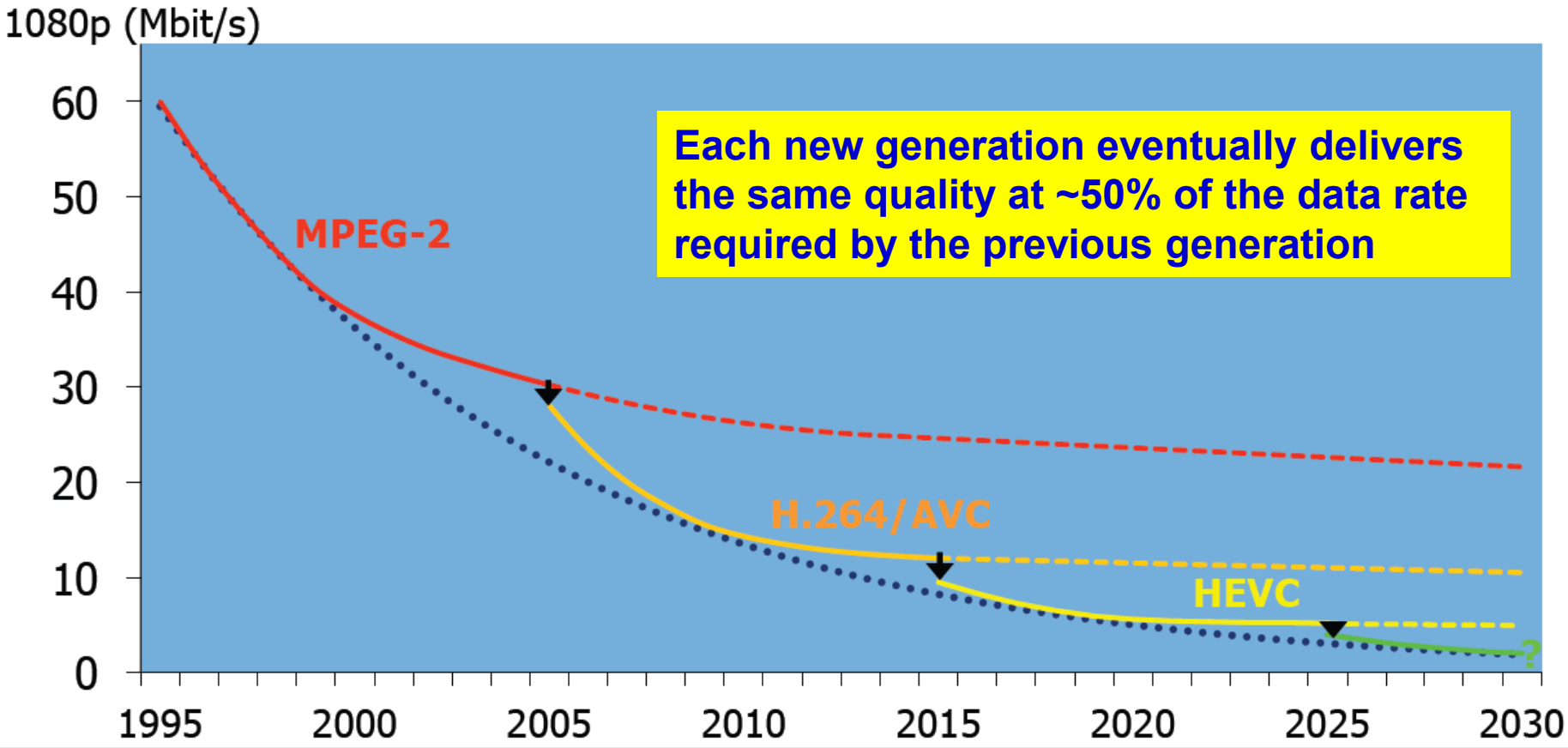
DVB-T data from Table A1 of ETSI EN 300 744 V1.6.1. DVB-T2 data from Table 44 of DVB Blue Book A133.

DIGITAL MODULATION & CODING

- Digital systems achieve reliable performance at low C/N ratios by using sophisticated digital modulation and coding techniques, such as:
  - COFDM with up to 32k carriers
  - each carrier is modulated using up to 256-QAM
  - advanced error correction schemes (e.g. LDPC)
- Digital compression is the key ingredient in squeezing lots of TV services into each multiplex
- In the mid-1990s, MPEG-2 video compression gave good quality SDTV at about 6 Mbit/s, about 3% of the uncompressed data rate
  - discarding 97% of the original data

VIDEO COMPRESSION

Illustration of Bit-rate Trends in Practice



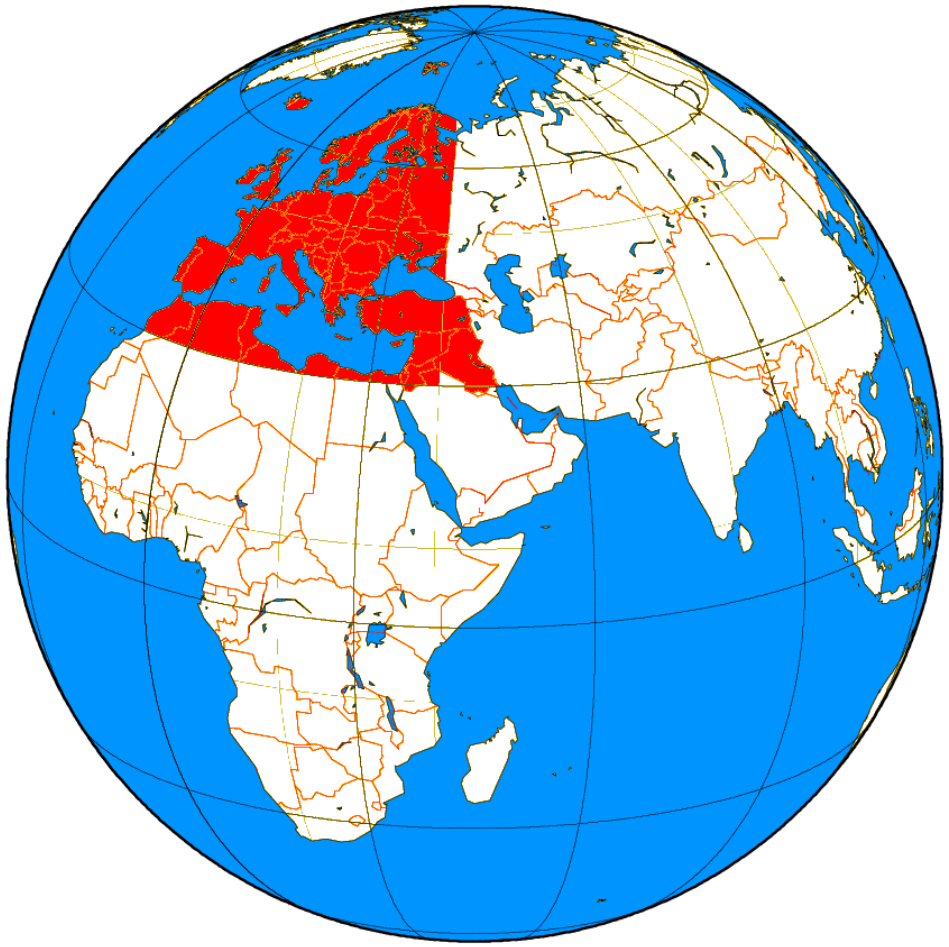
PLANNING CONFERENCES

- In Europe, we have had very good experiences with ITU Planning Conferences
  - ST61
  - GE84 (update of ST61 for FM above 100 MHz)
- GE75 (LF/MF for Regions 1 & 3) was a disaster!
- Although the initial “Plan” is important, it is even more important to have agreed procedures for modification of the Plan
  - ST61 survived for more than 40 years because the Plan could evolve to accommodate changing requirements

CEPT PLANS

- In the mid-1990s, many European countries were keen to launch digital radio and TV services
- As they could not wait for an ITU Conference, the CEPT organised two separate events:
  - Wiesbaden Plan (T-DAB) in 1995
  - Chester Agreement (DVB-T) in 1997
- These agreements allowed T-DAB and DVB-T services to start in various European countries
  - but they covered an area smaller than the European Broadcasting Area

EUROPEAN BROADCASTING AREA (ST61)



N.B. Boundaries shown on this map have no political or international significance

PLANNING AREA (GE06)

N.B. Boundaries shown on this map have no political or international significance

CONCLUSIONS

- Digital broadcasting has many advantages:
  - enhanced quality and/or more services
  - improved spectrum efficiency
  - lower transmitter power
- Despite successful work in the CEPT
  - ITU RRC04/05 was eagerly awaited in Europe
  - EBU and its members were very keen to support preparations for the Conference by providing experts and developing software