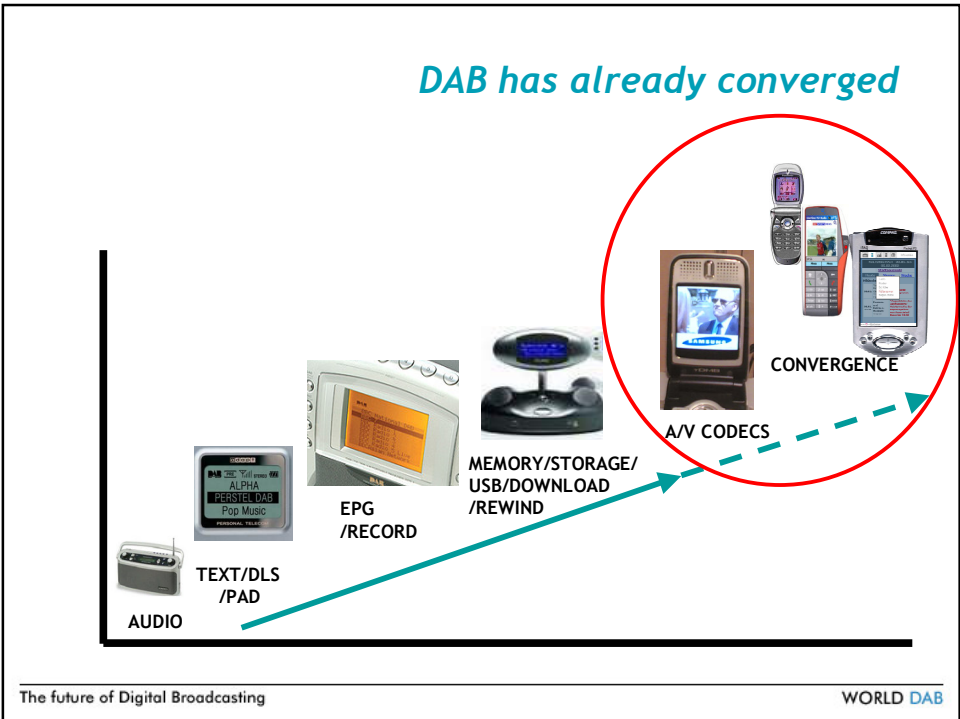
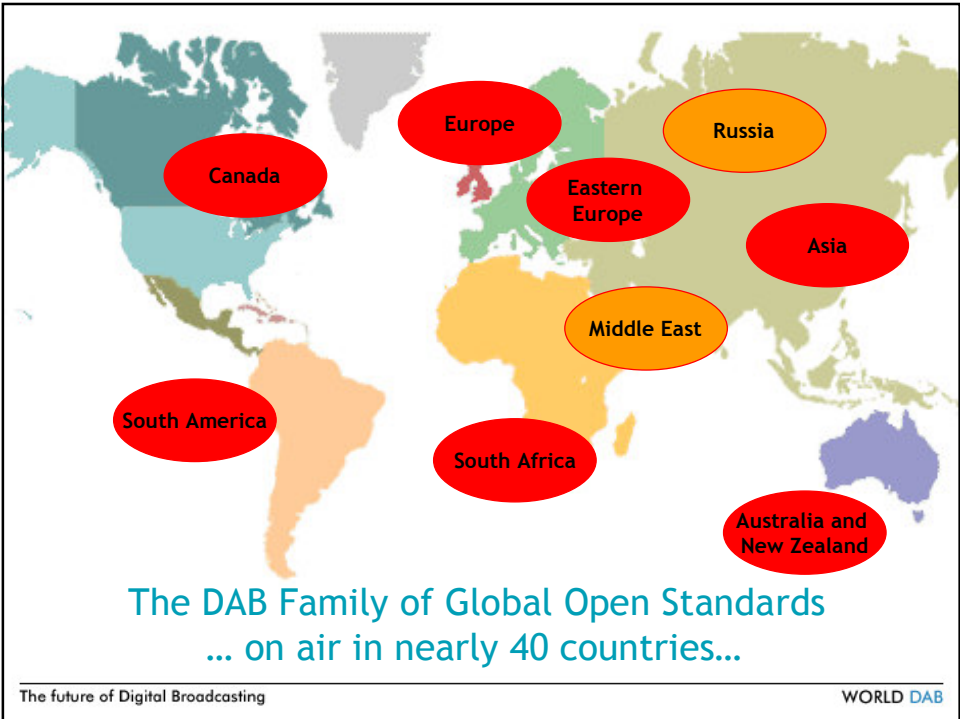


# The DAB Family of Standards The key to convergence

Quentin Howard  
President  
WorldDAB Forum

- Over 100 members from 30 different countries
- Industry networking forum
- Driving rollout of DAB across the world
- Industry information source
- Safeguarding DAB standards
- Development forum - receiver, silicon, content, systems, networks, technology, services





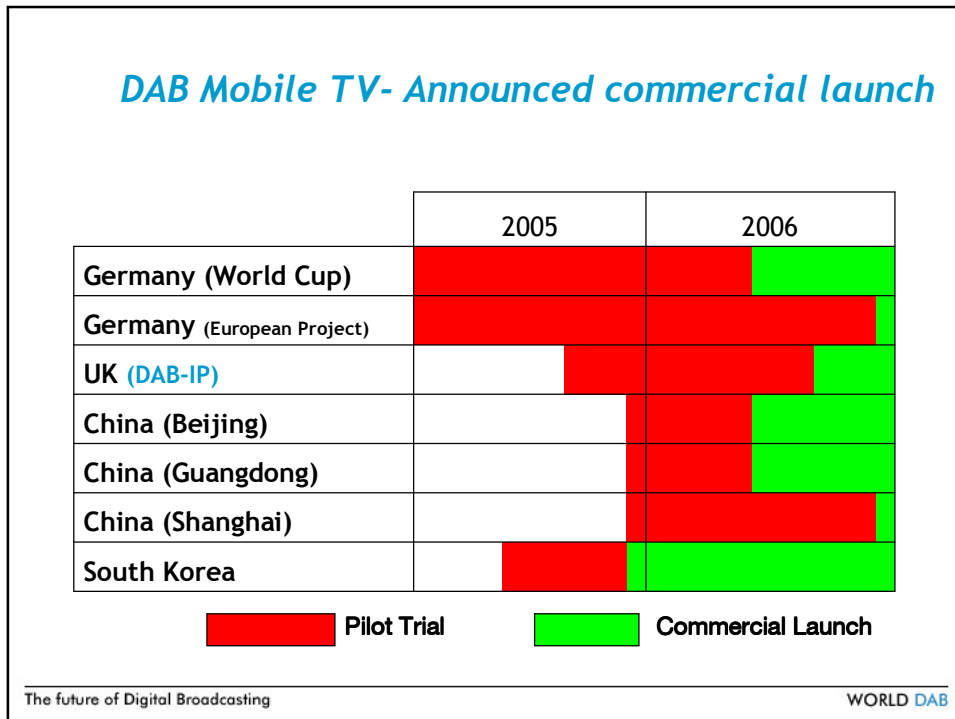
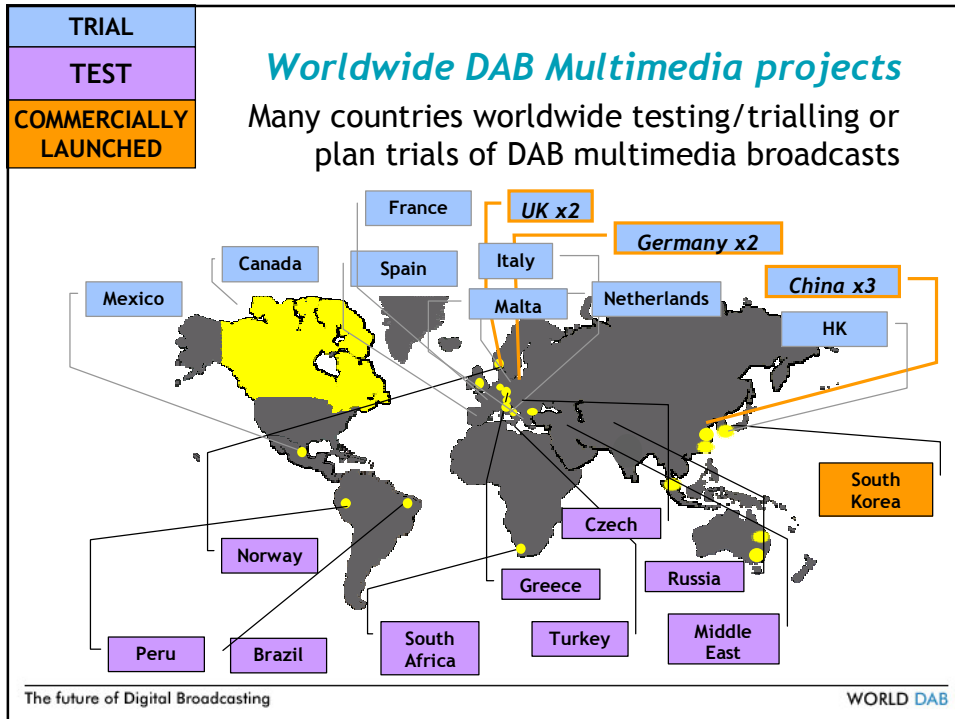
## *DAB Digital Radio + DMB / DAP-IP Mobile TV*

- DAB = audio + data services (EPG, PAD)
- DMB = stream mode MPEG video + DAB
- DAB-IP = Packet mode video + DAB
- Multi-standard platform designed for mobile
- Millions of DAB/DMB products
- Advanced silicon baseband and RF
- Spectrum in Band III and L-Band

## *Manufacturers building DMB products now - commercially available in Korea - shipped to Germany and China*

- Mobile phones
- In-car devices (TV screen + radio)
- Personal Media Player (PMP)
- USB dongles (for PC)
- Digital Cameras
- PDAs
- Laptops

***DMB is part of Eureka147 DAB standard  
DMB receivers are therefore DAB receivers too***



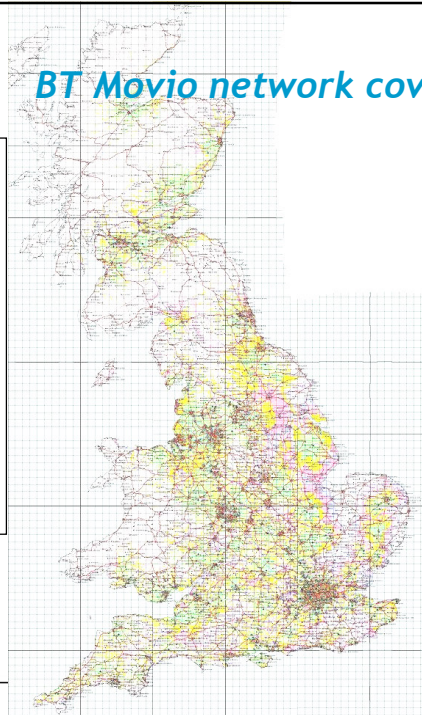
# Mobile TV in Great Britain DAB-IP

The future of Digital Broadcasting

WORLD DAB

## BT Movio network coverage

- 88% population coverage now
- National Digital One DAB network
- Indoor hand-held mobile coverage in London now
- 57% indoor h/h UK now
- additional coverage is SFN and requires no additional spectrum



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## The BT Movio launch device

- TV-centric device
- Dedicated hard key to instantly launch TV & Radio
- Prominent 'Red Button' hard key to launch & drive interactive services over GPRS
- Smartphone powered by latest Microsoft Mobile version 5 OS
- Windows Media 9, Microsoft DRM 10
- 2.5G device with DAB chipset and integrated L-Band antennae
- MicroSD card, 1.3 Mega pixel camera, Bluetooth
- Wholesale cost c. £200
- Available Q3 2006, multiple colours



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## The BT Movio services

### Broadcast TV

- Differentiated by live 'real TV' experience
- 6 launch channels
- More channels planned
- Programming aligned with consumer viewing habits



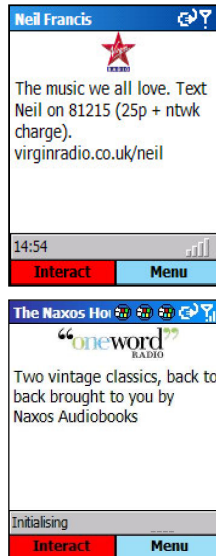
The future of Digital Broadcasting

WORLD DAB

## The BT Movio services

### Digital Radio

- 350+ channels across the UK
- DAB radio with live text-based DLS
- Interactive radio
- Programme information
- Channel recognition / branding



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## The BT Movio services

### What's On Guide

- Providing a TV guide experience users are familiar with
- Branded with channel logos
- Detailed 7 day information guide
- Ability to set programme reminders
- Ability to be skinned to reflect O2 livery / offering



What's On Guide created a very positive consumer experience during trial

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# BT movio

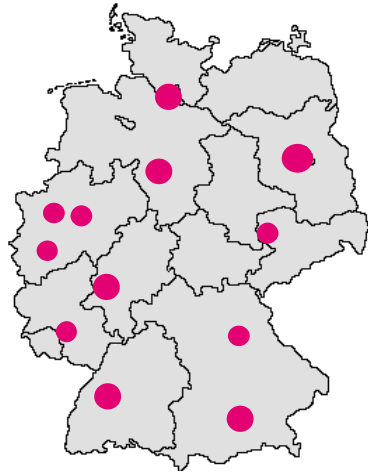
UK Pilot: 1000 users  
June-December 2005

- 70% pilot users would pay up to €11/month on their current network to receiver TV and radio
- During the pilot
  - TV watched for an average of 66 minutes per week
  - Radio listening to for an average of 95 minutes per week
- DAB TV & Radio services consumed for average of 2hrs 41 minutes
- 54% would buy a mobile phone which supported the service
- 59% of respondents rated the service as appealing or very appealing

# Mobile TV in Germany DMB



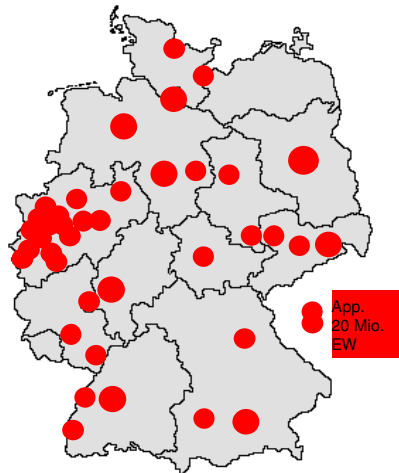
## Technical Designs DMB Rollout mid 2006



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## Roll out scenario end of 2006 Cities > 200.000



German DMB  
coverage

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# DMB now in Korea

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## Data Services

### TTI service (YTN & ETRI)



Congestion



Weather



Stock



Point of Interest



Road Traffic Message/Public Transport Interface



News (Headline/Detailed)

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## >30 DMB Terminals

### Phone



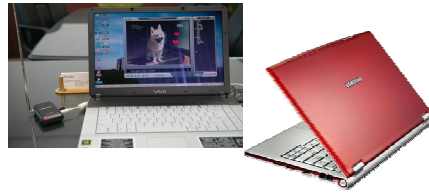
### In-Car



### Digital Camera



### Laptop & USB



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## DAB and DMB Consumer Devices

- Already available in mass production
- 300 different DAB and DMB devices
- Low consumer prices (< € 50)
- Mature silicon technology
  - Low power, high functionality
- Next generation silicon to be multi-standard
  - DAB, DMB, DVB-H,
- **Multi-standard is not a consumer barrier**
- Issue is therefore speed to market

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# Spectrum in Europe

## DAB, DMB & DAB-IP

### Mobile TV

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### Current DAB-DMB Status and Spectrum in Europe

<i>Countries</i>	<i>Status</i>	<i>Spectrum</i>
Austria	Trials	Band III and LBand
Belgium	Operational	Band III and LBand
Czech Republic	Trials	Band III and LBand
Denmark	Operational	Band III and LBand
Estonia	Trials	Band III and LBand
France	Trials now, Tender in 2006	Band III and LBand
Germany	Operational	Band III and LBand
Ireland	Trials	Band III and LBand
Italy	Trials now, Tender in 2006	Band III and LBand
Latvia	Trials	Band III and LBand
Lithuania	Trials	Band III and LBand
Malta	Operational in 2006	Band III and LBand
Netherlands	Tender in 2006	Band III and LBand
Portugal	Operational	Band III and LBand
Spain	Operational	Band III and LBand
Sweden	Delayed Launch	Band III and LBand
United Kingdom	Operational	Band III and LBand

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- Audio, TV and multimedia to mobile - **NOW!**
- ETSI standardised - **NOW!**
- Spectrum ratified and licensed - **NOW!**
- Extensive product range - **NOW!**
- Low risk implementation - **NOW!**
- Mature and low power silicon - **NOW!**
- Best economic rural & urban solution - **NOW!**
- Convergent solutions with telecom operators - **NOW!**
- **Launched commercially - NOW!**

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### *Mobile TV considerations*

- TV is not “everything”
- Radio is equally important in mobile
  - UK experience: TV 66 minutes, Radio 95 minutes
- Other mobile data is also important
  - Korea DMB data services, EPG, TTI (TMC/TPEG), visual radio services, broadcast web content
- **Free-to-air remains a key social, cultural and democratic requirement**

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### *Future Spectrum issues for EU*

- Some DAB “radio” spectrum available now in 16 EU states
  - Wiesbaden 95 for Band 3 VHF
  - Maastricht 2000 for L-Band
  - Also allocated/available in other EU states
- RRC06 to allocate/re-allocate digital spectrum in Band3 (also Bands 4 & 5 for TV)
- Ensure sufficient spectrum for TV and Radio

### *Issues for EU Spectrum Policy*

- Recognise value and spectrum efficiency of T-DAB/DMB systems for converged mobile broadcasting
- Recognise the equal value and importance of radio and TV to the consumer
- Recognise T-DAB/DMB is an existing, efficient and scalable market for radio and mobile TV
- Harmonise spectrum for T-DAB/DMB services to ensure interoperability and mass market devices
- Standardisation is key to interoperability across EU Member States

WORLD  
**DAB**

The future of  
**DIGITAL BROADCASTING**

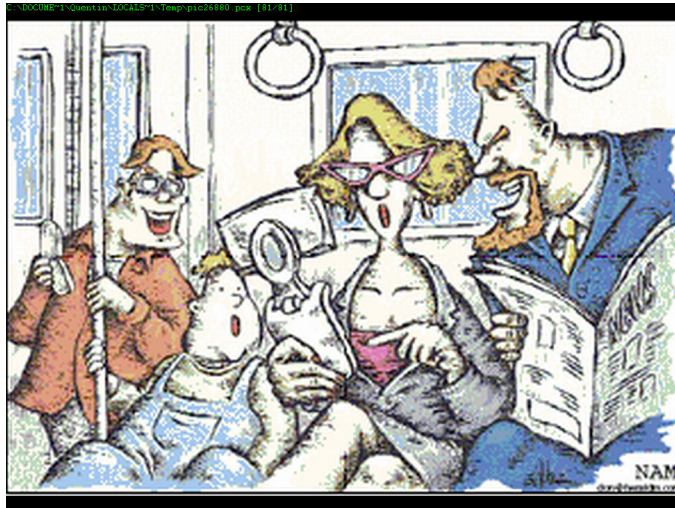
Radio • Mobile TV • Multimedia • Traffic Info

[www.worlddab.org](http://www.worlddab.org)

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*Be careful what you wish for...*



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