

Broadband Wireless Access Standardisation - A European View

N-WEST, November 9th 1998
Dave Palmer

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Presentation

- **BWS Market & Timing**
- **Standardisation**
- **Inputs from the ACTS Program**

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BWS Market - W&E

Europe

Forecast Subscribers

- **2001 - 1.8M subs @ 28GHz, 0.5M @ 42GHz**
- **2003 - 2.3M subs @ 28GHz, 3.0M @ 42GHz**

Source: Miller Freeman

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BWS - Market Stimuli

- **Market requirement for services - video/voice/data**
- **Operator business plan - investment, cash flow, return**
- **Need for speed of deployment**
- **Government pro-active initiatives**
 - **new service**
 - **competition enabling**
- **Environmental constraints on alternative technologies**

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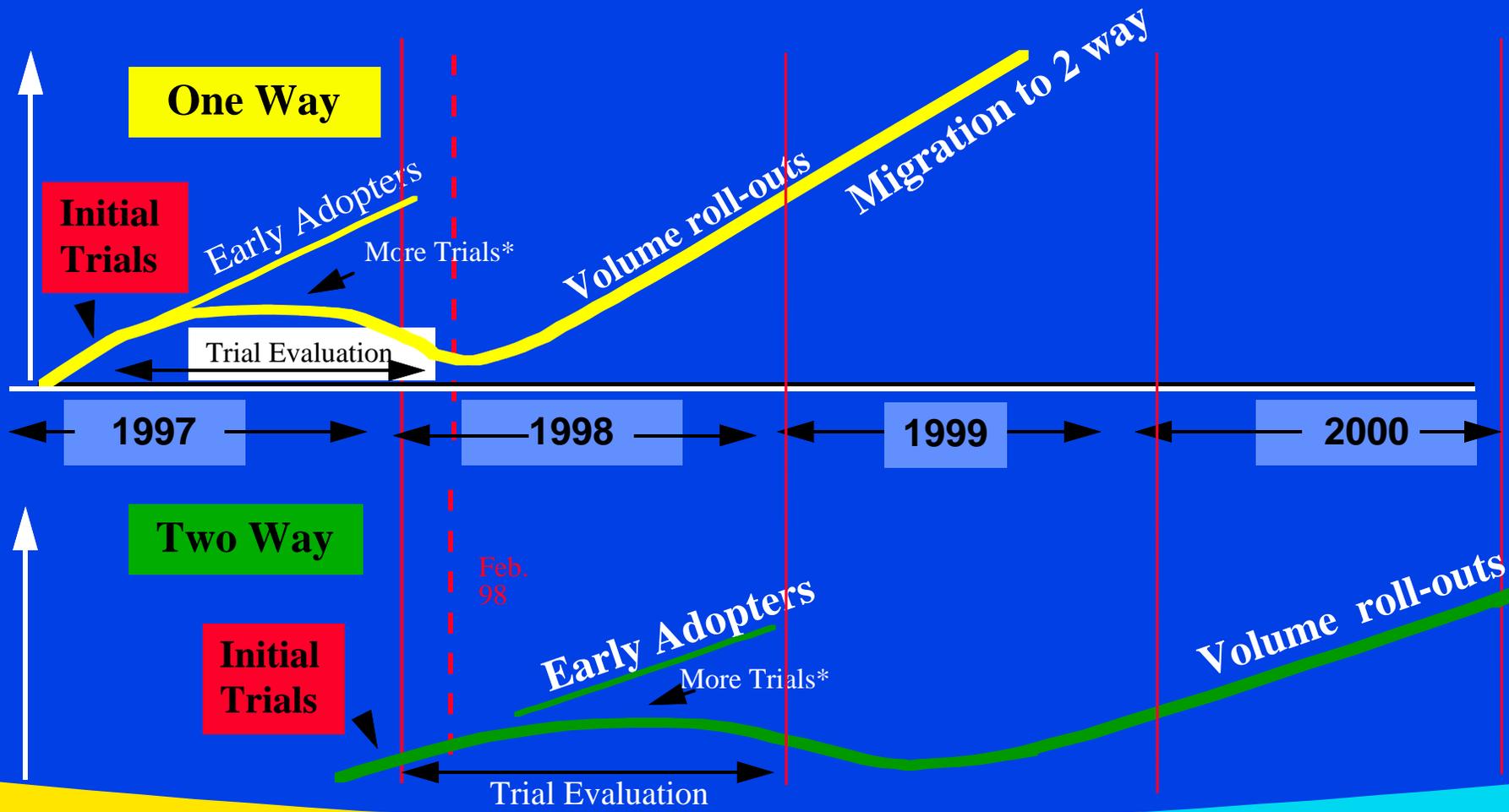
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BWS Market Timing



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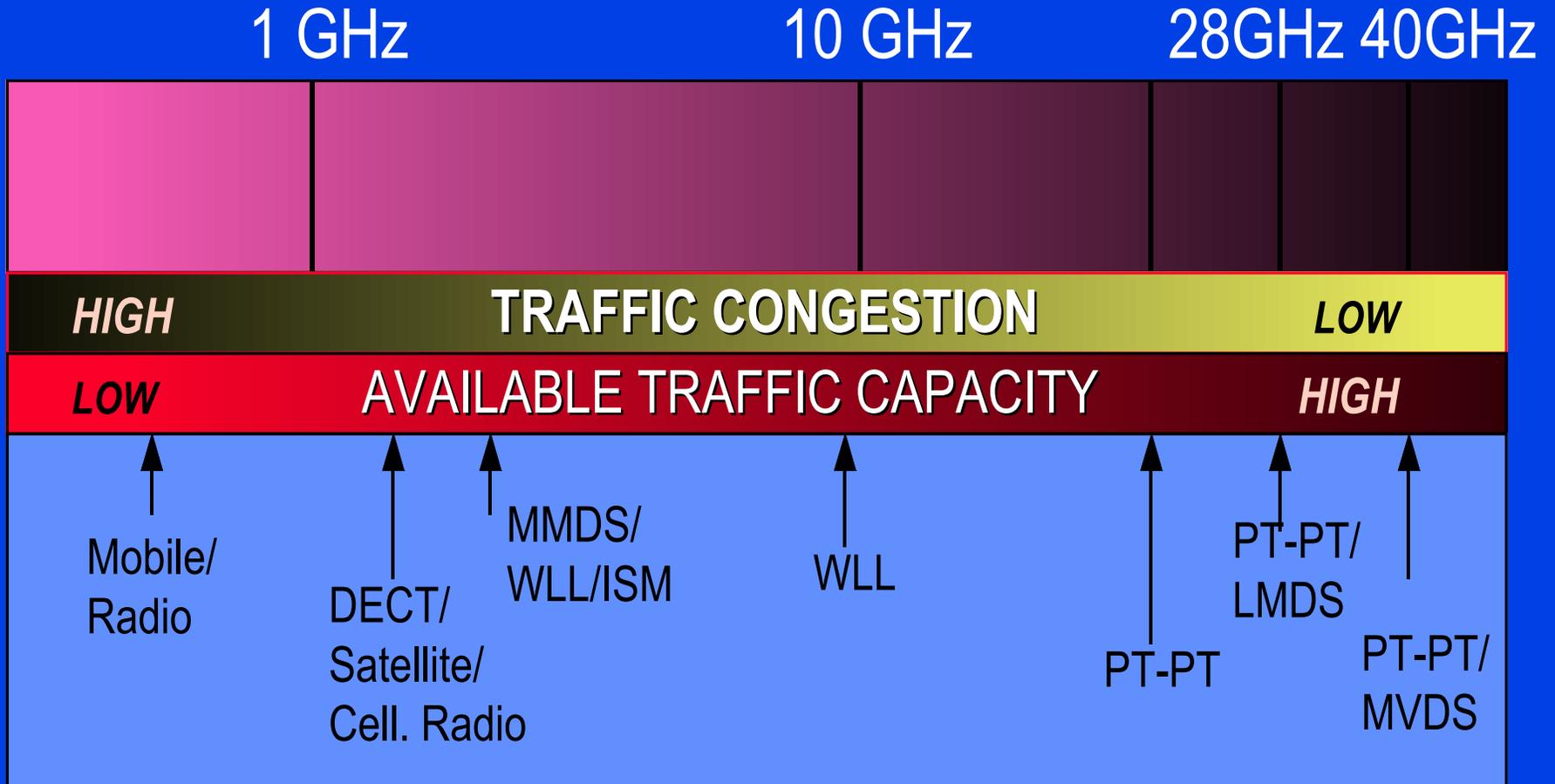
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BWS Market - SPECTRUM



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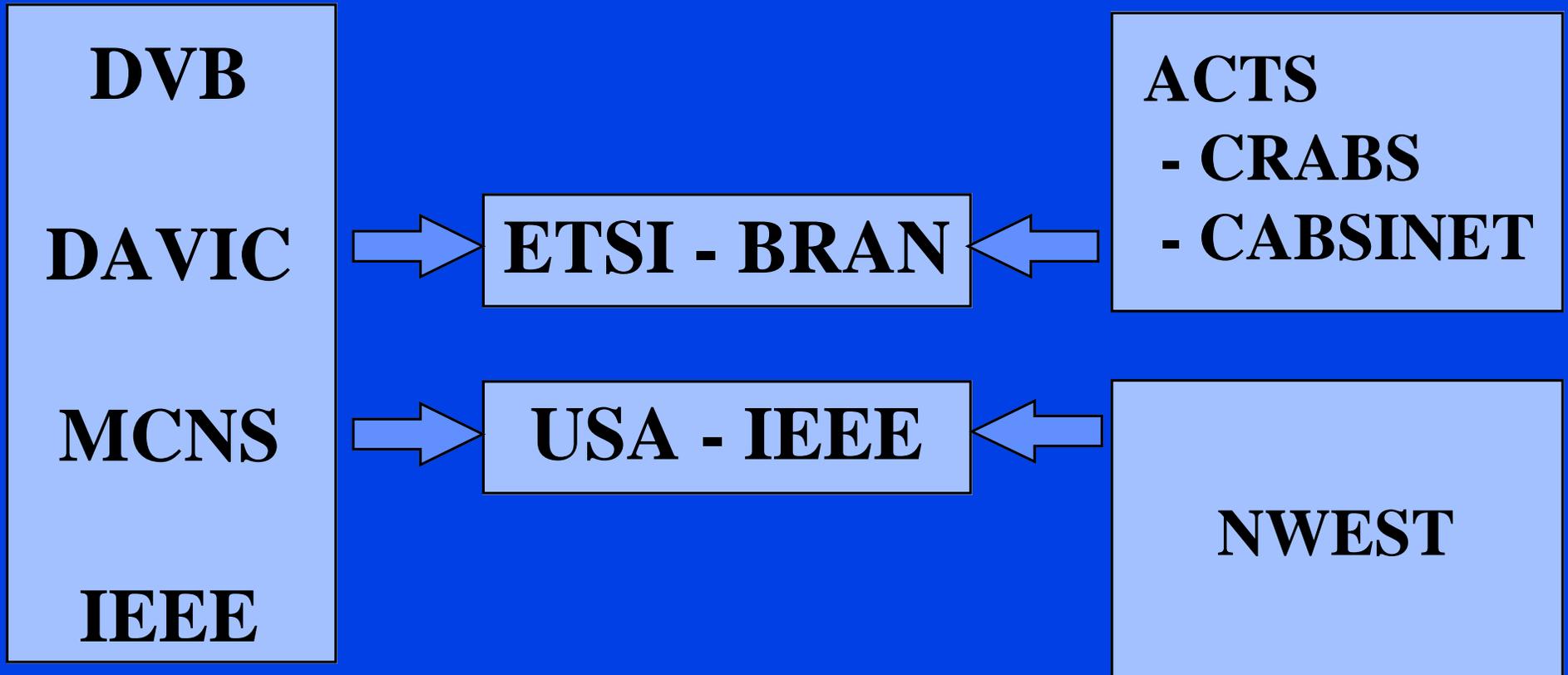
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Standardisation Process



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Standards Position Broadcast

- **Analogue specification issued in UK - MPT1550**
- **Digital specification issued in UK - MPT1560**
- **DVB specification issued - ETS300748**

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MPT 1550

- 40,5 to 42,5 GHz, Standard 'satellite' receiver set-top boxes, 4 Groups of 32 channels, 29,5MHz channel spacing, Analogue FM, 100 ... 400 mW transmitted per channel, Sector coverage (edge-fed cells), 950 ... 2050 MHz IF

MPT 1560

- 40,5 to 42,5 GHz, Maintains DTH compatibility, Analogue channel --> transponder channel, 96 channels in total : flexible cell groups, 39 MHz copolar spacing with interleave, QPSK

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42GHz BWS Channel Plan

A - Vertical Polarisation
MPT1550



C - Vertical polarisation



4 groups of 32 RF channels : co-polar spacing
29,5 MHz , cross-polar spacing 14,75 MHz

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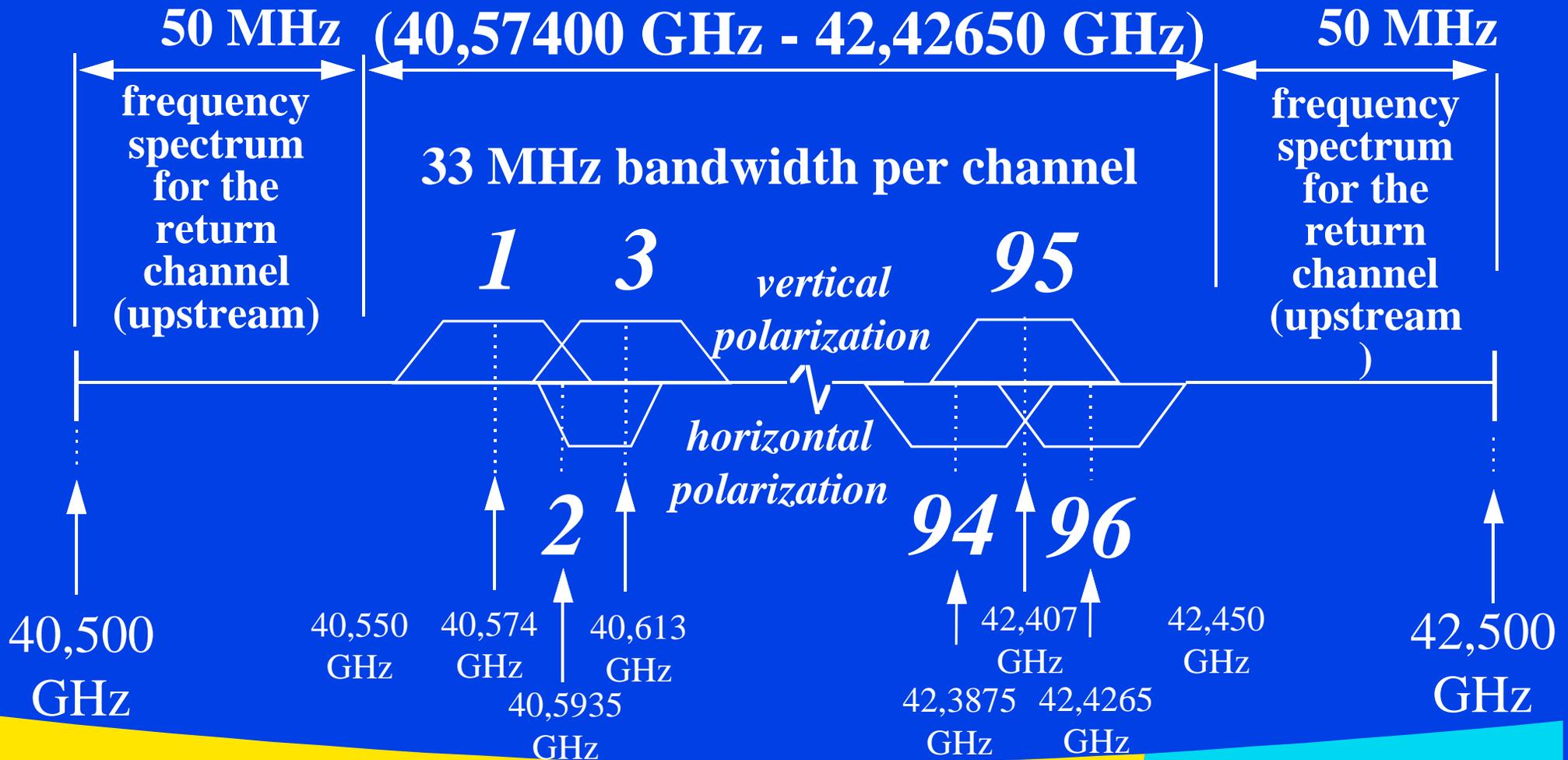


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Channel plan for digital MVDS

96 MVDS RF- channels



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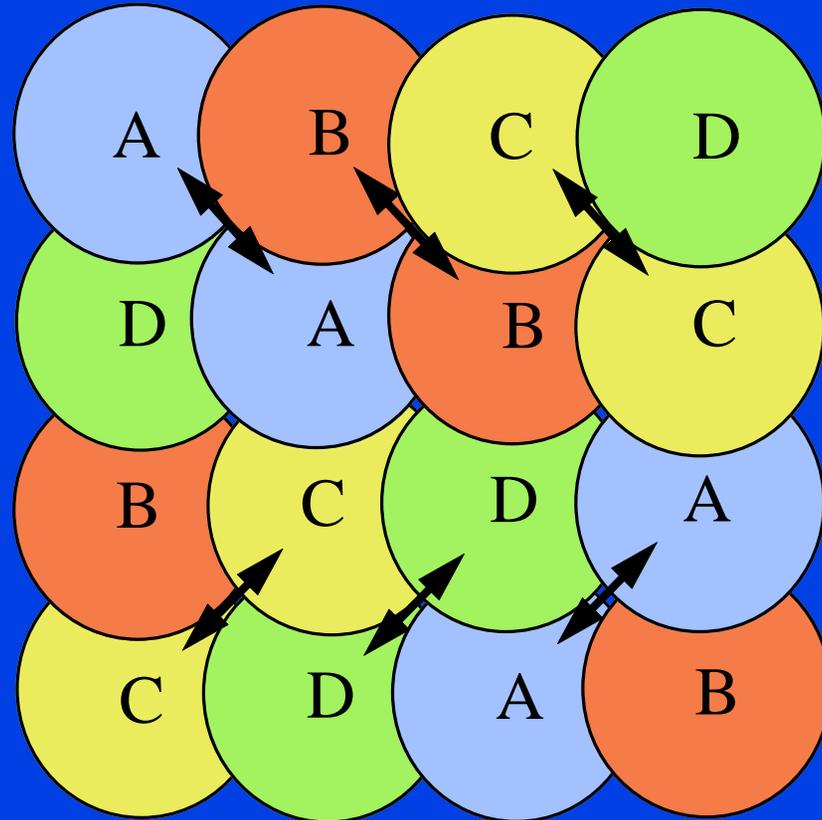
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Cellular Architecture

Cells edge fed

Cells 3 ... 6 km dia.

Patent granted



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ETS 300 748

- **Digital Video Broadcast Standard for above 10 GHz. Based on DVB satellite**

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Standards Position

Interactive

- Digital specification issued in UK - MPT1560
(permits return channel)
- DAVIC, - DAVIC 1.3
part 08
- DVB, -ETS 300 800
- BRAN, -Hiperaccess

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DVB

➤ Downstream:-

Inband - TDM based on MPEG2 TS on DVB-S
physical Layer.

Out of Band - TDM on 3 Mb/s DQPSK

➤ Upstream:-

FDM/TDMA

3Mb/s DQPSK with RS FEC

1 ATM cell per timeslot

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DVB

➤ MAC:-

Centralised control

polling, contention, reserved access modes.

power, timing, frequency ranging functions

➤ IF Interface:-

frequency duplex

no mandatory frequency bands

transmission masks specified

no physical parameters defined (DC, No. cables)

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DAVIC

➤ Downstream:-

- TDM based on MPEG2 TS or ATM on DVB-S physical - Layer. (Optional 16QAM)

➤ Upstream:-

- FDM/TDMA
- flexible bit rate DQPSK with RS FEC
- 1 ATM cell per timeslot

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DAVIC

➤ MAC:-

- Centralised control
- polling, contention, reserved access modes.
- power, timing, frequency ranging functions

➤ IF Interface:-

- frequency duplex (downstream 950-2050 MHz, upstream 400 - 700 MHz)
- transmission masks specified
- DC specified
- cables not specified

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BRAN - Hiperaccess

➤ Summary:-

- 25Mb/s ATM to and from user's terminal equipment
- Complementary/competitive to xDSL and cable modems
- Target SME's and high end residential
- systems overview document near completion
- reviewing wide range of operational frequencies

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WHAT IS ACTS?

- **Advanced Communications Technologies & Services**
- **European initiative in the field of research and technological development and demonstration**
- **Pools knowledge and resources of companies, institutions and organisations in pursuit of specific research objectives covered by ACTS workplan**
- **All ACTS research is conducted in the context of usage trials to ensure relevance to the results**

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What is CRABS?

**Cellular Radio Access for Broadband Services
Consortium of nine European Organisations
from 7 countries (Now 11 organisations from 9
countries)**

CRABS Objectives

**Develop & *demonstrate* cellular broadband
interactive digital television & multimedia
services**

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The CRABS Consortium

- Philips
- Demokritos
- Telenor
- Testcom
- IAS
- Detecon
- RAL
- Thompson
- Eurobell
- RAI
- Politecnico Di Torino
- Podlipki

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Trial Sites-CRABS

- **Italy**
- **Norway**
- **Greece**
- **UK**
- **Czech Republic**
- **Russia**

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Work Group 1 Objectives

- To collect and evaluate user reactions of the LMDS system
- To evaluate the barriers to commercialisation and to determine the market areas LMDS is a viable technology

Work Group 2 Objectives

- To deliver a report on simulation and hardware studies for the final LMDS system.
- To propose an architecture for next-generation LMDS systems

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Work Group 3 Objectives

- To continue propagation measurements, studies and development of propagation models for the assessment of area coverage at 42 GHz
- Obtain propagation statistics & make propagation recommendations for system design

Work Group 4 Objectives

- To demonstrate ATM based interactivity at 42Ghz
- To install interactive broadband links
- Inter-operability with radio fibre networks

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Work Group 5 Objectives

- Project administration
- Dissemination of results

Work Group 6 Objectives

- To identify the requirements for a system delivered by a microcellular microwave system and assess the level of interactivity required
- To establish the feasibility of digital interactive microcellular television by conducting demonstrations & Study of consumer reactions

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BWS Trial site in Prague



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Moscow region

- **Eurobell**
- **Detecon**
- **Podlipki**
- **90% Access to potential Subs**



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Microcell Transmitter



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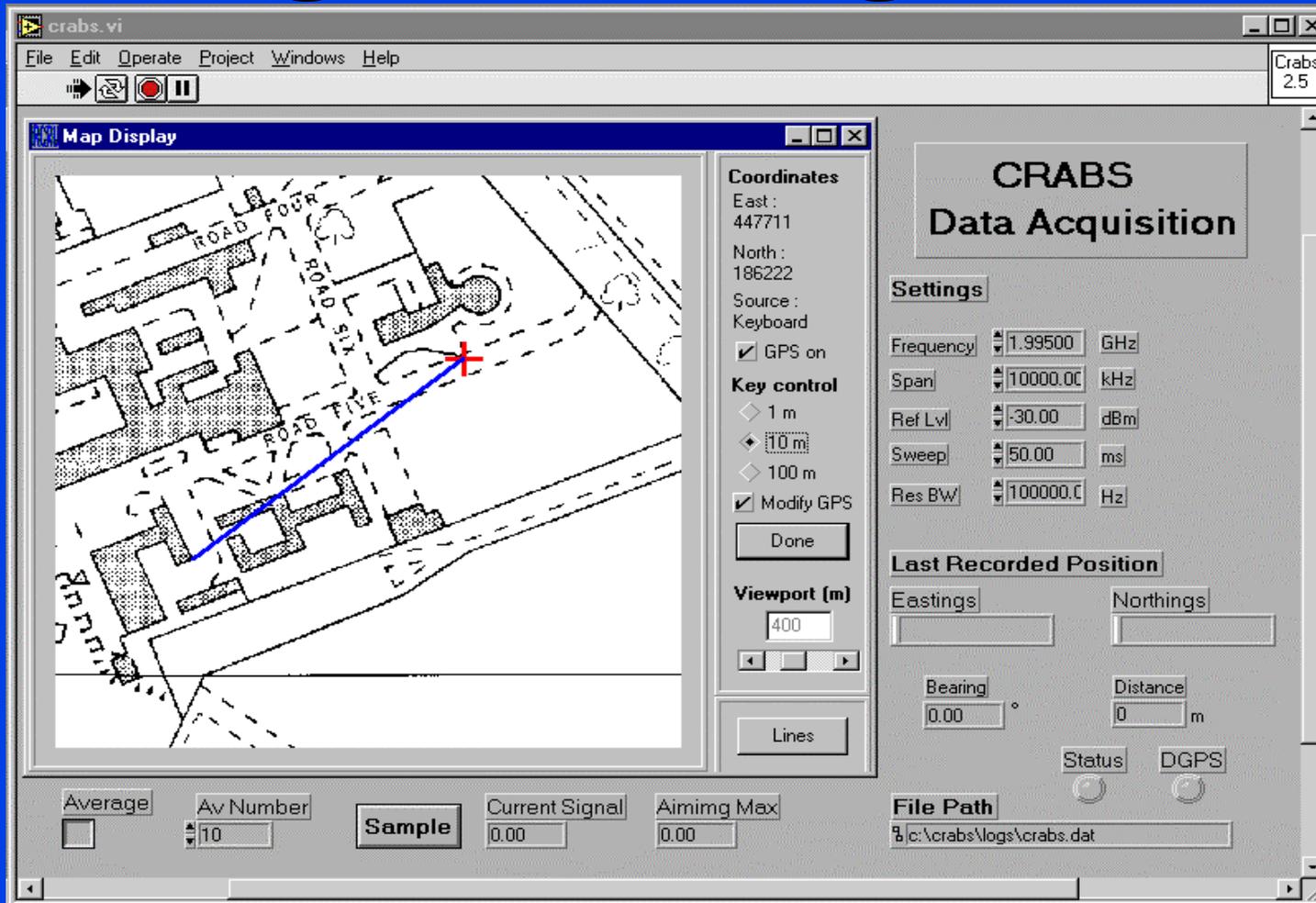
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Coverage Planning Tool - RAL



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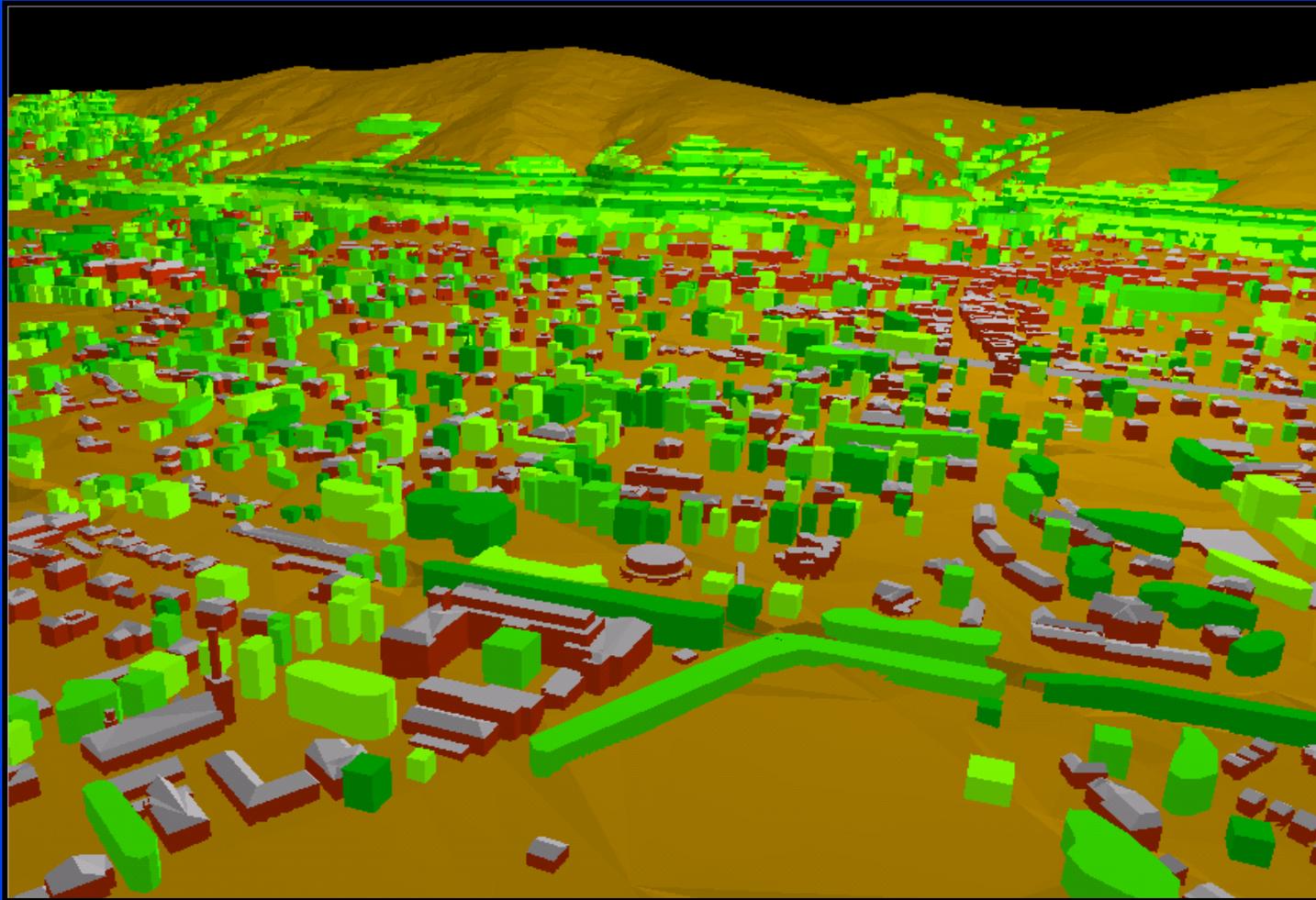
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Coverage Planning Tool - RAL



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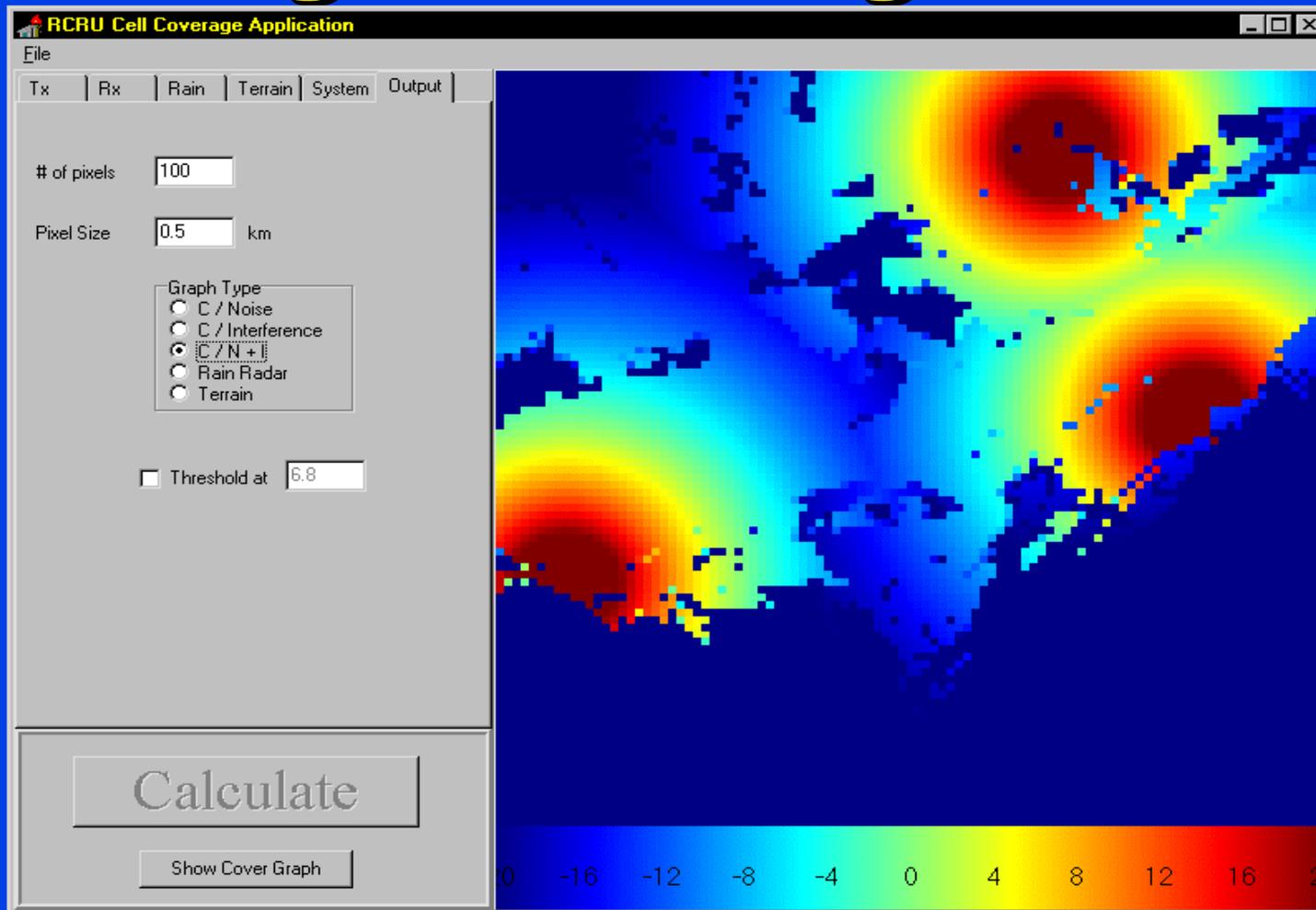
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Coverage Planning Tool - RAL



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What is CABSINET?

**Consortium of 20 companies from 8 countries.
Includes Bosch, Deutsche Telekom, Thompson
Multimedia, France Telecom, Thomcast.**

CABSINET Objectives

**Define and demonstrate a wireless broadband
access network for the coverage of the last mile
in both rural and urban environments.**

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Conclusions

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Conclusions

if this market is to be realised, the standardisation process should be managed in order that it does not `dampen`, `restrict` or even `kill` this business.

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Conclusions

The `business` is one that can produce a `WIN` situation for manufacturers, operators and customers, but the window of opportunity open for this business is not unlimited in time

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