



# WiMAX

## Tim Hewitt

Head of Radio Spectrum Policy, BT Group plc, UK  
Member, WiMAX Forum Regulatory Working Group

ITU-Anatel Regional Seminar on BWA for  
Rural and Remote areas of the Americas  
Brasilia, 23<sup>rd</sup>-25<sup>th</sup> May 2005

Copyright 2004 WiMAX Forum  
"WiMAX Forum™" and "WiMAX Forum CERTIFIED™" are  
registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



# Outline

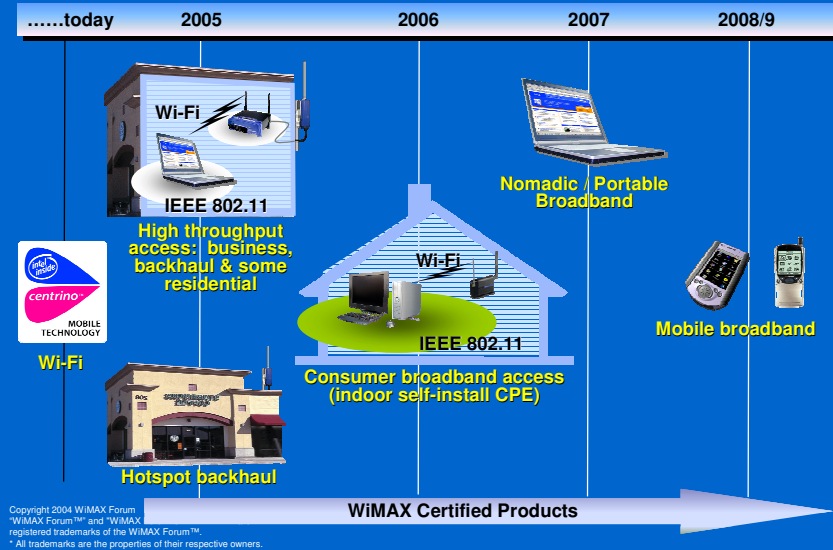
- The WiMAX concept
- The WiMAX Forum
- Global spectrum requirements
- WiMAX and the ITU-R
- Regulatory challenges in Europe
- Conclusions

Copyright 2004 WiMAX Forum  
"WiMAX Forum™" and "WiMAX Forum CERTIFIED™" are  
registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



## The WiMAX concept and timeline

A global, versatile, standards-based platform for Broadband Wireless Access applications, with certified conformance and interoperability



## What is WiMAX Forum Certification bringing?

- **A greatly improved business case opportunity**
  - Certified, standards-based interoperability brings lower equipment costs and larger markets
  - Multiple vendors and greater choice of devices
  - Increased operator confidence
  - Target \$250 for indoor self-install CPE
- **Both a competitive and a complementary technology**
  - Can backhaul other technologies (e.g. WiFi hotspots)
  - Overlay mobile networks
  - Adding capacity to mobile connectivity
- **Evolutionary technology from a common base**
  - A catalyst for convergence and converged terminal devices
  - Supporting a variety of operational scenarios

Copyright 2004 WiMAX Forum. "WiMAX Forum" and "WiMAX Forum CERTIFIED" are registered trademarks of the WiMAX Forum. All trademarks are the properties of their respective owners.



## The WiMAX Forum™

- The WiMAX Forum, founded in April 2001, brings together leaders in the communications and computing industries to drive a common platform for the global deployment of IP-based broadband wireless services
- The WiMAX Forum will certify products for conformance and interoperability based upon the IEEE 802.16 and ETSI Hiperman standards
  - *Certification begins July 2005 !*
- The WiMAX Forum is also now addressing the complete end-to-end “ecosystem” for BWA

Copyright 2004 WiMAX Forum  
“WiMAX Forum™” and “WiMAX Forum CERTIFIED™” are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



## WiMAX Forum Membership

April 6, 2005

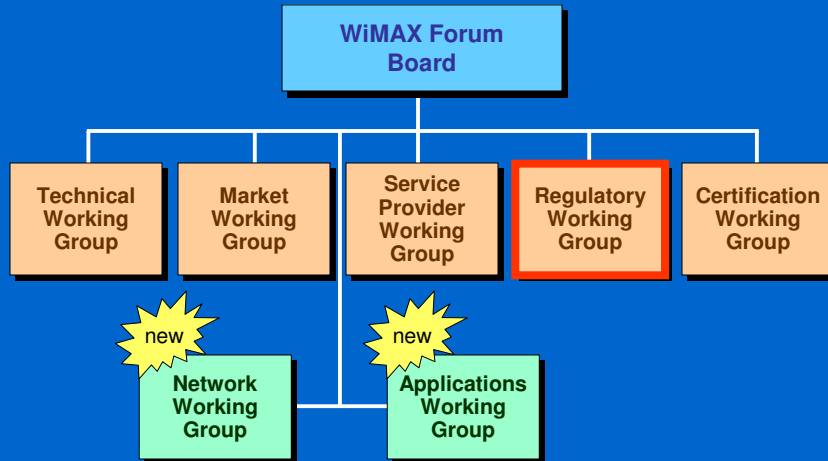
291 Members Total (includes in processing)

107 Operators	(27 processing)
67 System Manufacturers	(9 processing)
64 Components	(12 processing)
53 Eco-system Members	(14 processing)

Copyright 2004 WiMAX Forum  
“WiMAX Forum™” and “WiMAX Forum CERTIFIED™” are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



# WiMAX Forum organisation

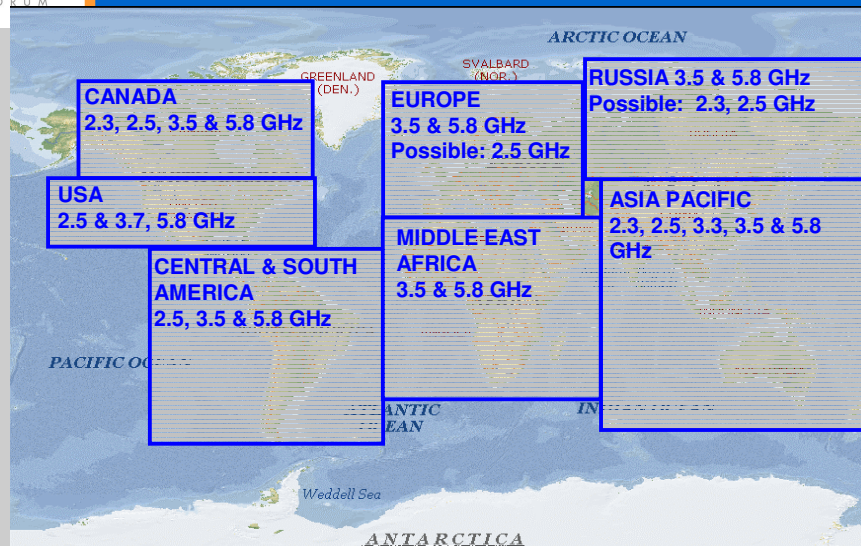


Copyright 2004 WiMAX Forum  
"WiMAX Forum" and "WiMAX Forum CERTIFIED" are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



# Spectrum by Region

Expected '05-'07 Deployment Bands



Copyright 2004 WiMAX Forum  
"WiMAX Forum" and "WiMAX Forum CERTIFIED" are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



## WiMAX Forum spectrum objectives

- To promote flexible management of spectrum to enable volume deployment of WiMAX Forum Certified™ products
  - Two licensed band ranges
    - 3.3-3.8 GHz
    - 2.3-2.7 GHz
  - One license-exempt band range
    - 5.725–5.85 GHz – Available with higher EIRP (4W over 20 MHz) for outdoor use
  - Each range will be covered by a single radio
    - Flexibility for vendors to address national situations with their products
- To promote additional spectrum below the 2.5 GHz band for Mobile broadband applications
  - 30 MHz or more per operator for “true” broadband

Copyright 2004 WiMAX Forum  
“WiMAX Forum™” and “WiMAX Forum CERTIFIED™” are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



## Engagement with regulators

### Consultations and specific enquiries

Germany

Luxembourg

UK

USA

Mexico

Hong Kong

Norway

Singapore

ITU

France

CEPT

Switzerland

Copyright 2004 WiMAX Forum  
“WiMAX Forum™” and “WiMAX Forum CERTIFIED™” are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



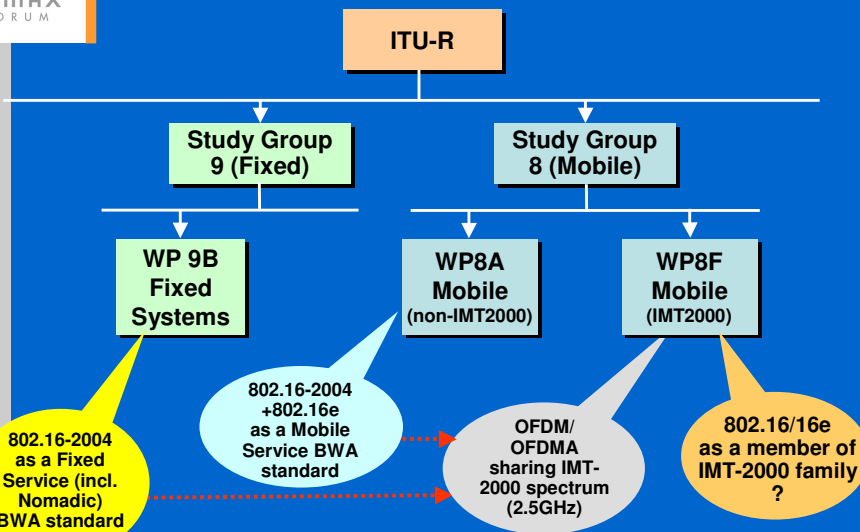
## Membership of the ITU

- The WiMAX Forum Joined the ITU as a Sector Member in Dec. 2004
  - ITU-R (Radiocommunications) & ITU-D (Development)
- “International Organisation” membership category, independent of any Member State
  - *The Forum can now send representatives and input contributions, but like other sector members cannot vote in the approval process of output documents*
- Forum members also attend as delegates of their national delegations and/or as representatives of their company (if it is a sector member)
- ETSI / IEEE are also ITU members so some coordination on relevant issues is useful

Copyright 2004 WiMAX Forum  
“WiMAX Forum” and “WiMAX Forum CERTIFIED” are registered trademarks of the WiMAX Forum™  
\* All trademarks are the properties of their respective owners.



## Relevant ITU-R discussions



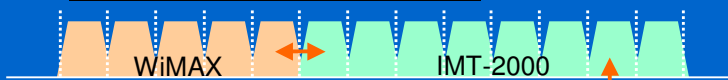
Copyright 2004 WiMAX Forum  
“WiMAX Forum” and “WiMAX Forum CERTIFIED” are registered trademarks of the WiMAX Forum™  
\* All trademarks are the properties of their respective owners.

## Working alongside IMT-2000

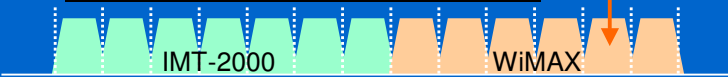
### Harmonised frequency arrangements



### Adjacent blocks in the same area



### Different arrangements across borders



Copyright 2004 WiMAX Forum  
 "WiMAX Forum" and "WiMAX Forum CERTIFIED" are  
 registered trademarks of the WiMAX Forum™.  
 \* All trademarks are the properties of their respective owners.

## The European sub-group of RWG

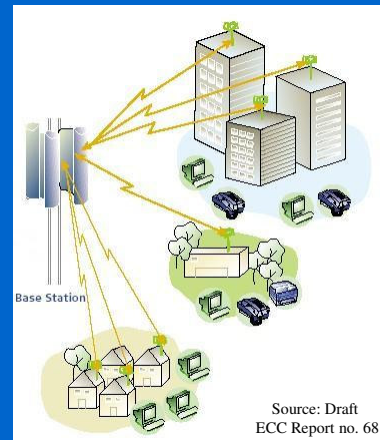
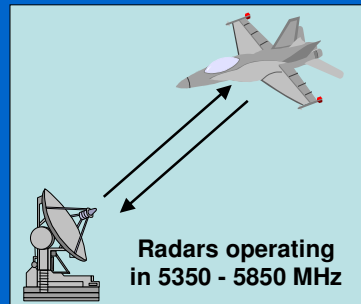
- The range and complexity of issues specific to the European spectrum and regulatory environment have necessitated the creation of a European sub-group of the WiMAX Forum RWG
  - Chair: *Barry Lewis, Redline Communications*
- Engagement in CEPT, ETSI and European Commission discussions
- Dialogues with individual national regulators
- Regular Face-to-Face meetings, supported by continuous e-mail contacts
  - *UK (x3), Israel, France (May 26<sup>th</sup>)*

Copyright 2004 WiMAX Forum  
 "WiMAX Forum" and "WiMAX Forum CERTIFIED" are  
 registered trademarks of the WiMAX Forum™.  
 \* All trademarks are the properties of their respective owners.



## DFS for compatibility with radars in the 5.8GHz band

*Dynamic Frequency Selection (DFS) will be required in 5.8GHz to ensure that BWA systems do not operate on the same channel as radar systems*



**Broadband Wireless Access system deployed in the band 5725 - 5875 MHz**

Copyright 2004 WiMAX Forum  
"WiMAX Forum" and "WiMAX Forum CERTIFIED" are registered trademarks of the WiMAX Forum™  
\* All trademarks are the properties of their respective owners.



## WiMAX Forum imperatives for the 3.4-3.8GHz band in Europe

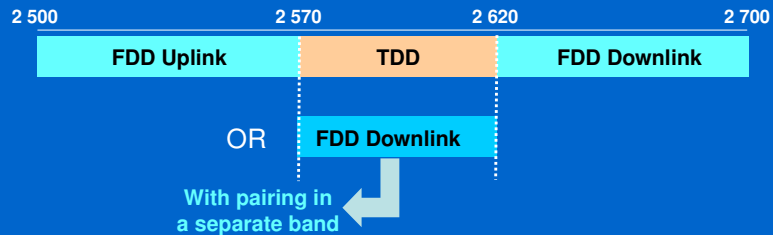
- Adequate spectrum in 3.4-3.8GHz to support high quality broadband services
- Large enough spectrum blocks (per operator) to allow broadband service innovation
- Regulatory approval of "nomadic" use in fixed service bands
- Power levels sufficient to support indoor CPE
- In recent months a number of European countries have issued public consultations relating to this frequency range ✓

Copyright 2004 WiMAX Forum  
"WiMAX Forum" and "WiMAX Forum CERTIFIED" are registered trademarks of the WiMAX Forum™  
\* All trademarks are the properties of their respective owners.





## 2500-2690MHz in Europe



Via ECC Decision ECC/Dec/(05)05, CEPT has “designated” this spectrum for IMT-2000/UMTS using the above frequency arrangements, subject to market demand and national licensing schemes

**The WiMAX Forum is seeking a “technology neutral” regulatory regime to allow operators to choose the technology best suited to their business model and business case**

Copyright 2004 WiMAX Forum  
“WiMAX Forum” and “WiMAX Forum CERTIFIED” are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



## Conclusions

- The WiMAX Forum is actively engaged at global, regional and national levels to secure a globally consistent spectrum environment for Broadband Wireless Access
  - *Including for WiMAX Forum Certified systems*
- The Forum has a strong Regulatory Working Group team to support WiMAX Forum spectrum and regulatory activities
- 5.8GHz, 3.5GHz and 2.5GHz remain the key focus at the present time
- The ITU has an important role in enabling the right spectrum and regulatory environment
  - *And we are especially pleased to have been welcomed as an ITU-R/ITU-D Sector Member !*

Copyright 2004 WiMAX Forum  
“WiMAX Forum” and “WiMAX Forum CERTIFIED” are registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.



*Thank You !*

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

**Tim Hewitt**  
Head of Radio Spectrum Policy  
BT Group plc

**e-mail:** [tim.mth.hewitt@bt.com](mailto:tim.mth.hewitt@bt.com)

Copyright 2004 WiMAX Forum  
"WiMAX Forum™" and "WiMAX Forum CERTIFIED™" are  
registered trademarks of the WiMAX Forum™.  
\* All trademarks are the properties of their respective owners.