

# ETSI BRAN Activities related to WiMAX

WiMAX World Europe 29-31 May 2007, Vienna Bernd Friedrichs - Ericsson GmbH, Germany - Chairman ETSI BRAN Milan Zoric - ETSI CTI



# **ETSI BRAN – Areas of Activity**

## (ETSI Technical Committee Broadband Radio Access Networks)







# **ETSI BRAN – Regulatory Activities**

#### □ Regulatory competence working group (RCWG)

- Coordination of all spectrum related and regulatory issues
- Assistance to regulatory bodies to define spectrum requirements and radio conformance specs for new broadband radio networks

## **Deliverables**

- Development of HENs (Harmonized European Norm) covering essential requirements under article 3.2 of the R&TTE directive
- **System Reference Documents, towards CEPT ECC**

### Current Activities

- EN 302 544 HEN for 2.6 GHz Personal Broadband
- TR 102 453 SRDoc for converged fixed-nomadic (-mobile) BWA
  (< / > 3.4 GHz, input to ECC aiming at more spectrum)
- > EN 301 893 HEN for 5 GHz RLAN (Pioneering work on DFS)
- > EN 302 502 HEN for 5.8 GHz FWA (Pioneering work on DFS)
- EN 302 567 HEN for 60 GHz WPAN (+ SRDoc TR 102 555)



# EN 302 544

#### □ EN 302 544 – Scope

- Broadband Data Transmitting System equipment operating in the frequency range 2500-2690 MHz
- Technology-neutral
- ... obviously the technology to be addressed is mobile WiMAX based on IEEE 802.16e-2005 and ETSI BRAN HiperMAN1.3.1.

### **ECC** Decision (05)05

- > The band is designated for terrestrial IMT-2000/UMTS systems.
- There is flexibility to allow other systems to be deployed on a national basis in European countries subject to market demand as long as these systems comply with harmonized standards.
- > Note: there is a trend towards more flexibility (EC, WAPECS)

#### Ongoing discussions

Compatibility studies are considered necessary by some ETSI members (to avoid harmful interference to other systems)



# **ETSI BRAN – Overview Testing**

## **Coverage**

- Radio Conformance Testing (RCT)
- Protocol Conformance Testing (PCT)

### □ Relevance of Specifications

- Normative part of standard
- Open work approach as for base specs
- > Actual testing and certification is left to industry and their fora

### **Good results from using advanced spec methods and languages**

Work is progressed through STFs (Special Task Force)
 STF funded by ETSI, operating under the guidance of BRAN
 STF led & managed by ETSI CTI (Centre for Testing&Interoperability)

# Cooperation with Industry Forums (WiMAX) Protocol conformance test specs, co-funded by WiMAX Forum



# **ETSI – WiMAX Co-operation Agreement**

□ Harmonization of test specs... the way towards the agreement

- Both ETSI BRAN and WiMAX Forum started developing their respective protocol conformance test specs
- In September 2004 ETSI BRAN and WiMAX Forum proposed the way to start harmonizing the work and profit from joint efforts

#### □ Signature of the agreement

- > The initial version of the agreement was signed in April 2005
- New amendments covering work agreed for 2006 and 2007

#### **By the agreement, ETSI and WiMAX**

- ... confirmed their common interest to perform and promote standardization towards a global market
- ... co-operate for testing and certification, standards development and regulatory activities to provide the necessary spectrum

#### □ Roles at a glance

- > of WiMAX: to control the certification scheme to assure interoperability
- of ETSI: to develop protocol test specs used for certification and to contribute to validation together with test tool vendors and certification labs





# **Recommendations on Balanced View (1 of 3)**

- **ETSI** develops specifications related to WiMAX.
- □ ETSI and WiMAX agree to have a common interest in performing and promoting standardization with the aim of global markets.
  - This does not imply that all ETSI members are committed to WiMAX technology or agree on all claimed performance data.
  - ETSI as a regular SDO does not engage in supporting any marketing activities of Industry fora.

#### **ETSI** has a very good track record in the GSM / UMTS / LTE path.

- Comparisons between different technologies (WiMAX HSPA/LTE) should follow a fair and balanced approach, especially regarding
- … timeline
- > ... performance data (like throughput, coverage, spectral efficiency)
- RAN deployment costs



## Recommendations on Balanced Views (2 of 3) For instance, compare technologies at the same timeline





# **Recommendations on Balanced Views (3 of 3)**

- There is a trend towards flexible spectrum allocations (removing linkages between technologies, bands and applications)
  - However the efficient use of spectrum as a scarce resource shall not be impaired by unqualified application of "technology-neutrality".
  - Ensure compatibility of different technologies if used in adjacent bands, in particular this applies to the 2.5 GHz band (impact on ETSI HEN, ECC, regulators, etc.)



Mobility

1995

CDMA/GSM

High

Low Speed

Speed

# Different Views on Wireless Evolution

2005

T-DMB

10Mbps

100Mbps

S-DMB

5GHz

WLAN

384kbps

CDMA2000 Nx

2000

2.4GHz WLAN

144kbps

CDMA2000 EV-DO



## ...ETSI is committed to a unified core network (IMS)



# The HiperMAN/WiMAX testing project

The project reports both to ETSI BRAN and WiMAX Forum

#### The project expert resource

- > 75 man month until the end of 2006
- Further 43 man months in 2007

**Seven experts are working in the team this year** 

The project team is led and managed by the ETSI CTI - Centre for Testing &Interoperability

❑ Expected to continue in 2008 and beyond



## **Status of Test Specifications**

#### □ HiperMAN1.2.1 / IEEE802.16-2004 (including Corr1)

- The first WiMAX Forum CERTIFIED products were announced in January 2006.
- As of May 2006, fourteen products have already been certified by independent test labs.
- The second wave is due to start shortly with over 300 test cases for which the validation is being completed

#### HiperMAN1.3.1 / IEEE802.16e-2005 (including Corr2)

- > The development and validation of first 200 test cases is ongoing
- The start of wave 1 certification should be Q3 2007
- WiMAX Forum has selected a total of over 500 test cases to be developed and validated this year



# Roles (1 of 4) ETSI Project Team STF 252

## Test specification development

- Test purposes (verbal descriptions of the tests)
- > Test architecture (how the code fits with the rest of the test platform)
- Test cases (code in TTCN-3 language)

## Test case validation

- > analysis of testing error reports
- rewriting of test cases
- integration of test cases and test platforms
- test code version management
- intermediate test code delivery
- compilation of regression results
- final test code deliveries



# Roles (2 of 4) ETSI BRAN HiperMAN / WiMAX Forum

#### □ Jointly

- Review the Test purposes
- Approve test specifications
- Approve change requests for the above

#### WiMAX Forum alone

- Selection of test purposes for which the code will be written
- > Management of all aspects of the certification programme
  - Selection of validation labs
  - Selection of the certification labs
  - Certification rules and procedures



# Roles (3 of 4) Test Tool Vendors

#### Development of test platforms

- BS emulator for testing MS devices and vice versa
- The emulators have to have:
  - everything that any WiMAX device has, such as PHY, lower MAC, etc
  - additional testing related functionality

## Integration of code on the platform

- Implementation and interfaces between code (ports)
- Implementation of external functions

## Role in validation

- Running of test cases
- Preparation of error reports
- Running of regression tests



# Roles (4 of 4) Validation Team

- □ Running of test cases, including regression test runs
- Providing traces and their analysis
- Providing error reports
- Interacting with the WiMAX equipment vendors to ensure that they fix their misalignments with the standard
- Making sure that test case runs demonstrate that the purpose of the test has been achieved
- Making sure that the testing documentation is complete and accurate



# Working together...





## All roles done well...





## For further information...

## More details can be found on http://portal.etsi.org/bran/summary.asp http://portal.etsi.org/radio/

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