

## Midweek Plenary WirelessHUMAN™ Presentation

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# WirelessHUMAN™ Update

- Addressed concerns of 802.11 and 802.15 in Monday's Tutorial Session
  - Participated in 802.11 5G Harmonization Meeting
- Evaluated formal comments from WGs
- Revised PAR and Criteria
- Initiated work on Call for Contributions

# Key Concerns from 802.11 as Understood by WirelessHUMAN Study Group

- Should the WirelessHUMAN standard exist at all?
  - Do regulations limit potential? Is there broad market potential?
- Where does WirelessHUMAN belong? 802.16 or 802.11?
- Will WirelessHUMAN systems cause significant interference to 802.11 devices?
- Can the interference be mitigated? Co-existence between MAN and LAN? Need Spectral Etiquette. Channel spacing should be correlated to minimize interference
- Spectrum partitioning consistent with globalization
- Part of 5 GHz Globalization effort

# Response of Study Group

- Regulations do not forbid service deployment
  - e.g. Metricom, startup ISPs
  - AT&T Project Angel uses PCS and ISM bands
- WirelessHUMAN belongs in IEEE 802.16
- Interference is possible
  - Develop an etiquette for co-existence
    - Dynamic Channel Allocation; Adaptive power control
    - Different Frequency bands
    - Other solutions developed jointly

# Some Suggestions from 802.16

- Work with 802.11/802.15 to develop strategies to mitigate mutual interference and facilitate co-existence, as well as the 5 Ghz Globalization efforts
- Cooperate to develop mutually beneficial scenarios (or new standards)
  - Use 802.16 systems to interconnect/trunk 802.11 systems
  - Use LANs to extend MAN services cost-effectively

# 5 GHz Globalization Effort

- Participation in 802.11 Meeting on 5 GHz Global Harmonization Effort
- Key issues
  - ITU requests elimination of 5.25-5.35 GHz band for outdoor use and requests reduced EIRP for indoor applications
  - FCC is revisiting Part 15 rules
  - Potential impact on WirelessHUMAN systems
- Group intends to actively participate

# IEEE 802.15 Response to PAR

- MOTION: Moved that to secure the official support of 802.15, the working group wants to see language in the WirelessHUMAN PAR, as part of the scope, that requires co-existence with other applications in the unlicensed bands and also that the issue of coexistence be explicitly addressed as the sixth criteria in the five criteria document.
- Suggestion for Sixth Criteria: We have identified WirelessHuman co-existence with WLANs and WPANs as a critical success factor.

# Message to IEEE 802.11

- The 5GSG believes that IEEE 802 should develop a set of co-existence and/or spectrum sharing guidelines to guarantee non-interference amongst its own wireless standards, currently 802.11/15 and 16. This should be done as soon as possible.
- We fully endorse the work of IEEE 802 regulatory Ad Hoc Group in their efforts to achieve global spectrum harmonization, and will offer our help as required. We would also like to invite the members of that group to attend our joint 5GSG WLAN Globalization group meetings.

# IEEE 802.11 5GSG response to WirelessHUMAN PAR

- This group believes that the approval of new standards in the 5GHz unlicensed bands should be consistent with the guidelines
  - Specifically, we have concerns about compatibility and distinct identity of WirelessHUMAN (802.16.1b), WPAN Low Rate (802.15.4) and WPAN High Rate (802.15.3) to the extent that they will operate in the 5 GHz unlicensed bands.
  - Without co-existence guidelines, the broad market acceptance of all of these standards is threatened.

# Revised PAR Scope

This standard specifies the medium access control layer and physical layers of the air interface of interoperable fixed point-to-multipoint broadband wireless access systems. The specification enables transport of data, video, and voice services. Physical layers are specified for both licensed and license-exempt bands.

This Amendment expands the scope of the original project by extending it to license-exempt bands (thereby defining the Wireless High-Speed Unlicensed Metropolitan Area Network [**WirelessHUMAN™**] Standard). It specifies the physical layer and medium access control layer of the air interface of interoperable fixed broadband wireless metropolitan area network systems, including point-to-multipoint.

# Revised PAR Scope

**PAR:** The standard enables access to data, video, and voice services with quality of service in unlicensed bands designated for public network access. It will focus on the 5-6 GHz range and may be applied to unlicensed bands between 2 and 11 GHz. It will address strategies for coexistence with other unlicensed applications. The project will utilize or modify applicable elements from the following:

MAC: IEEE 802.16

PHY: IEEE 802.11a; ETSI BRAN HIPERLAN/2

# Revisions: Criteria

## **Sixth Criteria added to Five Criteria List**

We have identified mutual coexistence of WirelessHUMAN (High-Speed Unlicensed Metropolitan Area Networks), WLANs and WPANs as a critical success factor.

# Revision: Purpose

To enable rapid worldwide deployment of innovative, cost-effective, and interoperable multivendor broadband wireless access products. To facilitate competition in broadband access by providing alternatives to wireline broadband access. To facilitate coexistence studies, encourage consistent worldwide allocation, and accelerate the commercialization of broadband wireless access spectrum.

This Amendment enhances the original project by extending it to license-exempt bands. It will identify techniques to tolerate interference in the unlicensed bands, ~~facilitate strategies for coexistence with other unlicensed band systems such as 802.11a, and maximize the carrying capacity in the unlicensed bands.~~ and facilitate strategies for coexistence with other unlicensed band systems such as 802.11 and 802.15. It will encourage consistent worldwide spectrum allocation and accelerate the commercialization of unlicensed broadband wireless access spectrum. Utilization of unlicensed frequencies will address a market that includes residences, small office-home office (SOHO), telecommuters, and small and medium enterprises (SME).

## MOTION

The revised WirelessHUMAN™ PAR and Six Criteria be accepted by 802.16 WG to forward to the IEEE 802 SEC.