

## WirelessHUMAN™ Study Group Report

### IEEE 802.16 Presentation Submission Template (Rev. 8)

Document Number:

IEEE 802.16hp-00/09

Date Submitted: 2000-07-13

Source:

[Durga Satapathy]

[Voice:(913) 534-6338]

[Sprint]

[Fax: (913) 534-6522]

[7101 College Blvd, Suite 1436 B]

<mailto:durga.satapathy@mail.sprint.com>

[Overland Park, KS 66210]

Venue:

[IEEE 802.16 Session #8]

Base Document:

[none]

Purpose:

[WirelessHUMAN™ Study Group report for 802.16 Closing Plenary]

Notice:

This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

Release:

The contributor grants a free, irrevocable license to the IEEE to incorporate text contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.

IEEE 802.16 Patent Policy:

The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures (Version 1.0) <<http://ieee802.org/16/ipr/patents/policy.html>>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, if there is technical justification in the opinion of the standards-developing committee and provided the IEEE receives assurance from the patent holder that it will license applicants under reasonable terms and conditions for the purpose of implementing the standard."

Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <<mailto:r.b.marks@ieee.org>> as early as possible, in written or electronic form, of any patents (granted or under application) that may cover technology that is under consideration by or has been approved by IEEE 802.16. The Chair will disclose this notification via the IEEE 802.16 web site <<http://ieee802.org/16/ipr/patents/letters>>.

## **IEEE 802.16 Plenary Report**

# **Wireless High-Speed Unlicensed Metropolitan Area Network (WirelessHUMAN™) Study Group**

Durga P. Satapathy

# Outline

- Key Achievements
- Proposed Agenda till November 2000
- Motion for WirelessHUMAN™ Study Group Extension till November 2000 session

## Key Achievements

- Identified niche market need in wireless industry, and attracted participation of over 40 industry & academia representatives
- Developed working relationships with other 802 groups
  - Held joint meetings with 802.16.3
  - Participated in the IEEE 802.11/802.15 Joint Interim Meeting.
  - Achieved mutual understanding of the need for co-existence strategies which would be jointly addressed by IEEE 802 wireless standards.

## Key Achievements (cont.)

- Reviewed contributions on following issues:
  - Unlicensed bands and regulatory constraints
  - WirelessHUMAN™ System Characteristics
  - Applicability of existing/proposed standards to WirelessHUMAN™ systems, including IEEE 802 and HIPERLAN/2 standards
- Delivered IEEE 802 tutorial on WirelessHUMAN™, July 10
- Formulated plan of action (developed PAR scope for WirelessHUMAN™)

## PAR Scope (tentative)

To create specifications for PHY & MAC layers for fixed wireless high-speed metropolitan area access operating in unlicensed frequency bands. The specifications will address providing an operator grade QoS in environments in which other unlicensed devices may operate. The standard will focus on the UNII bands, and create a set of specifications drawing from the following existing/ongoing work:

- 802.11a PHY; 802.11 MAC with 802.11e extensions
- HIPERLAN/2 MAC/PHY
- 802.16.1 MAC
- 802.16.3 MAC/PHY

## Potential Adaptation of Existing Work by WirelessHUMAN

- IEEE 802.11- Short-range uncoordinated LAN capability and not designed to support service provider MAN access
  - Modifications: Accommodate increased propagation delay and multipath, operation in presence of interference in MAN environments, QoS/802.11e, operations and maintenance support, public network grade availability, Dynamic Frequency Selection, Adaptive Power Control, Multiple simultaneous sessions to a single terminal/user, improved Error Control, cellular deployment with sectorization and frequency reuse.
- HIPERLAN/2-Short-range uncoordinated LAN capability and not designed to support service provider MAN access
  - Modifications: Accommodate increased propagation delay and multipath; operation in presence of interference in MAN environments, improved operations and maintenance, and public network grade availability.
- IEEE 802.16.1/802.16.3 – Addressing interference is not a major factor as frequency coordination is inherent in licensed bands: may require PHY and/or MAC modifications.

## Proposed Plan

- Goal: PAR approval in November 2000
- IEEE 802.16 Interim meeting in September: Identify most suitable elements from existing/ongoing standards efforts
  - Call for Contributions to identify applicability & modifications of existing/proposed MAC/PHY standards
  - Draft PAR based on above study
- Interact with IEEE 802.11 and HIPERLAN/2
  - e.g. Liaison Letters

# **Call for Contributions to develop the Project Authorization Request for A WirelessHUMAN™ Standard**

**Deadline: September 1, 2000**

The IEEE 802 LMSC has chartered the WirelessHUMAN™ (Wireless High-speed Unlicensed Metropolitan Area Networks) Study Group through 10 November 2000 to develop a proposed Project Authorization Request (PAR) for a standard for public MAN operation in the 5-6 GHz unlicensed bands, with primary focus on the 5.25-5.35 GHz and the 5.725-5.825 GHz UNII bands. In particular WirelessHUMAN™ aims to provide similar services as will be provided by IEEE 802.16.3 Systems but operating in the UNII bands. The Study Group is a unit of the IEEE 802.16 Working Group on Broadband Wireless Access but is coordinating with the IEEE 802.11 Working Group on Wireless LANs.

In conjunction with IEEE 802.16's Session #9 (September 11-15 in Denver, CO, USA), the Study Group will meet to write its proposed PAR and submit it to 802.16 for approval. The PAR will need to be submitted to the IEEE 802 Executive Committee by 6 October 2000

During its initial phase (5 March through 14 July 2000), the Study Group has determined that the standard will draw from applicable or proposed standards.

The Study Group will decide at the upcoming meeting on the technical approach to the WirelessHUMAN™ Standard. To assist in the decision, the Study Group is calling for contributions to identify applicability & modifications of existing/proposed MAC/PHY standards for WirelessHUMAN™ systems. Contributors should consider adaptations of the following candidates:

1. IEEE 802.16.1 MAC (currently in Working Group Letter Ballot within 802.16)
2. IEEE 802.16.3 PHY and MAC (in development by 802.16.3 Task Group)
3. IEEE 802.11a PHY and IEEE 802.11 MAC with 802.11e extensions (currently in development)
4. HIPERLAN/2 PHY and MAC([www.etsi.org/bran](http://www.etsi.org/bran))

The WirelessHUMAN™ Study Group has identified the following issues as potential modifications to the above standards as listed in [URL]. Contributors are encouraged to address the following factors in light of suitability for unlicensed operation in MAN environments:

- Operation in presence of interference
- Cellular deployment with sectorization and frequency reuse
- Accommodation of propagation delay and multipath
- Error Control
- Providing QoS capabilities
- Operations and maintenance support
- Public network grade availability
- Dynamic Frequency Selection
- Adaptive Power Control
- Multiple simultaneous sessions to a single terminal/user

## Proposed text for Liaison Letter to 802.11

To: Stuart Kerry - 802.11 Chair

Cc: John Fakatselis - 802.11e Chair  
Naftali Chayat - 802.11a Chair

Dear Stuart,

In the course of preparing a PAR for the development of a standard for Wireless High-Speed Unlicensed Metropolitan Area Networks (WirelessHUMAN™), we identified the 802.11a PHY and the 802.11 MAC with 802.11e QoS extensions as possible technologies for evaluation. In addition, we envision the need to share the medium with other unlicensed devices, and in particular with 802.11a-based devices in the future, and that there is a benefit in early collaboration in this area.

We would like to inform you of a call for contributions that we have issued on this matter, and invite your members to provide input to us.

Sincerely,

Roger Marks  
802.16 Chair

Attached: Call for contributions doc

## Proposed text for Liaison Letter to ETSI BRAN

To: Jamshid Khun-Jush – ETSI BRAN Chair

Dear Jamshid,

In the course of preparing a PAR for the development of a standard for Wireless High-Speed Unlicensed Metropolitan Area Networks (WirelessHUMAN™), we identified the HIPERLAN/2 as possible technology for evaluation. In addition, we envision the need to share the medium with other unlicensed devices, and in particular also HIPERLAN/2 devices, in the future, and there is a benefit in early collaboration in this area.

We would like to inform you of a call for contributions that we have issued on this matter, and invite your members to provide input to us.

Sincerely,

Roger Marks  
802.16 Chair

Attached: Call for contributions doc

# **Motion:**

**Extend the WirelessHUMAN™ Study  
Group until the end of November 2000  
IEEE 802 Plenary Session.**