

WirelessHUMAN™ Study Group Chair Report to IEEE 802.11/802.15 Joint Interim Meeting, 10 May 2000

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Sources:

[Durga Satapathy]

[Sprint]

[7101 College Blvd, Suite 1436 B]

[Overland Park, KS 66210]

[Voice:(913) 534-6338]

[Fax: (913) 534-6522]

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

Venue:

10 May 2000: Joint Plenary at IEEE 802.11/802.15 meeting (8-12 May 2000 in Seattle, WA, USA)

Purpose:

Highlight potential synergies between 802.11, 802.15 and WirelessHUMAN™ as discussed at the May 8 meeting

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IEEE 802.16 WirelessHUMAN™
Study Group Report at 802.11/802.15
Interim Joint Meeting, Seattle, May 10

Durga Satapathy

Sanjay Moghe

WirelessHUMAN™ Background

- The IEEE 802.16 WirelessHUMAN Study Group was approved at the March IEEE 802 Plenary meeting
- Significant interest from both academia and industry (manufacturers and service providers)
- First meeting held at IEEE 802.16 Session 7 with over 30 participants

Existing Support for Active Participation

- Durga P. Satapathy Sprint (**Chair**)
- Sanjay Moghe RF Solutions (**Secretary**)
- Amarpal Khanna Agilent Technologies
- Demos Kostas Adaptive Broadband
- Valentine Rhodes Intel
- Mika Kasslin Nokia
- David Trinkwon Transcomm Inc.
- Marianna Goldhammer Breezecom
- Naftali Chayat Breezecom
- Roger Durand Cabletron
- Avi Freedman Innowave ECI
- Dean Chang BNA Systems
- Amos Dotam WaveIP
- Hadad Zion Runcom
- Michael Stewart Escape

Existing Support for Active Participation

- Chris Paulowski Wireless Home
- Vijaya Gallagher Wireless Home
- Jon M. Peha Carnegie Mellon University
- Panos I. Dallas Intracom
- Gordon Stuber Georgia Institute of Technology
- Hossein Izanpanah HRL Laboratories, LLC
- Anader Benyamin-Seeyar Harris Corporation
- Chao-Chun Wang Malibu Networks
- Inchul Kang Malibu Networks
- Stan Rieble Proxim
- Jehuda Hakcai Ultracom
- Leif Jansson Ericsson
- Chaim Shenhan N Band Com
- Hossein Izadpanh HRL Labs
- Roger Durand Cabletron systems
- David Sumi Wireless Inc.
- E. Doherty Coreon Inc

WirelessHUMAN™ Objectives

- Identify license exempt bands that can best serve the wireless industry need for fixed broadband MAN access with a focus on 5-6 GHz bands
- Investigate issues in developing an Air Interface Standard for the identified bands
- Investigate feasibility of using elements from existing standardization efforts e.g. IEEE 802.15, 802.11 PHY & Enhanced MAC, IEEE 802.16.3 PHY & MAC etc. or modifications thereof
- Joint meetings with 802.16.3, 802.11, 802.15 and other standards groups

Key Issues

- What are the existing regulations in the various unlicensed bands, and what unlicensed bands may be appropriate for WirelessHUMAN systems?
- What mechanisms for interference avoidance/suppression, resource sharing, and ensuring adequate performance exist in unlicensed bands?
- What are the unique system design issues/requirements of WirelessHUMAN systems from a MAC/PHY layer perspective? What elements can we utilize from existing work?
- Should the Study Group write a PAR to proceed with a standard? If so, should we try for July or wait until November?

WirelessHUMAN™ System Characteristics

- Metropolitan Area Network
 - Need for Point-To-Multipoint Systems
 - Typically cellular; sectorized with frequency reuse
 - Typically needs backhaul architectures capable of reliable broadband transport
 - Connectivity to wired infrastructure/ core networks
- Services: voice, video & data
- Fixed/Nomadic Wireless Service Provider Application
- Operate in Unlicensed Frequency Bands (initial focus on outdoor UNII bands)
- Operation in presence of other unlicensed devices
- MAC/PHY efficiency to support MAN environment
- Cost and performance for residential/SOHO/SME/ customers
- QoS support (in-system & external interference)

Impact of 802.11/802.15

- Existing Common Elements
 - Operation in Unlicensed Spectrum
 - Growing interest from service providers/carriers
- Key Elements Needed
 - Mechanisms to avoid/suppress interference
 - Design input on multipath, equalization, modulation (e.g. OFDM; adaptive techniques), FEC/ARQ etc.
 - Co-existence criteria
 - QoS support

Key Input Requested

- 802.11 and 802.15 Tutorials/Conference Calls
- Contributions on elements of 802.11/802.15 MAC/PHY standardization efforts that would be applicable to WirelessHUMAN
- Present above findings at July meeting

Joint Meeting of
802.11/802.15/WirelessHUMANTM
Study Group held on 10th May

- 35 participants
- Lively discussion for over 2 hours
- Several feedback items/issues
- Joint work plan suggestions received

Key Discussion/Feedback Issues

- Significant mutual benefit in addressing coexistence strategies
- Need for standardization
 - Unlicensed MAN equipment already in market
 - WirelessHUMAN standard would offer solutions for co-existence and mitigate interference issues.
- Joint 802.11/802.15/802.16 meetings to facilitate discussion

Key Discussion/Feedback Issues

- WirelessHUMAN study group will take advantage of existing web-tutorials/information on 802.11 and 802.15, and initiate iterative process to identify useful MAC/PHY elements
- Potential for joint call for contributions to be investigated
- Potential for presentation of above issues at a tutorial at July meeting to be investigated