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

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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

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/WirelessHUMAN™ 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