IEEE 802.16
Mobile Wireless MAN Study Group:
Call for Contributions

Brian Kiernan, Chair

Status:

At Session #20, the IEEE 802.16 Working Group voted to create an 802.16 Working Group Study Group (WGSG) to "address enhancements to the IEEE 802.16a PHY/MAC to support mobile operation, including cell-to-cell and sector-to-sector handoff capability as well as other protocol and MIB support." The IEEE 802 Executive Committee subsequently reaffirmed the IEEE 802.16 Mobile Wireless MAN Study Group.

Plan of Attack:

I remind everyone that we are talking about modifying the current 802.16a air interface(s), not creating a new standard from scratch. Before even thinking about a PAR, we have to determine if this is technically feasible and, if so, at what level. I expect this will take at least two meetings, however, I would hope that coming out of the November meeting we would at least have a fair idea as to technical feasibility and the level of mobility that we might be able to support.

The initial output of the Study Group is expected to be a series of studies and analyses that would indicate whether such a capability can be provided within the basic confines of the 802.16a PHY/MAC, what level of mobility (pedestrian, vehicular) could be supported, and the extent of the PHY/MAC changes required to support it. It is NOT the current intent of the Study Group to develop a PAR. However, if the technical studies indicate that 802.16a enhancement for mobile operation is feasible, development of a PAR can be expected at some future date.

In thinking about this, a number of technical issues come to mind. The following list is not intended to be all-inclusive, and I solicit inputs on other areas people think are pertinent, but these strike me as a minimum set of technical issues that we need to address.

Contributions on these and any other relevant items are solicited for Session #21.

Some Technical Issues for 802.16a Mobility:

- Reference System Deployment Scenario
  - Multi-cell, macro and/or micro
  - Omnidirectional or sectored antennas or both
  - Frequency reuse and cell-to-cell interference (both FDD and TDD)
  - Level of cell network interconnect
  - MIB support
- Mobile Channel Models
  - Pedestrian (Indoor and Outdoor), Vehicular (target speed)

    - Doppler
    - Dispersive Multipath - Fast Fading
    - Simulations
- Impact of the above mobile environment on current 802.16a Air Interface(s) parameters and performance to include:
    - Synchronization and Timing, both initial and periodic
    - Ranging
    - Power Control
    - Channel coding
    - Measurement methods and messaging for support of intra- and inter-cell handoff
    - Effect on Advanced Antenna Systems
    - Protocols
- Impact on the Services to be provided:
    - QoS
    - Data Rates, BER or PER
    - Latency
- Determination of appropriate frequency bands

In addition to the technical issues, there are some other aspects of this effort that we need to keep in mind as we progress towards a possible PAR. The one that comes most readily to mind is: What significant advantages or disadvantages does a mobile enhanced 802.16a air interface provide over current or planned 3G mobile networks? Related to this is the question of liaison with other Standards Development Organizations such as T1P1, 3GPP and 3GPP2.

Document submissions must make use of the 802.16 Document Submission Template (Rev. 8.3 or higher) and follow the other submission instructions at <http://ieee802.org/16/submit.html>

Notes:
- Study Group web page: <http://ieee802.org/16/mobile>
- Study Group reflector: "stds-802-16-mobile" (see <http://ieee802.org/16/subscribe.html>)
- File uploads: <http://mobile.wirelessman.org>
- Document contribution numbering form: C802.16sgm-02/XX