

Rationale for a Mobile Wireless MAN Standard: Meeting the Five Criteria

1. Broad Market Potential

A standard project authorized by IEEE 802 shall have a broad market potential. Specifically, it shall have the potential for:

a) Broad sets of applicability

The mobility enhancement will target the consumer and enterprise market, allowing fast access to mobile IP applications, multi-media messaging, mobile videoconference, etc. The possible services include: games, video clips, virtual sightseeing, emergency, location based services, financial services, Telematics, telemedicine, etc. The user will have access to these services at data rates similar to those provided by the 802.16 standard, while stationary, walking or mobile. For example, in a 6 MHz channel, the maximum data rate per user can be beyond 20Mb/s.

This standard will converge fixed and mobile services by allowing connectivity for high-speed data rates in both stationary and mobile situations.

b) Multiple vendors and numerous users

The products on the market already allow connectivity while using multiple standards (GSM, CDMA, 802.11a, 802.11b, 802.15, etc). Due to the mass-market applications for Laptops, PDAs, etc, we believe that the producers of those devices will add the enhanced 802.16 PHY/MAC interface to mobile BWA terminals.

c) Balanced costs (LAN versus attached stations)

The production costs for portable PDA and Laptop radio interfaces should be similar to devices with cellular air interfaces.

2) Compatibility

IEEE 802 defines a family of standards. All Standards shall be in conformance with the IEEE 802.1 Architecture, Management and Interworking documents as follows: 802 Overview and Architecture, 802.1D, 802.1Q and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.

Each standard in the IEEE 802 family of standards shall include a definition of managed objects which are compatible with systems management standards.

The proposed standard will conform to the 802 Functional Requirements Document, with the possible exception of the Hamming distance.

3. Distinct Identity

Each 802 standard shall have a distinct identity. To achieve this, each authorized project shall be:

a) Substantially different from other IEEE 802 standards.

This standard will be the first IEEE 802 standard to support high data rate, fixed and vehicular mobile MAN operation. It targets macrocells, as compared with 802.11 or 802.15 wireless standards and utilizes licensed frequency bands

b) One unique solution per problem (not two solutions to a problem).

By modifying the existing 802.16 air interface, a unique solution will be developed. The mobile extension to the 802.16 standard will inherently provide a single BWA solution for both fixed and mobile applications.

c) Easy for the document reader to select the relevant specification.

It is anticipated that the document will be easily selectable by the user.

4) Technical feasibility

For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:

a) Demonstrated system feasibility

The feasibility of such systems has been demonstrated by proprietary systems that provide some, if not all, of the capabilities envisioned for this standard and being deployed in many cities worldwide.

b) Proven technology, reasonable testing

The radio technology proposed has been in existence for decades in both commercial and military environments. Similar proprietary systems currently exist.

c) Confidence in reliability

Commercial deployment of point-to-point and point-to-multipoint systems at these frequencies by carriers is evidence of proven reliability.

5) Economic feasibility

a) Known cost factors, reliable data

The economic feasibility of the equipment has already been demonstrated at the level of proprietary systems now going into operation. The willingness of investors to spend large sums to acquire spectrum rights, plus the large additional investment required for hardware in public networks, attests to the economic viability of the wireless access industry as a whole.

b) Reasonable cost for performance.

Utilizing modern radio-modem technologies, defined by 802.16a or ETSI BRAN HIPERMAN, will minimize the subscriber radio cost. As demonstrated in many IEEE 802 standards over the years, the radio shared-media systems effectively serve users whose requirements vary dynamically, within the constraints of the total available rate. The cost of a single base station is amortized over a large number of users.

c) Consideration of installation costs.

The mobile hand-held devices, such as PDAs and Laptops, do not need installation. The base station site is a more complex issue, but since one base station supports many users, the costs involved are low on a per-user basis.