

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://iee802.org/16 >		
Title	Proposed Changes to Preliminary MBWA PAR and Draft Five Criteria		
Date Submitted	2002-05-07		
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Re:	Revisions to Draft PAR and Five Criteria Posted Dated April 9, 2002		
Abstract	This contribution proposes revisions to the MBWA Draft and PAR and Five Criteria in order to clarify the scope of the project.		
Purpose	It is proposed that the MBWA SG modify the PAR and Five Criteria and that if these revisions are incorporated, the PAR and Five Criteria be approved by the SG to be forwarded to the Executive Committee for approval.		
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.		
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Patent Policy and Procedures	<p>The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures (Version 1.0) <http://iee802.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."</p> <p>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://iee802.org/16/ipr/patents/notices>.</p>		

Proposed Changes to MBWA PAR and Five Criteria

Reza Arefi, John L. Fan and Samir Kapoor

Revised PAR

IEEE-SA Standards Board Project Authorization Request (PAR) Form (2002)

1. Assigned Project Number:

2. Sponsor Date of Request:

3. Type of Document (Please check one)

- **Standard for** {document stressing the verb “shall”}
- **Recommended Practice for** {document stressing the verb “should”}
- **Guide for** {document in which good practices are suggested, stressing the verb “may”}

4. Title of Document: **Local and Metropolitan Area Networks – Standard Air Interface for Mobile Broadband Wireless Access Systems Supporting Vehicular Mobility – Physical and Media Access Control Layer Specification**

5. Life Cycle

- **Full Use** (5-year life cycle)
- **Trial Use** (2-year life cycle)

6. Type of Project:

- **New standard**
- **Revision of existing standard** (indicate Number and year existing standard was published in box to the right) [####-YYYY]
- **Amendment to an existing standard** (indicate Number and year existing standard was published in box to the right) [####-YYYY]
- **Corrigendum to an existing standard** (indicate Number and year existing standard was published in box to the right) [####-YYYY]
- **Revised PAR** (indicate PAR Number and Approval Date here: P [] – [] (YYYY-MM-DD)
 - Is this project in ballot now? []
 - State reason for revising the PAR in Item 318.

7. Contact information of Working Group Chair who must be an SA member as well as an IEEE and/or Affiliate Member

- **Name of Working Group(WG) :** IEEE 802.xx Working Group on Mobile Broadband Wireless Access
- **Name of Working Group Chair:**
- **First Name Last Name:** TBD
- **Telephone:**
- **FAX:**
- **EMAIL:**

8. Contact Information of Official Reporter, Project Editor or Document Custodian if different from the Working Group Chair. The Official Report must be an SA member as well as an IEEE and/or Affiliate Member

- **Name of Official Reporter (if different than Working Group Chair:**
- **First Name Last Name:** TBD
- **Telephone:**
- **FAX:**
- **EMAIL:**

9. Contact information of Sponsoring Society or Standards Coordinating Committee

- **Sponsoring Society and Committee:** Computer Society, LAN/MAN Standards Committee
- **Sponsor Committee Chair:**
- **First Name Paul Last Name: Nikolich**
- **Telephone:** (978) 749-9999 x 246
- **FAX:** (978) 749-8888
- **EMAIL:** p.nikolich@ieee.org

10. Sponsor Balloting Information (Please choose one of the following)

- **Choose one from the following:**
- **Individual Balloting**
- **Entity Balloting**
- **Mixed Balloting** (combination of Individual and Entity Balloting)

Expected Date of Submission for Initial Sponsor Ballot: 2004-03-30 (Format: YYYY-MM-DD)

Please review the PAR form three months prior to submitting your draft for ballot to ensure that the title, scope and purpose on the PAR form match the title, scope and purpose on the draft. If they do not match, you will need to submit a revised PAR.

Additional communication and input from other organizations or other IEEE Standards Sponsors should be encouraged through participation in the working group or the balloting pool.

11. Projected Completion Date for Submittal to RevCom [] (Format: YYYY-MM-DD)

If this is a REVISED PAR and the completion date is being extended past the original four-year life of the PAR, please answer the following questions. If this is not a revised PAR, please go to question #12

Statement of why the extension is required: []

When did you begin writing the first draft? (Format: YYYY-MM-DD): []

How many people are actively working on the project?: []

How many times a year does the working group meet in person?: []

How frequently is a draft version circulated to the working group via electronic means?: []

How much of the Draft is stable (Format: NN%): []

How many significant working revisions has the Draft been through?: []

Briefly describe what the development group has already accomplished, and what remains to be done: []

12. Scope of Proposed Project

This standard specifies the physical and media access control layer of the air interface of interoperable mobile broadband wireless access systems (i.e. supporting per-user data rates, in excess of 1 Mbps and with cell sizes, appropriate to ubiquitous metropolitan-area deployment) and supporting vehicular mobility. It applies to systems operating in licensed bands below 3.5GHz and utilizing either a TDD channel structure or a 1.25 MHz FDD channel structure.

- Deleted: up to 3 mbps center cell
- Deleted: of about 3 mile radius
- Deleted: (speeds up to 200 mph)
- Deleted: between 450 MHz to
- Deleted: s

13. Purpose of Proposed Project:

To enable worldwide deployment of cost effective, spectrum efficient, ubiquitous, always-on and interoperable multi-vendor mobile broadband wireless access networks. To provide for the simplification of mobile data network architectures by providing an efficient packet based air interface. To provide for a channel organization that is compatible with frequency allocations worldwide for cellular wireless networks. To provide for a wireless data access architecture that transparently extends current wired data access architectures.

Deleted: Utilization of 1.25 MHz channels and frequencies from 450 MHz to 3.5 GHz will assure that this technology is compatible with evolving cellular wireless networks.

14. Intellectual Property { Answer each of the questions below }

- Sponsor has reviewed the IEEE patent policy with the working group? [Y] {Yes/No}
- Sponsor is aware of copyrights relevant to this project?

Y {Yes/No}

- **Sponsor is aware of trademarks relevant to this project?**

Y {Yes/No}

- **Sponsor is aware of possible registration of objects or numbers due to this project?**

Y {Yes/No}

15. Are there other standards or projects with a similar scope?

Y {Yes, with explanation below/ No}

Explanation: ITU and related organizations are developing mobile data air-interface specifications. The approach taken in these specifications is as an extension/derivation from existing circuit switched architectures, this approach imposes performance and cost penalties on data transport. This project adopts an approach of defining an air-interface optimized for IP data that will result in a cost effective mobile broadband wireless data solution.

If Yes, please answer the following:

- **Sponsor Organization:** []
- **Project Number:** []
- **Project Date:** [] (YYYY-MM-DD)
- **Project Title:** []

16. International Sponsor Organization

Is there potential for this standard (in part or in whole) to be submitted to an international organization for review/adoption?

Y {Yes/No/?? if you don't know at this time}

If Yes, please answer the following questions:

International Committee Name and Number: **Potentially for inclusion by reference in 3GPP/3GPP2/ITU documents**

International Organization Contact Information:

Contact First Name: []

Contact Last Name: []

Contact Telephone Number: []

Contact FAX Number: []

Contact E-mail address: []

17. Will this project focus on health, safety or environmental issues?

N {Yes/No/?? if you don't know at this time}

If Yes: **Explanation?** []

18. Additional Explanatory Notes: {Item Number and Explanation}

[]{If necessary, these can be continued on additional pages}

The PAR Copyright Release and Signature Page must be submitted either by FAX to 732-562-1571 or as an e-mail attachment in .pdf format to the NesCom Administrator before this PAR will be sent on for NesCom and Standards Board approval.

Revised “Five Criteria”

(Deletions shown by strike-out and additions in light blue font)

Broad Market Potential

- a) Broad sets of applicability.
- b) Multiple vendors and numerous users.
- c) Balanced costs

- Mobile broadband wireless access, based on IP mobility, unlocks all Internet content to the general public, potential addressable market is all Internet users. Applications include:
 - Enterprise Intranets and VLAN Services
 - Entertainment & Gaming
 - Internet and Location Services
- Mobile station and terminal equipment is provided by multiple international telecommunications equipment vendors, deployed by international carriers and made available to the end-user community. Tutorial and Call for Interest sessions were held at the March 802 plenary. The tutorial session was attended by 180 individuals from 110 organizations. The CFI was attended by 55 individuals from 45 organizations expressing support for the project.
- This project will achieve cost balance between terminal devices and network infrastructure equipment that is comparable to existing cellular wireless networks and encourage mass deployment of wireless data services.

Compatibility

- a) Conformance with 802 Overview and Architecture
- b) Conformance with 802.1D (MAC Bridges) and 802.1F (VLAN Bridges)
- c) Conformance with 802.1F and compatible managed object definitions
- d) Identification of any variance in conformance

- The proposed standard will conform with the appropriate IEEE 802 functional requirements.
- Compatibility will be addressed during development of the standard and any variance that may be required will be clearly identified and justified .
- The standard will include the definition of a compliant MIB in support of the PHY and MAC layer capabilities.

Coexistence

- The proposed standard is applicable to licensed spectrum and will be compliant with the respective constraints imposed by the spectrum license.

Distinct Identity

- a) Substantially different from other IEEE 802 standards.
 - b) One unique solution per problem.
 - c) Easy for the document reader to select the relevant specification.
-
- This project will specify an air-interface supporting ~~full~~ vehicular mobility in a cellular system. IEEE 802 presently has no project addressing this capability.
 - The project has been socialized with the existing 802 Wireless groups. (To be done at the July meeting).
 - The proposed project will specify a unique solution to the physical and MAC layer of the air-interface operating ~~between 450 MHz to below 3.5 GHz and utilizing a 4.25 MHz channel~~ both TDD and FDD modes. This solution will ~~support~~ incorporate traffic engineering and QOS aspects adequate for both real-time and non-real-time data traffic.
 - The specification will be a stand-alone document with clearly defined scope.

Technical Feasibility

- a) Demonstrated system feasibility.
 - b) Proven technology, reasonable testing.
 - c) Confidence in reliability.
-
- The technical feasibility of such a system has been demonstrated by proprietary systems currently in trial. These systems utilize technological components in wide deployment today, such as modems, radios, antennas and MAC protocols.
 - The solution ~~will~~ may utilize well understood spread spectrum techniques (such as frequency hopping), radio technologies (such as OFDM), advanced signal processing techniques (such as adaptive antennas) and a cellular architecture. These technologies have been successfully used and tested over the past decades and are finding increased usage in the LAN/MAN environment.
 - Commercial deployment of cellular wireless networks in the ~~450 MHz to bands below 3.5 GHz band~~ demonstrates that carrier grade reliability can be achieved.

Economic Feasibility

- a) Known cost factors, reliable data.
 - b) Reasonable cost for performance.
 - c) Consideration of installation costs.
-

- Cost factors for wireless services and components are well known and understood. Worldwide deployment of mobile wireless networks and burgeoning demand for mobile services demonstrates the economic viability of mobile networks.
- The solution will offer better cost/performance characteristics than existing solutions since it is based on a pure packet architecture and designed for optimal spectral efficiency.
- Installation and operating costs will be reduced by designing the system so as to allow for one-by-one frequency reuse and automatic configuration capabilities, eliminating the need for frequency planning.