

**1. ASSIGNED PROJECT NUMBER:** 802.11u

**2. SPONSOR DATE OF REQUEST:** 2004-11-19

**3. TYPE OF DOCUMENT:** Standard

**4. TITLE OF DOCUMENT:** Amendment to Standard [for] Information Technology – Telecommunications and information exchange between systems –Local and Metropolitan networks – specific requirements –Part II: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications: IEEE 802.11 Wireless Interworking with External Networks

**5. LIFE CYCLE:** Full-Use

**6. TYPE OF PROJECT:** Amendment IEEE 802.11

Modified PAR?  
In Ballot?

## **7. WORKING GROUP INFORMATION**

Name of Working Group: IEEE P802.11, Working Group for Wireless LANs  
Approximate Number of Expected Working Group Members: 411

## **8. CONTACT INFO FOR WORKING GROUP CHAIR**

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**11. TYPE OF SPONSOR BALLOT:** Individual

Expected Date of Submission for Initial Sponsor Ballot: 2006-07-01

**12. PROJECTED COMPLETION DATE FOR SUBMITTAL TO REVCOM:** 2007-07-01

**13. SCOPE:** This document amends the IEEE 802.11 MAC and PHY to support interworking with external networks.

Completion of this document contingent? No

**14. PURPOSE:** The purpose of this document is to provide amendments to the IEEE 802.11 PHY/MAC layers which enable interworking with other networks. This includes both enhanced protocol exchanges across the air interface and provision of primitives to support required interactions with higher layers for interworking.

14a. Reason: Work undertaken within IEEE 802.11 and external bodies such as the IETF, 3GPP and 3GPP2 regarding the interworking of IEEE 802.11 technology, has raised IEEE 802.11 specific issues which can only be addressed within the IEEE 802.11 project. The benefit of this particular project is to address said issues, by producing an amendment to IEEE 802.11 to allow external networks to interwork with IEEE 802.11 equipment in a common, harmonized and standardized manner and remove the requirement for bespoke solutions which are starting to appear in the market.

**15. INTELLECTUAL PROPERTY:**

Patent Policy: Yes

Copyrights: No  
Trademarks: No  
Registration of Object: No

**16. SIMILAR SCOPE: Yes**

Explanation: IEEE 802.21 Media Independent Handover Services states that it will consider handoffs between all IEEE 802 wireless technologies and Cellular networks. This can be interpreted as addressing the issue of IEEE 802.11 interworking to cellular systems, except for the following reasons: 1) IEEE 802.21 will not be able to amend IEEE 802.11. This project only considers specific IEEE 802.11 amendments to allowing interworking. 2) IEEE 802.21 considers terminals which have multiple interfaces each with a different potential network connection. IEEE 802.21 addresses handover from one interface to another. By contrast, this project only considers issues which impact upon the IEEE 802.11 air interface. It is worth noting that an agreement has been made between IEEE 802.21 and IEEE 802.11 WIEN SG to co-ordinate in avoiding any overlap in their scopes.

Sponsor: IEEE

Project Number: IEEE 802.21

Project Date: 2004-03-01

Project Title: IEEE 802.21 Media Independent Handover Services

**17. FUTURE ADOPTION - INTERNATIONAL SPONSOR: Do not know at this time**

Int'l Organization:

Int'l Contact Person:

Telephone:

FAX:

E-mail:

**18. FOCUS ON HEALTH, SAFETY OR ENVIRONMENTAL ISSUES:**

Explanation:

**19. ADDITIONAL NOTES:** The scope of this project is to develop an amendment to IEEE 802.11 to facilitate interworking with external networks. It is necessary for IEEE 802.11 to create a standard, which specifies the requirements and interfaces between IEEE 802.11 and external networks, such as those found in Cellular systems. The amendment will address specific interfaces to support external authentication, authorization and accounting, together with network selection, encryption, policy enforcement and resource management. Such interface provides interaction methods between IEEE 802.11 entities and the interworked external network. The standard also specifies how the interface works with existing IEEE 802.11 functions, e.g. IEEE 802.11i, to meet the interworking requirements. It is planned to set up a continuous liaison between IEEE 802.11 and IEEE 802.21 to monitor both groups' activities to ensure that any future overlap in scope is co-ordinated. The section below mentions previous documents presented in IEEE 802.11 WNG SC and IEEE 802.11 WIEN SG, indicating the level of interest for this activity: 11-03-0687-02-0wng-wfa-public-access-overview.ppt 11-03-0695-00-0wng-Interworking-Policy.ppt 11-03-0727-02-0wng-Interworking-AdmissionControl.ppt 11-03-0827-00-0wng-co-existence-of-different-authentication-.ppt 11-03-0828-03-0wng-hotspot-evolution.ppt 11-03-0993-00-0wng-interworking-sg-justification.doc 11-04-0222-00-0wng-3gpp-requirements-wlan-selection.ppt 11-04-0407-00-0wng-backend-interworking-security.ppt 11-04-0408-02-0wng-3gpp-wlan-interworking-security.ppt 11-04-0617-00-wien-wlan-interworking-scenarios.ppt 11-04-0626-00-wien-

3gpp-wlan-interworking-issues.ppt 11-04-0638-02-wien-network-selection.ppt 11-04-0690-00-wien-3gpp-sa3-interworking-security-issues.ppt 11-04-0691-00-wien-considerations-about-network-selection.ppt 11-04-0708-00-wien-network-side-issues-in-wlan-interworking.ppt 11-04-0711-00-wien-domain-identification-predictive-handover-among-different-domains.ppt 11-04-0733-01-wien-3gpp-wlan-interworking-requirements.ppt 11-04-0751-00-wien-selling-network-access.ppt 11-04-0780-00-wien-anonymous-mac-addresses.ppt 11-04-0835-00-wien-arid-use-case.ppt

The section below represents the list of some specific open issues to be addressed by IEEE 802.11u. This list, by no means exhaustive, has been generated by considering submissions and presentations made in IEEE 802.11 WIEN SG.

- Network Detection and Selection
  - o This provides additional information to STAs about the characteristics of the network to support network selection decisions.
  - o As part of this, IEEE 802.11u will investigate aspects related to beacon scalability.
- Secure Portal Page/IEEE 802.11i co-existence
  - o The majority of current hotspots use portal pages to support authentication and a solution is needed for allowing the full IEEE 802.11i to operate in parallel.
  - o Issues include support for new user sign up in IEEE 802.11i enabled networks
- MAC address anonymity
  - o This provides protection for the terminal identity
- Policy enforcement
  - o Issue concern how policy rules from the network are enforced within the IEEE 802.11 access point
  - o Specific requirements placed on IEEE 802.11 by external network operators, where traffic enforcement policies are applied to user traffic. This particularly applies to the scenario where multiple operators share the IEEE 802.11 hotspot infrastructure.
- External QoS mapping
  - o Issues concerning specific external network requirements mapping to IEEE 802.11
  - o Issues concerning the co-ordination of admission control between the air interface and external networks
- Charging
  - o Specifically charging information, generated within the Access Point, is required to be communicate to the external network
  - o IEEE 802.11u will define a mechanism to collect such information
- Access Router identifier
  - o This is either within the beacon or is an information element within an IEEE 802.11k neighbor information element.
  - o It provides an indication as to whether handover is at layer 2 or layer 3.

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