

Notes from meeting between Jim Carlo (Chair of IEEE 802), Ian Gifford (WPAN WGSG Secretary) and Ray Weaver and Simon Ellis (Intel members of Bluetooth)

Monday, December 14, 1998 8:00am-10:00am PST

Intel Corporation
Mobile & Handheld Products Group
SC9-22
2200 Mission College Blvd.
Santa Clara, CA 95052-8119 USA

1. Introduction

The meeting was called to order at 8:12am PST and Jim Carlo asked the attendees to introduce themselves and state their affiliations. Ian Gifford, WPAN SG Secretary is present and took these notes. Vic Hayes was available on conference phone.

Note: This was not an official IEEE 802 meeting; it is rather a presentation from the IEEE 802 Chair to representatives of Bluetooth to explain the rules of the IEEE standards process.

2. Attendees

NAME	COMPANY	PHONE	FAX	E-MAIL
Jim Carlo	Texas Instruments	+1 214 340 8837	+1 214 853 5274	jcarlo@ti.com
Simon Ellis	Intel	+1 408 765 4461	+1 408 765 5634	simon.ellis@intel.com
Ian Gifford	AMP	+1 978 442 4650	+1 978 442 5442	giffordi@amp.com
Vic Hayes	Lucent	+31 30 6097528	+31 30 609 7556	vichayes@lucent.com
Ray Weaver	Intel	+1 408 765 0004	+1 408 765 5634	ray.weaver@intel.com

3. Meeting Goals

The goal for the meeting was to provide the Bluetooth Special Interest Group with an overview of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) 802 LAN MAN Standards Committee (LMSC) organization and processes. Additionally, a "Pro & Con" discussion on formal standardization within the IEEE would be presented.

Simon Ellis informed the attendees that the Bluetooth SIG had recently formed a new Task Team called "Program Management Group". Simon Ellis went on to inquire about the Bluetooth Special Interest Group "Terms List" ref: doc.: IEEE 802.11-98/326 which he had submitted (11/9/98) to the IEEE WPAN SG and that they were interested in getting a response. Jim Carlo indicated that rather than respond to the "Terms List", a better approach was holding this meeting where he would providing an overview of the IEEE 802 standardization process and have subsequent discussions.

In recent IEEE 802 meetings the discussion on Consortiums and the need for providing an overview has become apparent and this meeting is one in a series of meetings that the 802 Chairman is conducting. Jim Carlo prepared a pitch for this meeting and the file [JC-802-Consortium.PDF] can be downloaded from the following URL: <ftp://ftp.flexipc.com/wearablesgroup/802>

4. IEEE 802 Organization Summary

Jim Carlo described the Project 802 (P802) as a Standards Committee which reports to the Standards Activity Board (SAB) of the IEEE Computer Society.

Jim Carlo noted that it operates under sponsorship of the IEEE Computer Society. The P802 Standards Committee is directed by a Sponsor Executive Committee (SEC) which oversees the operation of a standards sponsoring organization. The P802 Sponsor Executive Committee serves as the Executive Committee for both the sponsor ballot groups as well as the Standards Development Groups. The IEEE 802 Local and Metropolitan Area Network Standards Committee has the basic charter to create, maintain, and encourage the use of IEEE/ANSI and equivalent IEC/ISO JTC 1 standards primarily within layers 1 and 2 of the OSI (Open System Interconnection) Reference Model.

Jim Carlo said the IEEE is accredited by ANSI and is called a "Standards Development Organization" (SDO) in the USA.

Simon Ellis asked about the IEEE as an International SDO. Vic Hayes described the ongoing work with the European Telecommunications Standards Institute (ETSI) and the Broadband Radio Access Networks (BRAN) Project. Vic Hayes informed the group of the collocated meeting of IEEE 802.11 and ETSI BRAN project January 11-15, 1999 Orlando, FL. Jim Carlo added that the IEEE and ETSI leadership has active liaisons at the 802 Leadership level as well as higher levels at the IEEE-SA BOG level.

Jim Carlo said that the 802 meets three times per year (400 individuals, 15% non-US) and that they develop equivalent IEC/ISO JTC 1 standards (JTC 1 series of equivalent standards are known as ISO 8802-nnn). The IEEE 802 web site is at <http://stdsbbs.ieee.org/groups/802>

The IEEE series of standards are known as IEEE 802.xxx and the JTC 1 series of equivalent standards are known as ISO 8802-nnn. In the IEEE 802 context "local" means campus and "metropolitan" means intracity.

4.1 802 Standards Family:

LMSC has 13 Working Groups with average total participation of about 400 individuals at Plenary sessions. Within IEEE 802 there are four distinct categories of standards as follows:

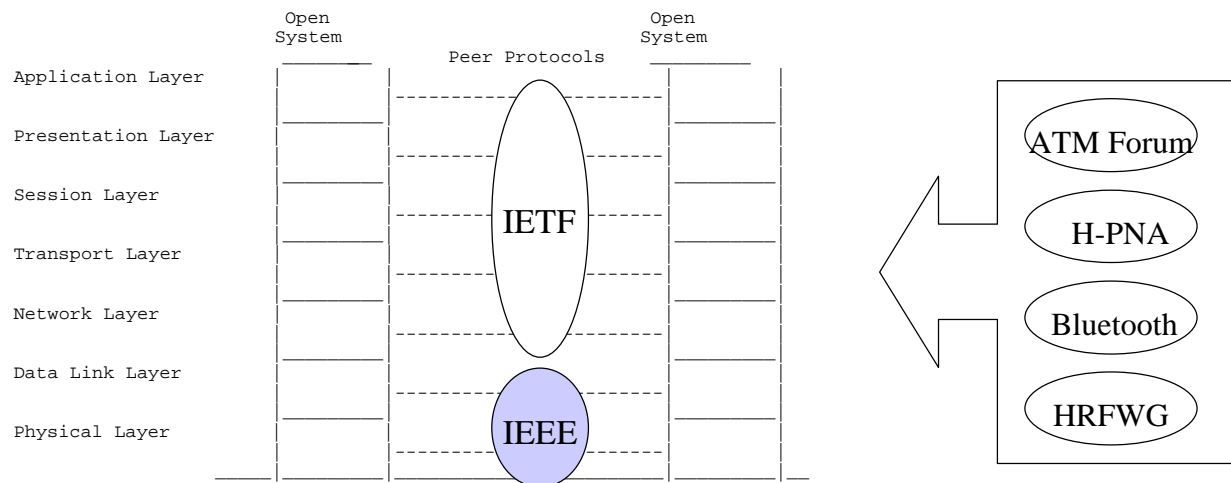
- IEEE 802.1: Overview and Architecture, Bridging, Virtual bridged LAN (VLAN)
- IEEE 802.2: Logical Link Control (currently in hibernation and inactive).
- IEEE 802.3, .4, .5, .6, .9, .11, .12, .14: access methods and physical signaling for specific types of LAN and MAN technologies as follows; CSMA/CD, Token Bus, Token Ring, DQDB, Integrated Services, Wireless, Demand Priority, and Cable TV respectively. (802.4 and 802.6 are currently in hibernation and inactive)
- IEEE 802.7 (currently in hibernation and inactive) and IEEE P802.8 providing advisory groups in broadband and fiber optic technologies.
- IEEE 802.10 provides various levels of security for all IEEE 802 standards.

Simon Ellis indicated that the Bluetooth SIG was interested in upper layer standards activities in IEEE 802.1 Bridging and Architecture & 802.2 Logical Link Control.

5. IEEE 802 Standards Process

Jim Carlo described the 802 standards process in detail (see the pitch for more detail). Jim Carlo discussed the fact that the IEEE works in the lower layers of the OSI Reference Model and that other entities work at

the higher levels. A primary interface is the Internet Engineering Task Force (IETF) <http://www.ietf.org/> focuses on the higher layers e.g., “IP over...”:



The above graphic depicts the ISO/OSI Reference Model and the positioning of IEEE and IETF. Jim Carlo suggests that Consortia are a necessary force in standards-making and that they can provide critical success factors (e.g., drivers, etc.), via marketing input, to SDO initiatives.

6. Consortium Experience

Jim Carlo provided the following two consortia activities as good examples of work done outside of the IEEE and then driven through by stalwart consortia members:

6.1. 1284 - Parallel Printer Port Standard

- Parallel Printer Alliance developed specification
- IEEE Standard "very close" to original spec

6.2. 1754 - SPARC Instruction Set Standard

- SUN developed SPARC technology
- IEEE Standard "very close" to original design

Jim Carlo also provide a short history on Token Ring where technology implementations (in the field) led to a revision with greater specificity based on products in the field. Jim stressed that the critical success factor was that people interested in the Token Ring technology drove the IEEE process. The key ingredient is that someone (Individuals, companies, consortium) must be willing to drive a standard and not "throw it over the wall".

6.3 How to Drive an 802 Standard

- Requires study group chair to drive consensus
- Requires editor to write standard
- Requires committed individuals/organizations
- Requires technical leaders to resolve issues

- Requires consortium to drive market awareness

6.4 Result

- Standard will be rock solid
- Standard will be maintainable
- Market will be ready

7. IEEE-SA and IEEE ISTO - New Initiatives

Jim Carlo described the new IEEE Standards Association (IEEE-SA). The IEEE-SA was formed to provide a major entity that would offer increased responsiveness to the standards interests of IEEE societies and their representative industries.”

- Allows for "entity" developed/voting on standards in addition to "individual" voting

Jim also described the IEEE Industry Standards and Technology Organization (IEEE ISTO)

- Under the IEEE ISTO, an IEEE Society can sponsor programs that are not possible under their existing procedures.
- Trade associations, consortia, and user groups that form around an IEEE standard can come under the IEEE ISTO umbrella.

Jim Carlo concluded these overviews by stating that they were new and if the Bluetooth SIG wanted more information he could help.

8. IEEE 802 Wireless Vision

Jim Carlo's IEEE 802 Wireless Vision Statement - IEEE 802 is the focal point for Wireless LAN standards

Jim Carlo described the 802.11 Base Standard i.e., 2.4GHz Frequency Hopping Spread Spectrum (1Mbit/s), 2.4GHZ Direct Sequence Spread Spectrum (2Mbit/s), Infrared (1Mbit/s). He went on to describe current Task Group activities in the 802.11 Working Group e.g., 802.11a 5GHz Extension (>20Mbit/s), 802.11b 2.4GHz Extension (>8Mbit/s)

Jim also described the recent Broadband Wireless LANs (LMDS) – ECSG as well as the ongoing work of the Wireless Personal Area Networks – WGSF.

9. Discussion

9.1. Pro's and Con's of IEEE 802

What are the advantages to IEEE 802 effort?

- Greater Industry Awareness of Standard
- Increase Vendor Participation
- Clarify specification so it becomes an interoperable standard
- World-wide visibility and internationalization

What are the disadvantages to IEEE 802 effort?

- Increased effort by Consortium Participants
- Cannot throw the specification "over the wall"

- "Loss of Control" if specification is only a few vendors products

9.2. ECSG vs. WGSG

Jim Carlo noted that there are two types of Study Groups which are specified:

An Executive Committee Study Group (ECSG) is initiated by vote of the Executive Committee and the ECSG Chair is appointed and approved by the Executive Committee. The ECSG Chair has the same responsibilities as a Working Group Chair but does not have Executive Committee voting rights.

A Working Group Study Group (WGSG) is initiated by vote of the Working Group or TAG and approved by the Executive Committee. The WGSG Chair is appointed and approved by the Working Group or TAG.

The group debated the relative merits of the two (2) types of entities.

9.3. 802 Data-link Layer

Vic Hayes explained that the IEEE splits the data-link layer in half because the layer has two jobs to do. The first is to coordinate the physical transfer of data. The second is to manage access to the physical medium. Dividing the layer (OSI RM) allows for more modularity and therefore more flexibility. By dividing the layer, a number of Medium Access Control (MAC) Layers can be created, each corresponding to a different physical layer, but just one Logical Link Control (LLC) can handle them all. Also in the case of IEEE 802.11 there is one MAC Layer and currently there are three (2 RF & 1 IR) PHY Layers.

Simon Ellis discuss the Bluetooth SIG specification and that there needs to a discussion of the Bluetooth "Data Link Layer" and the resultant partitioning of it if an accredited standard from IEEE is deemed necessary.

Vic Hayes recommend that the Bluetooth SIG review the standard "802.11-1997 Information technology--Telecommunications and information exchange between systems--Local and metropolitan area networks--Specific requirements--Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications" <http://standards.ieee.org/catalog/IEEE802.11.html>. In particular the normative references (see Appendix B in these minutes) and the ISO/IEC 15802-1:1995 Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Common specifications - Part 1: Medium Access Control (MAC) service definition.

Simon Ellis indicated that the Bluetooth SIG has neared 400 Adopters and with this the number of Usage models has increased e.g., automotive, etc.. Simon Ellis discussed the fact that it would be nice to focus on the Upper Layers vs. the Lower Layers and that the IEEE 802 LMSC may offer a path forward. Jim Carlo suggested having a clearly defined MAC Layer interface definition with all the "hooks" defined may help. The group agreed. Simon Ellis concluded by saying there was a newly formed Task Team inside of the Bluetooth SIG called the "Networking Group".

9.4 Test Specifications/Standards?

Simon Ellis asked if IEEE produced Test Specifications. Jim Carlo said yes, but this has not been successful. Simon referenced the European Telecommunications Standards Institute (ETSI) and the GSM Testing Standards. Vic Hayes concurred but also added that ETSI is legally required to provide these Testing Specifications. Vic Hayes also indicated that 802.11's PAR (Project Authorization Request) had, at one time, a task to create a test spec but that this was dropped. However, it was noted

the InterOperability Lab (IOL) at the University of New Hampshire is used by IEEE 802 and more specifically for IEEE 802.11 testing:

InterOperability Lab (IOL)
 University of New Hampshire
 332 Morse Hall
 Durham, NH 03824
<http://www.iol.unh.edu/>

10. Potential Bluetooth MAC/PHY standard timeline

TASK	START	STOP
March 8-12, 1999 - Hyatt Regency, Town Lake, Austin, TX, USA, Plenary		
Bluetooth 802 Tutorial, based on v1.0. Study Group Approved	3/9/99	
July 5-9, 1999 - Queen Elizabeth, Montreal, PQ, Canada, Plenary		
Bluetooth PAR Approval	7/5/99	7/8/99
November 8-12, 1999 - Hyatt Regency, Kauai, Koloa, HI, USA, Plenary		
First Unapproved Bluetooth Draft Standard	11/8/99	11/11/99
March 6-10, 2000 - Hyatt Regency, Albuquerque, NM, USA, Plenary		
Draft Standard approved by 802.11 WG	3/6/00	3/9/00
July 10-14 - Hyatt Regency La Jolla, San Diego, CA, USA Plenary		
November 6-10, 2000 - Hyatt Regency, Tampa, FL, USA, Plenary		
Draft Standard approved by IEEE SAB		12/00

Note: The IEEE 802 has three (3) Plenary Meeting each year and the IEEE 802 .11 WG meets during these times as well as there are Interim Meeting between each Plenary. It was suggested that the Bluetooth SIG/IEEE 802 group plan on attending, at the very least, when 802.11 meets.

11. Next Steps

The following will summarize the next steps from this meeting:

WHAT	WHO	WHEN
Send out minutes from meeting	Ian Gifford	12/17/98-Done
Resend the "WLAN/ Coordination of the use of the 2.45 GHz band" e-mail dated 11/3/98 (see Appendix A)	Vic Hayes	12/18/98-Done
Forward the "IEEE 802 and Consortiums" presentation [JC-802-Consortium.PDF] in MS PowerPoint file format to the Bluetooth SIG attendees	Jim Carlo	12/18/98-Done
Bluetooth SIG to contact IEEE 802 to inform the Chairman on the SIG's intentions i.e., partition & standardization of MAC & PHY Layers	Ray Weaver	1/99
Bluetooth SIG agreed to provide a Tutorial during the IEEE 802 Plenary on March 9 th , 1999 in Austin, TX USA.	Ray Weaver	3/9/99

12. Conclusion

Jim Carlo indicated that he has planned five other consortiums presentations over the next two months to promote 802 process.

The meeting was adjourned at 10:25am PST.

Appendix A

WLAN/ Coordination of the use of the 2.45 GHz band

-----Original Message-----

From: Hayes, Vic (Vic) [SMTP:vichayes@lucent.com]
Sent: Tuesday, November 03, 1998 3:40 PM
To: Allen, Warren, Toshiba, Bluetooth; Allen, Warren, Toshiba, Bluetooth; Ellis, Simon Intel/Bluetooth; Haartsen, Jaap Ericsson, Bluetooth; Joeressen, Olaf Nokia, Bluetooth; Lee, Peter, IBM, Bluetooth; Mattisson, Sven Ericsson, Bluetooth; Muller, Thomas Nokia, Bluetooth; Svenssen, Anders Ericsson, Bluetooth; Smit, Kiwi Ericsson
Cc: 802.11 reflector
Subject: WLAN/ Coordination of the use of the 2.45 GHz band

Wireless colleagues,

As Chairman of IEEE P802.11, I am taking the freedom to write this e-mail to you to discuss the possible coordination of the use of the 2.45 GHz band; both for sharing as well as protecting the band.

First the protection.

From members of my working group, I understand that you all participate in the Bluetooth effort. From the same members, I understand that you have received an e-mail explaining that the Lighting industry in the USA are planning to use the band for lighting and that the FCC is on the brink of ruling to permit it. It appears that they would heavily interfere with our devices and it would be worthwhile to ask the FCC to delay the ruling to permit us to communicate with the Lighting industry to find a method to co-exist.

The sharing

For users in the same band and in the same geographic are, it may be a wise thing to coordinate the use of the band. We could talk about taking measures that would prevent that devices from the two types of networking would not make communications of each impossible.

IEEE P802.11 holds their meeting next week. Information about the meeting and 802.11 can be found at the following URL:

<http://grouper.ieee.org/groups/802/11>

I am looking forward to a fruitful cooperation.

Please do not hesitate to contact if you have questions

Vic Hayes, Chairman, IEEE P802.11
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the Netherlands
phones: voice +31 30 609 7528, fax +31 30 6097556
Time zone: UTC + 2

Appendix B

IEEE 802.11 Normative References:

1. IEEE Std 802-1990, IEEE Standards for Local and Metropolitan Area Networks: Overview and Architecture (ANSI).
2. ISO/IEC 7498-1:1994, Information technology -- Open Systems Interconnection -- Basic Reference Model: The Basic Model.
3. ISO/IEC 8802-2:1994, Information technology -- Telecommunications and information exchange between systems -- Local and metropolitan area networks -- Specific requirements -- Part 2: Logical link control.
4. ISO/IEC 8824-1:1995(E); Information technology -- Abstract Syntax Notation One (ASN.1): Specification of basic notation.
5. ISO/IEC 8824-1:1995/Amd.1:1996(E); Information technology -- Abstract Syntax Notation One (ASN.1): Specification of basic notation, AMENDMENT 1: Rules of extensibility.
6. ISO/IEC 8824-2:1995(E); Information technology -- Abstract Syntax Notation One (ASN.1): Information object specification.
7. ISO/IEC 8824-2:1995/Amd.1:1996(E); Information technology -- Abstract Syntax Notation One (ASN.1): Information object specification, AMENDMENT 1: Rules of extensibility.
8. ISO/IEC 8824-3:1995(E); Information technology -- Abstract Syntax Notation One (ASN.1): Constraint specification.
9. ISO/IEC 8824-4:1995(E); Information technology -- Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications.
10. ISO/IEC 8825-1:1995(E); Information technology -- ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).
11. ISO/IEC 8825-2:1996(E); Information technology -- ASN.1 encoding rules: Specification of Packed Encoding Rules (PER).
12. ISO/IEC 10039:1991, Information Technology - Open Systems Interconnection - Local Area Networks - Medium Access Control (MAC) Service Definition.
13. ISO/IEC 15802-1:1995 Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Common specifications - Part 1: Medium Access Control (MAC) service definition.
14. ITU-T Recommendation Z.100 (03/93), CCITT Specification and Description Language (SDL).
15. ITU-T Recommendation Z.105, SDL Combined with ASN.1 (SDL/ASN.1).
16. ITU-T Recommendation X.210, Service Definitions - Open Systems Interconnection - Layer Service Definition Conventions.
17. ITU Radio Regulations