IEEE Project 802
Estimated Statement of Operations
July 2000 Meeting

open	**9 July Operating Reserve**			**46,700**		
July 2000 Meeting Income:				***Actual***	*Budget*	
294	**Registrations@**	**$300**	**88,200**			
557	**Registrations@**	**$250**	**139,250**			
	Registrations@	**$100**	**0**			
Subtotal				**227,450**	125,875	
Deadbeat Registrations				**0**	0	
Bank Interest				**200**	200	
Other				**850**	450	
plus	**TOTAL Income**			**228,500**	126,525	
July 2000 Meeting Expenses:				***Estimate***	*Budget*	
Audio Visual Rentals				**8,600**	5,000	
Bank Charges				**25**	25	
Copying				**8,500**	9,750	*
Credit Card Discounts				**6,619**	4,641	*
International Program Fee				**22,200**	22,200	*
IEEE 802 Free Standards						
Meeting Administration				**48,200**	42,150	*
Phone & Electrical				**3,000**	800	
Refreshments				**56,000**	23,400	
Shipping				**3,500**	3,000	
Social				**42,000**	15,600	
Supplies					22	
Other				**1,000**		
minus	**TOTAL Meeting Expense**			**199,644**	126,588	
minus	**Equipment Expense**			**8,000**	5,000	
equals	**Jul 2000 Operating Reserve**			**67,556**		
	Net Change in Operating Reserve			**20,856**	(63)	

* Actual charges are based on registration, budget is based on registration forecast.

IEEE Project 802
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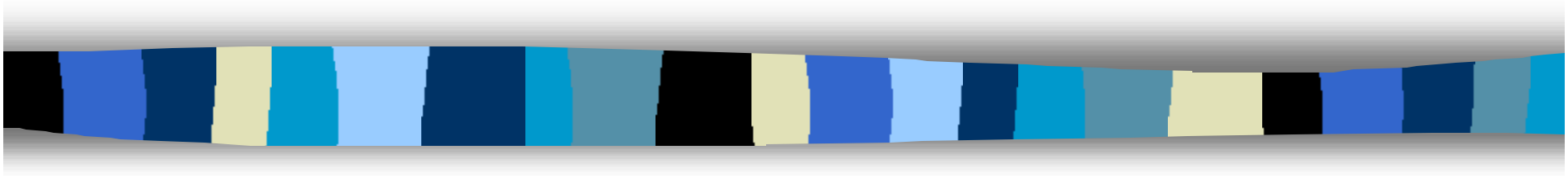
July 2000 Meeting Expenses:				***Estimate***	*Budget*	
Audio Visual Rentals				**8,600**	5,000	
Bank Charges				**25**	25	
Copying				**8,500**	9,750	*
Credit Card Discounts				**6,619**	4,641	*
International Program Fee				**22,200**	22,200	*
IEEE 802 Free Standards				**62,900**		
Meeting Administration				**48,200**	42,150	*
Phone & Electrical				**3,000**	800	
Refreshments				**56,000**	23,400	
Shipping				**3,500**	3,000	
Social				**42,000**	15,600	
Supplies					22	
Other				**1,000**		
minus	**TOTAL Meeting Expense**			**262,544**	126,588	
minus	**Equipment Expense**			**8,000**	5,000	
equals	**Jul 2000 Operating Reserve**			**4,656**		
	Net Change in Operating Reserve			**(42,044)**	(63)	

* Actual charges are based on registration, budget is based on registration forecast.

	1999			2000			2001		
	Austin *Actual*	Montreal *Actual*	Kauai *Actual*	Albq. *Actual*	LaJolla *Estimate*	Tampa *Budget*	Hilton Head *Budget*	Portland *Budget*	Austin *Budget*
Meeting Income:	***March***	***July***	***Nov***	***March***	***July***	***Nov***	***March***	***July***	***Nov***
Registrations	**415**	**469**	**474**	**598**	**851**	**700**	**600**	**500**	**400**
Preregistration fee	**275**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**
On-site registration fee	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**
Average Fee	**286**	**266**	**266**	**270**	**267**	**260**	**255**	**255**	**255**
Subtotal	**118,800**	**124,650**	**126,150**	**161,700**	**227,450**	**182,000**	**153,000**	**127,500**	**102,000**
Bank Interest	**263**	**202**	**213**	**200**	**200**	**200**	**150**	**150**	**150**
Other			**475**	**450**	**850**	**400**	**400**	**375**	**375**
TOTAL Income	**119,063**	**124,852**	**126,838**	**162,350**	**228,500**	**182,600**	**153,550**	**128,025**	**102,525**
Meeting Expenses:	***March***	***July***	***Nov***	***March***	***July***	***Nov***	***March***	***July***	***Nov***
Audio Visual Rentals	**4,208**	**5,911**	**6,863**	**4,577**	**8,600**	**5,000**	**6,000**	**5,000**	**5,000**
Bank Charges	**1**	**133**	**1**	**0**	**25**	**25**	**30**	**30**	**30**
Copying	**4,819**	**2,384**	**4,818**	**6,721**	**8,500**	**8,400**	**7,200**	**6,000**	**4,800**
Credit Card Discounts	**3,383**	**3,245**	**3,364**	**4,145**	**6,619**	**5,096**	**4,284**	**3,570**	**2,856**
IPF/Escrow	**37,400**	**42,000**	**22,200**	**22,200**	**85,100**	**70,000**	**60,000**	**50,000**	**40,000**
Meeting Planners	**36,302**	**32,999**	**36,547**	**39,397**	**48,200**	**44,300**	**40,200**	**35,900**	**31,600**
Phone & Electrical	**822**	**618**	**986**	**556**	**3,000**	**1,000**	**1,000**	**1,000**	**1,000**
Refreshments	**15,814**	**9,988**	**25,626**	**22,610**	**56,000**	**23,100**	**19,200**	**16,000**	**12,800**
Shipping	**2,248**	**1,855**	**4,025**	**1,631**	**3,500**	**3,000**	**4,000**	**3,000**	**3,500**
Social	**9,596**	**7,125**	**23,411**	**18,426**	**42,000**	**16,100**	**12,000**	**10,000**	**8,000**
Supplies	**0**	**0**	**5**	**22**		**0**	**0**	**0**	**0**
Other	**1,100**	**70**	**2,806**	**223**	**1,000**	**1,500**	**2,000**		**1,500**
Meeting Equipment	**4,924**	**20,150**	**22,482**	**5,796**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**
TOTAL Meeting Expense	**120,617**	**126,479**	**153,134**	**126,305**	**267,544**	**182,521**	**160,914**	**135,500**	**116,086**
NET to Operating Reserve	**(1,554)**	**(1,627)**	**(26,296)**	**36,045**	**(39,044)**	**79**	**(7,364)**	**(7,475)**	**(13,561)**
Opening Reserve	**49,480**	**47,963**	**66,296**	**39,293**	**75,338**	**36,294**	**36,373**	**29,009**	**21,534**
Projected Closing Reserve	**47,926**	**46,336**	**40,000**	**75,338**	**36,294**	**36,373**	**29,009**	**21,534**	**7,973**
Projected Closing Cash	**36,726**	**35,136**	**28,800**	**64,138**	**25,094**	**25,173**	**17,809**	**10,334**	**(3,227)**

802.1 - Activities & status



Tony Jeffree, WG Chair

13th July 2000

Areas of work

- 802 Architecture
- Interworking between 802 technologies
  - "Technical Plenary" if needed
- MAC Bridging
  - "traditional" bridging
  - VLAN bridging
- LAN management
- Website: http://www.ieee.org/groups/802/1/

Status of current projects - (1)

- Standard 802 revision (Overview & Architecture)
  - Awaiting Sponsor confirmation ballot
- P802.1s - Multiple Spanning Tree support in VLANs
  - Further Task Group ballot on Draft 7

Status of current projects - (2)

- P802.1t - Tech & ed corrections to 802.1D MAC Bridges
  - Draft 8 to Recirculation ballot, then to Sponsor Ballot
- P802.1u - Tech & ed corrections to 802.1Q VLANs
  - Draft 7 to Sponsor Ballot

Status of current projects - (3)

- P802.1v - VLAN classification by protocol and port
  - Draft 4 to RecRecirculation ballot, then to Sponsor Ballot
- P802.1w - Rapid Spanning Tree reconfiguration
  - Draft 6 to Working Group ballot

Status of current projects - (4)

- P802.1X - Port based network access control
  - Draft 7 to Confirmation Ballot

802.3 CSMA/CD Working Group Status

Major Activities this week (July 2K):

- P802.3ae 10 Gigabit Ethernet
  - App'd mat'l for MAC & PCS
  - App'd 2 PMDs, not done yet.
- P802.3af DTE Power via MDI
  - Review lab work, start draft work
- 1802.3 Rev. (10BASE-T Conformance)
  - P802.3rev draft fwd to Sponsor ballot
- Maintenance #6 revision PAR to Nescom
- Maintenance #6 Pkg to WG Ballot

802.3 CSMA/CD Working Group Officers

- 802.3 Chair: Geoff Thompson (thompson@ieee.org)
- 802.3 Vice Chair: David Law (davel@pdd.3Com.com)
- 802.3 Secretary: Bob Grow (bob.grow@intel.com)
- P802.3ae 10 Gig E'net: Jonathan Thatcher (jonathan@worldwidepackets.com)
- P802.3af DTE Power via MDI: Steve Carlson (scarlson@esta.org)

- 802.3 CSMA/CD Web site
- Information always available on our web site:
  http://grouper.ieee.org/groups/802/3/index.html

IEEE P802.3ae Task Force Interim Meeting
IEEE P802.3af DTE Power via MDI Task Force Interim Meeting
Hosted by Enterasys Networks
Tuesday, Sept 12 thru Thursday, Sept 14, 2000
Hotel tbd
Boston area

IEEE P802.11, Wireless LANs

Http://www.ieee802.org/11

Chair: Stuart Kerry

Vice Chair: Al Petrick

Co-Vice Chair: Harry Worstell

Secretary: Tim Godfrey

IEEE P802.11, Wireless LANs

802.11d
802.11b-cor1

802.11e
802.11f

Liaison and Contact with regulatory agencies

Study Group for

Higher Rate 802.11b

MAC

2.4 GHz Frequency. Hopping Spread Spectrum	2.4 GHz Direct Sequence Spread Spectrum	Infra-Red	2.4 GHz Higher data rate extension 802.11b	5 GHz High data rate extension 802.11a
1 Mbit/s *2 Mbit/s*	2 Mbit/s 1 Mbit/s	1 Mbit/s *2 Mbit/s*	5.5 Mbit/s 11 Mbit/s	6, 12, 24 Mbit/s *9-54 Mbit/s*

Legend: italic (and red) = optional

IEEE P802.11, Wireless LANs

802.11d Regulatory domain update	Chair: Bob O'Hara WG Reconfirmation Letter Ballot 22
802.11b-cor1 corrigendum MIB	Chair: Carl Andren Approved ISO version 8802-11amd2
802.11e MAC enhancements QoS/Security	Chair: John Fakatselis Completed functional requirements
802.11f Rec. Practices Inter-Acces Point Prot.	Chair: Dave Bagby Completed functional requirements
Study Group for Higher rates of .11b	Chair: Matthew Shoemake Submitted PAR. Drafting procedure, func. requirements and comparison criteria

IEEE P802.11, Wireless LANs

Regulatory matters

- Received a status report on FCC Docket 99-231
- Rules change in the 2.45 GHz band
  - Wide band Frequency Hopping
  - Test requirements for Direct Sequence
- Interesting compromise proposal filed
  - To add rules similar to the CEPT/ETSI regulations
- No actions taken
- Vote to approve IS 8802-11/DAM1
  - 6-54 Mbit/s in the 5 GHz band

IEEE P802.11, Wireless LANs

TGd, Regulatory domains

- Resolved no votes by contacting no voters and without making changes to the resolution comments document for LB 22
- Submit results to 802 chairperson for final approval to SEC

Study Group MAC Enhancements

- SEC approved 2 PARs for submission to NesCom
  - 802.11e (Supplement for MAC enhancements on QoS and security)
  - 802.11f ([Recommended Practices for Multi-Vendor Access Point Interoperability via Inter-Access Point Protocol across Distribution Systems supporting IEEE P802.11 operation.]

IEEE P802.11, Wireless LANs

TGb-cor1, Repair MIB

- Proposed to include PICS reference number correction
- Will become an errata sheet
- Draft will go out for Sponsor Ballot

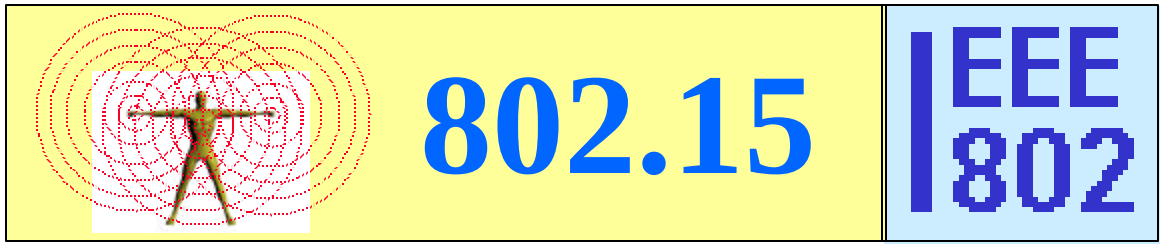
Study Group 802.11b improvement

- Received no comments or objections to PAR and 5 Criteria
- Submitted PAR to SEC and received approval contingent on a WG reaffirmation of PAR by e-mail LB
- Drafted IEEE Press Release, Proposal Selection Process, Functional Requirements and Comparison Criteria

IEEE P802.11, Wireless LANs

Interim meeting

- September 18-21, 2000, Hosted by Motorola
- Radisson Resort & Spa, Scottsdale, Arizona, USA
- Co-located with 802.1 and 802.15
- Objectives:
  - Process results of TGd LB 22
  - Process results of 802.11b-cor1 ISO version of 8802-11amd2
  - Continue work on 802.11e and 802.11f and HRb SG
  - Send letters to liaison groups and to regulatory agencies as needed
  - Approve WG operating rules



7th Session of meetings of the IEEE 802.15 Working Group for Wireless Personal Area Networks

July 10-14, 2000

Closing Report to 802

Hyatt Regency La Jolla
3777 La Jolla Village Drive
San Diego, CA. 92122

Objectives of the LaJolla Meeting July 10-14, 2000

WG: **Call for Interest on Low Rate and SIG Radio2 SGs**

TG1: **Comment Resolution**
Planning for update to D0.7.2
Begin production of D0.8
Plan for production of D1.0

TG2: **MAC & PHY Model Presentations.**
Present several detailed PHY Model results.
Present MAC Model results using the PHY Model available results.
Review updated outline of Recommended Practice.
Bluetooth Coexitence Working Group Liaison

Objectives of the LaJolla Meeting July 10-14, 2000

TG3 **Summarize Conference Call results & vote on acceptance of work**
Continuation of CFA Presentation
Continue CFP Presentation
Initiate subcommittees work to analyze and compare PHY/MAC/Host Radio Interface proposals. ----Also include QOS, Coexistence, Bluetooth and System liaisons.

MC: **Report/Review Seattle action items**
Review status of ongoing activities

TG1-Bluetooth Summary

- All technical, most “E” LB3 Comments resolved, summarized in –00/159r7 worksheet.
- LB3 Comment Resolution 10-13Jul00, post meeting, and possibly into Aug00.
- Once resolved, apply edits from 00/159r7, BSIG v1.1, et. al. to next Draft
- LB(4) Recirculation, est. Sep00
- Draft ready for Sponsor Ballot prior to Nov00 Plenary a possibility, but not likely

TG1-Bluetooth
September 2000 Objectives

- Comment Resolution follow-up
- Begin production of D0.8
- Plan for production of D1.0

- See 00/181r0 for details of planning process

TG2-Coexistence Deliverables

- Coexistence Model
  - Model describing the mutual interference of WLAN and WPAN upon one another.
- Coexistence Mechanisms
  - Mechanisms or techniques to facilitate coexistence of WLAN and WPAN devices.
- Both to be documented in an IEEE Recommended Practice

TG2-Coexistence
Current Coexistence Organization

- TG2 is within 802.15 Working Group
- All 802.11 members are encouraged to participate
- Only 802.11 liaisons can vote in TG2
- Both 802.11 and 802.15 vote on the Recommended Practice

TG2-Coexistence
New Proposed Organization

- A Fully Joint Coexistence Task Group.
- Multiple Co-Chairmen
  - Steve Shellhammer (802.15)
  - New co-chair (802.11)
  - Later add another new co-chair (802.16)
- TG meetings part of both 802.11 & 802.15 meeting plans
- All 802.11 and 802.15 members can vote

TG2-Coexistence
New Proposed Organization

- New title: *Wireless Coexistence Task Group*
- Jointly address all 802 Wireless Coexistence Issues
- A forum for collaboration between 802.11, 802.15 and 802.16 on all issues of coexistence arising with Wireless 802 Working Groups

TG2-Coexistence
Coexistence Presentations

- Rich Ditch, *Bluetooth SIG Coexistence Working Group Liaison Report #1,* 00/228r0.
  - Described BT SIG Coexistence WG
  - Looking at applications and environments
  - Expected Interferers
  - Look first at impact of other on Bluetooth
  - Look next at impact of Bluetooth on others
  - Not doing PHY or MAC layer simulations

TG2-Coexistence
Coexistence Presentations

- Peter Voltz, *Physical Layer Model of the Impact of Bluetooth on IEEE 802.11b,* 00/220r0.
  - BER versus Signal-to-Interferer Ratio (SIR)
  - Included Multipath delay spread
  - Still need to add equalizer into model

TG2-Coexistence
Coexistence Presentations

- Jim Lansford, Bluetooth *Physical Layer Modeling Update,* 00/229r0.
  - Environment Description (Geometry)
  - PHY/MAC Model Interface
  - Initial Simulation

TG2-Coexistence
Coexistence Presentations

- Gary Kelson, *Berkeley Wireless Research Center,* 00/221r0.
  - Overview of Research Center
  - Mostly interested in implementations.
  - Universal Spectrum Sharing (USS) Project.
  - Thinking about Uncoordinated Coexistence Mechanisms.

TG2-Coexistence
Coexistence Presentations

- Steve Shellhammer, *TG2 Submission to Bluetooth SIGnal,* 00/160r1.
  - For regular column on IEEE 802.15
  - Review comments from Ian Gifford
  - Made some edits from r0 to r1
  - Emailed 00/160r1 to Ian Gifford and Bruce Kraemer

TG2-Coexistence
Coexistence Presentations

- Nada Golmie, *MAC Layer Model Parameters for First Experiment,* 00/222r0.
  - Simplified scenario (2 BT & 2 802.11)
  - Describe BT and 802.11b Traffic
  - Intended to validate by experimentation

TG2-Coexistence
Coexistence Presentations

- Steve Shellhammer, *TG2 Project Plan,* 00/089r1.
  - Updated the TG2 Project plan.
  - Continue working on *Coexistence Model*.
  - Call for *Coexistence Mechanisms* in September.
  - Presentations on Coexistence Mechanisms
    - November 2000
    - January 2001

TG2-Coexistence
Objectives for September Meeting

- Bluetooth Coexistence WG Liaison Report
- Results of First Integrated PHY/MAC Model Application
- Presentation on RF Propagation Model
- Call for Coexistence Mechanisms
- Work on Evaluation Criteria for Coexistence Mechanisms.

TG3-High Rate WPAN
Goals of the July Meeting

- ✓Approve results of conference calls
  - ✓110r10P802-15_TG3-Criteria-Definition
- ✓Continuation of CFP Presentations
- ✓Initiate sub-committee work to analyze and compare PHY/MAC proposals.
- ✓Update criteria definition if required.
- ✓Identify SEP00 Objectives & Graphic

TG3-High Rate WPAN
Summary of July Meeting

- Proposals
  - 5 PHY, 1 MAC, 4 PHY/MAC
  - 2.4 GHz, 5 GHz, UWB
- July Submissions Summary
- July Document Summary
  - Updated Criteria Document – 00/110r11
  - Evaluation Process Flowchart – 00/180r2

TG3-High Rate WPAN --Proposals

- Intersil (March) – Waveform
- Rypinski (March) – PHY/MAC – 5 GHz
- Motorola (Davis) – PHY/MAC – 5 GHz
- Motorola (De Courville/Dydyk) – PHY – 5 GHz OFDM
- Intermec - MAC
- Kodak – PHY/MAC – 2.4 GHz
- Supergold – PHY – 2.4 GHz
- TI – PHY – 2.4 GHz
- Xtreme Spectrum – PHY - UWB
- Broadcom – PHY – 2.4 GHz or 5 GHz
- Radiata – PHY/MAC – 5 GHz OFDM
- LinCom – PHY/MAC – 2.4 GHz (withdrawn)

TG3-High Rate WPAN
July Submissions Summary

00/051	HRSG-Desirable-PHY-Modulation-wrt-HR	doc	Roberts/Kraen
00/077	HRSG Case for DOQPSK High-Rate Physical Medium Modulation	pdf	Rypinski
00/195	TG3 XtremeSpectrum Multimedia Data Rate WPAN Proposal	ppt	Rofheart
00/196	TG3 A COFDM Scheme for IEEE's High Rate WPAN	ppt	Skellern
00/199	TG3 Texas Instruments Physical Layer Presentation	ppt	Dabak
00/200	TG3 Texas Instruments Physical Layer Submission	doc	Dabak
00/201	TG3 An OFDM Solution Providing Compatibility Between the Next Generation of High Rate Wireless PANs and Wireless LANs	doc	de Courville
00/205	TG3 MAC Proposal for High Rate WPAN	ppt	Kinney
00/206	TG3 Physical Layer proposal for the High Rate 802.15.3 Standard	ppt	Davis
00/207	TG3 Physical Layer submission for the High Rate 802.15.3 Standard	doc	Davis
00/208	A MAC Layer proposal for the High Rate 802.15.3 Standard	ppt	Davis
00/209	A MAC Layer submission for the High Rate 802.15.3 Standard	doc	Davis
00/210	SuperGold Encoding for High Rate WPAN PHY Layer	ppt	O'Farrell
00/211	Broadcom Frequency Hopping, multimode QAM PHY for HRWPAN	ppt	Karaoguz
00/212	TG3 Eastman-Kodak-HighRate-MAC-Proposal	ppt	Heberling
00/213	TG3 Reusable SW Components	doc	Heberling
00/214	TG3 - Kodak - High Rate PHY Proposal	ppt	Carlson
00/215	TG3 - Eastman Kodak Support Document for PHY Proposal	doc	Carlson
00/225	TG3 - An OFDM Solution Providing Compatibility Between the Next Generation of High Rate Wireless PANs and Wirelss LANs	ppt	de Courville /D

TG3-High Rate WPAN
July Document Summary

00/110	TG3-Criteria-Definitions	doc	DuVal
00/165	TG3-July00 Meeting Objectives and Agenda	xls	Barr
00/170	TG3 July00 Minutes	doc	Kinney
00/174	WG-TG3 Opening Report July00	ppt	Barr
00/178	WG-TG3 Closing Report July00	ppt	Barr
00/180	TG3 Evaluation Process Flow Chart	ppt	Allen
00/191	TG3 BSIG PM Pitch 16Jun00	ppt	Barr
00/226	TG3 Proposal Eval Form		Evans
00/227	TG3-Proposed-Criteria-Changes	ppt	Alfvin
00/230	TG3_Pugh-Selection-Clarification	ppt	Allen
00/236	TG3 Proposal to Reinstate the Pugh Matrix Sensitivity Values	ppt	Nafie

TG3-High Rate WPAN
Status and Plans for TG3

- Construction of Initial Draft

  Goal: everything you need to know to construct the lower layers of high rate WPAN (future Bluetooth?)

- Schedule

  Goal: Produce a Standard by the end of 2001 or early 2002

- Next Steps

  Goal: Selection of candidate MAC/PHY, September, 2000. Working Group draft, May, 2001. Sponsor ballot, November, 2001.

TG3-High Rate WPAN Teleconference Calls

- Held every Tuesday between F2F meetings starting July 25.
- Evaluation and ranking of proposals in order to prepare initial draft recommendation for September.
- Three teams:
  - System – Mary DuVal –TI
  - PHY – James Gilb – Mobilian
  - MAC – Allen Heberling - Kodak

TG3-High Rate WPAN
September Meeting Goals

- Summarize Conference Call results & vote on acceptance of work
  - Approve other work items
  - Selection initial PHY/MAC candidates
- Folding CFA data into Criteria Document – Document Complete – Vote on acceptance
- Call for Patents

Executive Committee Action on Study Group Proposals

- Bluetooth Radio2 Study group approved
- Low Rate WPAN Study Group approved

Next Meeting

Joint IEEE Interim 802.11, 802.15 and 802.1 Standards Meetings
September 18-21, 2000
Hosted By:
Motorola

Hotel Information: Radisson Resort & Spa
7171 North Scottsdale Road
Scottsdale, AZ 85253-3696
USA

Direct Reservations Phone: 1-800-333-3333
Reservation Facsimile: +001 480-948-9843
Phone: +001 480-991-3800

Hotel Reservation Deadline: Thursday, August 10, 2000

Archive, Mailing List, URLs

- Web Page
  - http://www.ieee802.org/15/
- Mailing List
  - stds-802-wpan@majordomo.ieee.org
- Bluetooth Special Interest Group
  - http://www.bluetooth.com/
- Home RF Working Group
  - http://www.homerf.org/

To add your name to IEEE mailing list please send an e-mail to Mike McInnis: michael.d.mcinnis@boeing.com

So Long and Thanks for all the Fi

Hitchhikers Guide to the Galaxy

Acronym's & Glossary

- IEEE (Institute of Electrical and Electronics Engineers, Inc.)
- MAC (Medium Access Control) Layer
- PHY (Physical) Layer
- TG (Task Group)
- SG (Study Group)
- MC (Marketing Committee)
- WG (Working Group)
- WPAN (Wireless Personal Area Networking)
- Bluetooth (Bluetooth Special Interest Group is the codename for a technology specification for small form factor, low-cost, short range radio links between mobile PCs, mobile phones and other portable devices.)
- HomeRF (The HRFWG plans to publish the SWAP specification by fall of 1998 and companies may begin product development shortly thereafter.)

IEEE 802.16 Session #8 Report

Session #8 of the IEEE 802.16 Working Group on Broadband Wireless Access took place on 10-13 July 2000 as part of the July IEEE 802 Plenary Meeting in La Jolla, California, USA.

Working Group 802.16

The IEEE 802.16 Working Group on Broadband Wireless Access Standards is creating the **WirelessMAN™** family of standards for wireless metropolitan area networks. The mission of Working Group 802.16 is "to develop standards and recommended practices to support the development and deployment of fixed broadband wireless access systems." 802.16 is a unit of the 802 LAN/MAN Standards Committee, the premier transnational forum for wired and wireless networking standardization.

Task Group 1

Task Group 1 (TG1) is developing an Air Interface for Fixed Broadband Wireless Access Systems (10-66 GHz) under IEEE PAR 802.16.1. At Session #8, the group accepted a revised PHY 802.16.1p-00/07r2 after considering several proposals on Forward Error Correction and a proposed major edit 802.16.1pc-00/38 of the previous draft. TG1 then resolved to develop its MAC draft on the basis of 802.16.1mc-00/21r1. In order to remain on schedule for completion of a Working Group draft of 802.16.1 before the end of the year, the Task Group agreed to move to a Final Task Group Review. This electronic comment submittal process, soliciting specific change requests, will begin by 4 August and close on 1 September. The plan gives an editorial team almost three weeks to produce a single coherent document based on 802.16.1p-00/07r2, 802.16.1mc-00/21r1, and the 802.16.1 Functional Requirements 802.16s-99/00r1. The intent is to, at Session #9, review the results and initiate a Working Group Letter Ballot based on an updated version.

Task Group 2

Task Group 2 (TG2) is developing a Recommended Practice on Coexistence of Broadband Wireless Access Systems under IEEE PAR 802.16.2. The draft document was reviewed and changes recommended for several sections. Modeling results were reviewed, with results incorporated into document as appropriate. The timeline was revised (802.16.2-00/02r2), but the process remains on schedule to initiate a Working Group letter ballot in November.

Task Group 3

Task Group 3 (TG3) is developing an Air Interface for Fixed Broadband Wireless Access Systems in Licensed Bands from 2 to 11 GHz under IEEE PAR 802.16.3. TG3 continued to focus mainly on developing its Functional Requirements; it and completed resolution of the many comments it had received. A new version will be accompanied by a Call for Comments in time for comment resolution at Session #9. TG3 also developed a list of Key Characteristics of the 802.16.3 Air Interface Standard (802.16.3-00/07r1) and it issued its reactions to a press release from the IEEE-ISTO (802.16.3-00/08). Four motions recommended in this document were later approved by Working Group 802.16.

WirelessHUMAN™ Study Group

The Wireless High-Speed Unlicensed Metropolitan Area Network (WirelessHUMAN™) Study Group is studying standardization for broadband fixed wireless access in the 5-6 GHz

license-exempt bands, with primary focus on the 5.25-5.35 GHz and 5.725-5.825 GHz bands. It conducted a well-attended tutorial (802.16hp-00/08) for IEEE 802 on Monday 10 July. It then met during the week and issued a Study Group Report (802.16hp-00/09) requesting its renewal through Session #10, with an indication of intent to draft a Project Authorization Request (PAR) based on standards that either exist or are in development. The Study Group report includes text of a Call for Contributions and of two liaison letters. On 13 July, 802.16 voted to continue the Study Group through Session #10 based on this report. This decision was affirmed by the IEEE 802 Executive Committee on 13 July.

Liaison Letters

Based on a previous liaison letter and a meeting between the 802.16 Chair and ETSI BRAN Chair Jamshid Khun-Jush, 802.16 issued a Liaison Letter to ETSI BRAN 802.16l-00/19. Based on input from TG3, 802.16 issued a second ETSI BRAN Liaison Letter (802.16l-00/21). Based on input from TG2, 802.16 issued a Liaison Letter to ETSI TM4 (802.16l-00/20). All three of these letters were approved by the IEEE 802 Executive Committee on 13 July.

IEEE 802 Position Statement on IEEE 802.16 Broadband Wireless Access (BWA) Working Group Conflict of Interest with recent IEEE-ISTO announcement

Based on input from 802.16 and several other 802 Working Group, IEEE 802 issued an IEEE 802 Position Statement on IEEE 802.16 Broadband Wireless Access (BWA) Working Group Conflict of Interest with recent IEEE-ISTO announcement.

Attendance and Membership

At Session #8, the 802.16 membership increased by 28, from 78 to 106. In addition, four people earned membership status but did not claim it. The total sign-in attendance at the meeting was approximately 165.

Future Meetings

The Working Group voted on 13 July to hold Session #11 in Tel Aviv, Israel on 22-26 January 2001. The host will be Naftali Chayat of BreezeCOM. Session #9 will be held in Denver, Colorado, USA on 11-15 September in conjunction with the IEEE Radio and Wireless Conference; a meeting announcement will be issued soon. Session #10 will be held in Tampa, Florida, USA on 6-10 November in conjunction with an IEEE 802 Plenary Meeting.

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See IEEE 802.16 Web Site

RPRSG ECSG Status

July 13, 2000 SEC Meeting

Mike Takefman

RPRSG Meeting Summary

- **30 people / 19 organizations**
- **13 presentations**
- **MAC Layer Model & 802.1D/Q bridging discussed**

  will forward a description to 802.1 for comment
- **PAR and 5 Criteria complete**

  revisit based on comments from 802.*

RPRSG Interim Meeting

- **August 28/29, 2000 in San Jose**

  802.1D/Q compatibility

  Simulation / Evaluation Criteria

  Draft Objectives

  Press Release

1. Broad Market Potential

- Broad sets of applicability.
- Multiple vendors and numerous users.
- Balanced costs (LAN versus attached stations).

- **Presentations given to the Resilient Packet Ring Study Group has identified customer demand for resilient packet rings in the following application areas:**

  ISP Intra-POP LANs

  Inter-POP MANs and WANs (e.g. ISP; MSO; *LEC)

  Enterprise Campus LAN Backbones

  Enterprise MANs and WANs

  Multi-provider customer access MANs

- **An efficient bandwidth sharing mechanism for ring topologies will provide optimum cost / performance for the identified application areas.**
- **At an 802 tutorial session, 33 individuals representing 14 organizations (including vendors of computer systems, networking systems, networking silicon, and Internet Service Providers) expressed interest in working on a standards project in this area. An RPRSG interim meeting was attended by 26 individuals representing 13 organizations. An RPRSG plenary meeting was attended by 30 individuals representing 19 organizations.**
- **In Metropolitan and Wide Area Networks, the medium (fiber optic cable) represents a significant portion of the total hardware cost. This standard will optimize the cost balance between the network medium and the station attachment hardware for ring topologies.**

2. Compatibility

- 802. Overview and Architecture
- 802.1D, 802.1Q, 802.1f.
- Systems management standards.

- **The Resilient Packet Ring standard will be fully compatible with the 802 Overview and Architecture document.**
- **The Resilient Packet Ring standard will be compatible with the relevant portions of 802.1D, 802.1Q and 802.1f.**
- **The Resilient Packet Ring standard will be compatible with the Simple Network Management Protocol. The MIB for RPR will be defined and submitted to the IETF.**
- **Selection of the frame format for the RPR is a subject of investigation for the working group. At the present time the 802.3 frame format with either the TYPE or LENGTH interpretation is being given prime consideration.**

3. Distinct Identity

- Substantially different from other IEEE 802 standards.
- One unique solution per problem (not two solutions to a problem).
- Easy for the document reader to select the relevant specification.

- **There is no other IEEE 802 standard which addresses high speed (622 Mbps and above) ring topologies optimized for data transmission.**
- **There is no other IEEE 802 standard which specifies a bandwidth sharing algorithm for data rates in excess of 1 Gbps.**
- **This standard will provide a solution which provides high speed, scalable, resilient ring based networks featuring spatial reuse and protection mechanisms (capable of sub 50 ms switching).**
- **The standard will define a single Media Access Control algorithm, along with multiple Physical Layer options, formatted in a fashion similar to other 802 standards.**

4. Technical Feasibility

- Demonstrated system feasibility.
- Proven technology, reasonable testing.
- Confidence in reliability.

- **Presentations given to the RPRSG have demonstrated the technical feasibility of candidate protocols using simulation. Empirical results will be presented at a future meeting.**
- **Several implementations of candidate protocols exist in the industry, embodied in commercially available products comprising:**
  - **Systems (routers, switches, Add drop nodes for optical networks, hubs)**
  - **Host interfaces (NICs)**
  - **Chipsets**
  - **Optical components**
- **Implementations of candidate protocols are currently deployed in major Service Provider and enterprise environments.**
- **Simulations have been used to demonstrate the feasibility of reliable protocols under a range of operating conditions. Traffic models, configurations and metrics for evaluating candidate protocols will be developed as part of the working group.**

5. Economic Feasibility

- Known cost factors, reliable data.
- Reasonable cost for performance.
- Consideration of installation costs.

- **Several implementations of high speed resilient packet ring networks exist in the industry from different vendors. The cost factors for the various components and sub-assemblies, as well as complete systems, are well known.**
- **In high speed networks, fiber optic components dominate the cost of a station. For data rates of 1 Gbps and below, the cost associated with these components is declining rapidly as technologies such as Gigabit Ethernet and Fiber Channel increase in volume. For data rates greater than 1 Gbps, this standard, as well as 802.3ae, and other industry standards (Fibre Channel, InfiniBand, etc) will generate the volumes necessary in order to produce similar cost reductions.**
- **The costs associated with a network based on this standard will be competitive with other technologies operating at similar data transmission rates. One of the goals of this project is to eliminate layers of equipment and reduce the port counts in a typical customer's network, thus reducing cost.**
- **The cost of installations based on a ring topology has been given prime consideration in the development of this project proposal. Ring topologies are preferred for MAN and WAN applications because they entail a lower installation cost than a mesh topology.**