IEEE P802.15
Wireless Personal Area Networks™

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	**TG1 Project Planning**		
Date	[20 November 2000]		
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Re:	[-99/015r0, -99/016r0, -99/006r0, etc.]		
Abstract	[TG1's Project Planning Document for IEEE Std 802.15.1-[2001].]		
Purpose	[TG1's PAR indicates the Project will be completed on Nov00 (this month); we were off by ~9-12 months. This document is offered as a revised project planning document for the TG1 Editors as well as interested observers. You will find a project introduction and then three summaries: (1) Sponsor, (2) 802.15 WG and, (3) a TG1 Summary for the Editors. These summaries all use the same data they are just reformatted for ease of use. In addition we have provided an update to our Scenario Planning as well as some of the detailed Gantt Charts we are using in the Appendix. If you have questions please contact any of the TG1 Officers.]		
Notice	This document has been prepared to assist the IEEE P802.15. 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.		
Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.		

Introduction

The Project 802.15.1 IEEE Std 802.15.1-[2001] initiated our work at the IEEE New Opportunities in Standards Committee (NosCom), which was held in Cleveland Ohio on 24Jun97. At that time the Bluetooth Special Interest Group (SIG) did not exist and the availability of a specification for small form factor, low-cost, wireless communication and networking between PCs, mobile phones and other portable devices seemed remote. During this meeting Dick Braley, Senior Staff Advisor, Wireless Systems Development of Federal Express gave a presentation regarding "wearable computers." The purpose of his presentation was to encourage development of standards for "wearables, and solicit IEEE support to develop the standards."

The conclusion of this meeting was for the interested individuals to form an IEEE Ad Hoc Committee and attend next months (Jul97) PASC Plenary Meeting. During the PASC Wearables Standards Meeting the committee discussed things to standardize:

- Yes: PAN (zero-range to micro (~5 meters) -- capacitive, IR, RF)
  - o Physical Interfaces / connectors (computer <-> computer interfaces)
  - o Software interfaces -- Text-speech, dialogue management, GPS, etc. More likely to be railroaded through interface
- No: Peripherals
- No: Nomadicity (5 meters+) -- sounds like it's already being covered elsewhere
- No: Wearable computers (CPU, operating system, related systems)
- No: Power/Battery (power-saving in other systems/communications)

The IEEE Ad Hoc "Wearables" Standards Committee met twice more and during that time liaised with the IEEE 802.11 WG for WLANs and decided to form an 802.11 Study Group to review the Wireless Personal Area Network (WPAN) applications and available MAC sublayers and PHY layers. Additionally, the committee coined and now has trademarked the term WPAN™ or Wireless Personal Area Network™.

After much deliberation in 802.11 the IEEE NesCom approved the 802.15.1 Project Authorization Request on 18Mar99. Coincidentally, the Bluetooth SIG was formed two (2) months later on 20May98 and the four (4) year old Ericsson multi-communicator link or MC Link was now code name: Bluetooth. The 802.15.1 Project reviewed the Bluetooth wireless technology and realized this industry special interest group might be able to address the WPAN applications. Liaison's ensued and during the IEEE 802 Plenary in Jul99, the Bluetooth Specification was chosen as the only Call For Proposals candidate that met the project criteria.

The IEEE and Bluetooth SIG created an agreement and since then the BSIG has continuously provided the project the Bluetooth version 1.x Spec releases in FrameMaker file format via CD-ROM. The next release will be BT v1.1 on 29Dec00 and the IEEE Std 802.15.1-[2001] D0.8 will follow in ~3 weeks. The next IEEE draft is estimated to be ~1052 pages.

Sponsor Summary

The IEEE 802.15.1 Project or Task Group 1 is deriving a Wireless Personal Area Network™ standard based on the Bluetooth™ v1.x Foundation Specification's. The following is offered as a project planning tool for the Sponsor and the 802.15.1 Balloting Group Voting Members. The report will be updated as required.

The Project 802.15.1 initiated our work in 24Jun97 and the PAR was approved on 18Mar99. The PAR indicates that the project will be competed in Nov00 - this month. The current (20Nov00) project planning has us completing the IEEE Std 802.15.1-[2001] in Sep01 during the IEEE-SA Standards Board Committee Meetings 11-13Sep00; see Figure 1.

TASK NAME	DAYS	START	STOP	97		98		99		00		01	
				1H	2H	1H	2H	1H	2H	1H	2H	1H	2H
802.15.1 Project Plan Scenario A	1162d	Tue 6/24/97	Thu 12/6/01										
IEEE Wearables Committee	152d	Tue 6/24/97	Thu 1/22/98										
IEEE 802.11 WG for WLANs	300d	Thu 1/22/98	Thu 3/18/99										
IEEE 802.15 WG for WPANs	616d	Wed 5/5/99	Thu 9/13/01										

Figure 1 IEEE 802.15.1 Committee and Working Group Timeline

As with all IEEE standards efforts the IEEE Std 802.15.1-[2001] will experience two (2) balloting phases – the 802.15 Working Group (WG) Ballot Phase and the Sponsor Ballot Phase; see Figure 2:

TASK NAME	DAYS	START	STOP	99		00				01			
				1H	2H	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
IEEE Std 802.15.1[2001] Scenario A	692d	Fri 10/22/99	Thu 9/13/01										
WG Ballot Phase	498d	Fri 10/22/99	Fri 3/2/01										
Sponsor Ballot Phase	117d	Mon 3/12/01	Fri 7/6/01										
StB Approval D1.1	41d	Fri 8/3/01	Thu 9/13/01										

Figure 2 IEEE 802.15.1 Ballot Phases and Timeline

The WG Ballot Phase is nearing the end. The Task Group 1 began editing the current format of the draft after the Sep99 Interim Meeting and since that time Draft 0.6 and Draft 0.7.2 were balloted by the WG. The Task Group 1 is planning to initiate a few more WG ballots and one or two more drafts prior to Sponsor Ballot. The 802.15 WG currently has eighty-four (84) members and they were informed this month during the Plenary Meeting 6-9Nov00 of our planning and that Sponsor Ballot is approximately three (3) months away.

The LAN/MAN 802.15 balloting pool has been formed and currently has seventy-seven (77) members. The project is nearing the Sponsor ballot stage, and the IEEE Standards Staff Liaison for IEEE 802: Denise Scozzafava and IEEE 802 Chair: Jim Carlo our Sponsor have been notified. Based on our planning, we request the invitation (electronic) be sent 1Dec00 to extend a request to join the 802.15.1 balloting group to all members of the 802.15 balloting pool.

802.15 Working Group Summary

The following is offered as a project planning tool for the 802.15 Voting Members. The Sponsor has provided the 802.15.1 project extensive support and council. The first of which was a timeline for 802.15.1; see Figure 3:

DATE	TASK
Jul-99	Initial Discussion on Proposal submissions.
Jul-99	IEEE initial vote of support to draft 802.15 based on Bluetooth specification.
Sep-99	Overview the draft 802.15.1 based on the current Bluetooth specification to the time line.
Nov-99	Initial draft ready for WG ballot.
Jan-00	First Ballot complete
Mar-00	Draft ready for IEEE sponsor ballot.
Nov-00	
Dec-00	Approval by IEEE Standards Board.

Figure 3 Original Timeline

The project has encountered a few unforeseen problems and has not been able to meet this eighteen (18) month timeline. Specifically, the project was to have effort driven tasks vs. duration driven tasks. Effort is the amount of work (resource assignments) to be done on the task. Duration is the length of time (calendar time) the task is scheduled to occur.

Unfortunately, we ended up working based on IEEE events or to the six (6) meetings per year vs. in a more rapid pace based on resource assignments. Additionally, we had draft & ballot timing issues as well as the typical resource issues arise that contributed in putting a drag on the project. We have created a revised baseline timeline indicating task status; see Figure 4:

DATE	TASK	STATUS
Jul-99	Initial Discussion on Proposal submissions	Done, Jul99
Jul-99	IEEE initial vote of support to draft 802.15 based on Bluetooth specification.	Done, Jul99
Nov99	Overview the draft 802.15.1 based on the current Bluetooth specification to the timeline.	Done, 9Nov99
Nov99	Initial Draft 0.6 ready for WG ballot. WG LB1 (11Nov-23Dec99)	Done, 4Nov99
Jan00	Comment Resolutions & WG LB2 (23Feb00-3Mar)	Done, 3Mar00
Mar00	Comment Resolutions	Done, 10Mar00
May00	2nd Draft 0.7.2 ready for WG LB3 (24May-3Jul00).	Done 24May00
Jul00	Comment Resolutions	Ongoing
Sep00	Comment Resolutions, received smoothed Draft 0.7.3	Ongoing
Nov00	Comment Resolutions	Ongoing

Figure 4 Revised Timeline, Task Status

The following scenario planning is offered for your consideration. Since scenarios depict possible futures but not specific strategies to deal with them, it makes sense to invite outsiders into the process, such as the 802.15 WG, our Sponsor, BSIG, etc. Input requested.

Scenario Planning

When contemplating the future, the Task Group 1 has determined it is useful to consider three classes of knowledge:

1. Things we know we know.
2. Things we know we don't know.
3. Things we don't know we don't know

TG1 has learned a lot but we realize that based on our agreement to adopt or adapt and copy a portion of the Bluetooth Specification to be used as base material in IEEE Std 802.15.1-[2001] we will not fully understand all the issues. However, we have a deeper appreciation for the myriad of factors that shape the future and our deliverable. The following are the current scenarios we are considering as we exit Session #9/Tampa - TG1 is planning for **Scenario A** which has a Sep01 RevCom intercept. **Scenario B** has a Dec01 RevCom intercept and **Scenario C** has a Mar02 RevCom intercept. See appendix for TG1 Editor Scenario A Gantt Chart details.

Scenario A (BSIG BT v1.1=IEEE Std 802.15.1-[2001])

Assumptions:
- Dependent on a 29Dec00 BSIG BT v1.1 publication release
- 802.15 WG does not provide 75% approval of IEEE Std 802.15.1-[2001] D0.8
- 802.15 WG does provide 75% approval of IEEE Std 802.15.1-[2001] D0.9
- Sponsor Ballot starts in Mar01

DATE	TASK	STATUS
Nov00	Comment Resolutions	[Done, 30Nov00]
Jan01	3rd Draft 0.8 ready for WG LB(6) (Jan01-Jan01).	
Jan01	Comment Resolutions	
Feb01	4th Draft 0.9 ready for WG LB(7) (Feb01-Mar01).	
Mar01	Comment Resolutions	
Mar01	5th Draft 1.00 ready for IEEE sponsor ballot (Mar-Apr)	
Apr01	Comment Resolutions	
May01	6th Draft 1.01 ready for IEEE sponsor ballot (Jun)	
Jun01	Comment Resolutions	
Jun01	7th Draft 1.02 ready for IEEE sponsor ballot (Jul)	
Jul01	Comment Resolutions	
3Aug01	Draft 1.1 Submission Deadline*	
Sep01	Approval by IEEE Standards Board.	
Mar02	Maintenance PAR (BSIG v1.x=IEEE Std 802.15.1-[2002])	

Scenario B (BSIG BT v1.1=IEEE Std 802.15.1-[2001])

Assumptions:
- Dependent on a 29Dec00 BSIG BT v1.1 publication release
- 802.15 WG does not provide 75% approval of IEEE Std 802.15.1-[2001] D0.8
- 802.15 WG does provide 75% approval of IEEE Std 802.15.1-[2001] D0.9
- Sponsor Ballot starts in Mar01 but we receive significant comment reply and it delays the draft submission to RevCom from 3Aug01 to 26Oct01

DATE	TASK	STATUS
Nov00	Comment Resolutions	[Done, 30Nov00]
Jan01	3rd Draft 0.8 ready for WG LB(6) (Jan01-Feb01).	
Jan01	Comment Resolutions	
Feb01	4th Draft 0.9 ready for WG LB(7) (Feb01-Mar01).	
Mar01	Comment Resolutions	
Mar01	5th Draft 1.00 ready for IEEE sponsor ballot (Mar-Apr)	
Apr01	Comment Resolutions	
May01	Comment Resolutions	
Jun01	6th Draft 1.01 ready for IEEE sponsor ballot (Jun)	
Jul01	Comment Resolutions	
Aug01	7th Draft 1.02 ready for IEEE sponsor ballot (Aug)	
Sep01	Comment Resolutions	
26Oct01	Draft 1.1 Submission Deadline*	
Dec01	Approval by IEEE Standards Board.	
Mar02	Maintenance PAR (BSIG v1.x=IEEE Std 802.15.1-[2002])	

Scenario C (BSIG BT v1.x=IEEE Std 802.15.1-[2002])

Assumptions:
- The 29Dec00 BSIG BT v1.1 publication release is missed or
- 802.15 WG does not provide 75% approval of IEEE Std 802.15.1-[2001] D0.9 or
- Sponsor Ballot starts in Mar01 but we receive significant comment reply and it delays the draft submission to RevCom from 3Aug01 to 26Oct01 to 8Feb02

Again, the difference in Scenario C to Scenario A & B is that the draft is approved in 2002 vs. 2001; ergo IEEE Std 802.15.1-[2002].

*Note: Timelines are based on backward scheduling from IEEE-SA RevCom Draft Submission Deadlines.

802.15.1 Task Group 1 Summary

The Editor in Chief, Tom Siep is coordinating the TG1 Editors. The following list is offered as a project planning tool for the TG1 Editors. Each clause is identified in terms of D0.8 as well as the resource assignments over time:

IEEE CLAUSE	EDITOR	STATUS D0.8	FM6	DOC	PDF	NOTES	D0.8	D0.9	D1.0	D1.0	D1.2	D1.1	D1.x
Editor in Chief	Siep												?
Front Matter (IEEE Intro Material)	Gifford	Needs Edit	X			Ian text and others which wish to help edit							?
Table Of Contents	Siep	Needs Edit	X			Add line numbers to D0.8 and add normative or informative							?
Clause 1 (Overview)	Gifford	Needs Edit	X			Ian text and others which wish to help edit							?
Clause 2 (References)	Gifford	Needs Edit	X			Ian text and others which wish to help edit							?
Clause 3 (Definitions)	Gifford	Needs Edit	X			Ian text and others which wish to help edit							?
Clause 4 (Acronyms and abbreviations)	Gifford	Needs Edit	X			Ian text and others which wish to help edit							?
Clause 5 (General Description)	Gifford	Needs Edit	X			Ian text and others which wish to help edit							?
Clause 6 WPAN Architecture Overview	McInnis	Needs Edit		X					?	?	?	?	?
Clause 7 Physical Layer	Camp	Needs Edit		X		drop ins from BT v1.1 text			?	?	?	?	?
Clause 8 Baseband	Cypher	Needs Edit		X		drop ins from BT v1.1 text			?	?	?	?	?
Clause 9 Link Management Protocol	Cypher	Needs Edit		X		drop ins from BT v1.1 text			?	?	?	?	?
Clause 10 Logical Link Control and Adaptation Protocol	Cypher	Needs Edit		X		drop ins from BT v1.1 text			?	?	?	?	?
Clause 11 Host Controller Interface	Siep	Needs Edit	X			drop ins from BT v1.1 text							?
Clause 12 Service Access Points	McInnis	Needs Edit		X		Mike text			?	?	?	?	?
Annex A Protocol Implementation Conformance Statement	Watanabe			X		Fujio's doc submitted to BSIG, drop in text, (normative)			?	?	?	?	?
Annex B Formal Definitions: SDL (Informative)	Cypher	Needs Edit			X	-00/202r3, (informative)			?	?	?	?	X
Annex C Generic Access Profiles	Siep		X			drop ins from BT v1.1 text, (informative)							?
Annex D Optional Paging Schemes	Siep		X			drop ins from BT v1.1 text, (informative)							?
Annex E Bluetooth Assigned Numbers	Siep		X			drop ins from BT v1.1 text, TMS want this??? , (informative)							?
Annex F Bluetooth Test Mode	Siep		X			drop ins from BT v1.1 text, (informative)							?
Annex G Configuration Message Sequence Charts	Siep		X			drop ins from BT v1.1 text, (informative)							?
Annex H Baseband Timers	Siep		X			drop ins from BT v1.1 text, (informative)							?
Annex I Bibliography	Gifford	Needs Edit	X			(informative)							?
Annex J Bluetooth Reference Document Listing (Informative)	Gifford		X			List ALL known BSIG docs w/ URL & file name (informative)							?

= EDITOR IS CONFIRMED AND IN PLACE
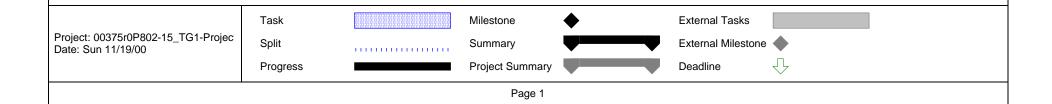
? = EDITOR IS NOT CONFIRMED, POTENTIAL PROBLEM

X = NO EDITOR, PROBLEM

W = WG BALLOT PHASE (NOW-MAR01)

S = SPONSOR BALLOT PHASE (MAR01-AUG01)

M = MAINTENANCE PAR (2002)

Appendix

ID	Task Name	Duration	Start	Finish	1997	1998	1999	2000	2001	2002
1	**802.15.1 Project Plan Scenario A**	**1162 days**	**Tue 6/24/97**	**Thu 12/6/01**						
2	**IEEE Wearables Committee**	**152 days**	**Tue 6/24/97**	**Thu 1/22/98**						
8	**IEEE 802.11 WG for WLANs**	**300 days**	**Thu 1/22/98**	**Thu 3/18/99**						
19	**IEEE 802.15 WG for WPANs**	**616 days**	**Wed 5/5/99**	**Thu 9/13/01**						
20	May99 Interim Meeting	2 days	Wed 5/5/99	Thu 5/6/99						
21	#1 Jul98 Plenary Meeting	5 days	Mon 7/5/99	Fri 7/9/99						
22	#2 Sep98 Interim Meeting	5 days	Mon 9/13/99	Fri 9/17/99						
23	#3 Nov98 Plenary Meeting	5 days	Mon 11/8/99	Fri 11/12/99						
24	#4 Jan00 Interim Meeting	5 days	Mon 1/10/00	Fri 1/14/00						
25	#5 Mar00 Plenary Meeting	5 days	Mon 3/6/00	Fri 3/10/00						
26	#6 May00 Interim Meeting	5 days	Mon 5/8/00	Fri 5/12/00						
27	#7 Jul00 Plenary Meeting	5 days	Mon 7/10/00	Fri 7/14/00						
28	#8 Sep00 Interim Meeting	5 days	Mon 9/18/00	Fri 9/22/00						
29	#9 Nov00 Plenary Meeting	4 days	Mon 11/6/00	Thu 11/9/00						
30	#10 Jan01 Interim Meeting	5 days	Mon 1/15/01	Fri 1/19/01						
31	#11 Mar01 Plenary Meeting	4 days	Mon 3/12/01	Thu 3/15/01						
32	Draft & PAR Submission Deadline	0 days	Fri 5/4/01	Fri 5/4/01					5/4	
33	#12 May01 Interim Meeting	5 days	Mon 5/7/01	Fri 5/11/01						
34	#13 Jul01 Plenary Meeting	4 days	Mon 7/9/01	Thu 7/12/01						
35	**Draft & PAR Submission Deadline**	**0 days**	**Fri 8/3/01**	**Fri 8/3/01**					8/3	
36	**RevCom Meeting**	**0 days**	**Thu 9/13/01**	**Thu 9/13/01**					9/13	
37										
38	**Scenario B**	**58 days**	**Mon 9/17/01**	**Thu 12/6/01**						
39	#14 Sep01 Interim Meeting	5 days	Mon 9/17/01	Fri 9/21/01						
40	#15 Nov01 Plenary Meeting	4 days	Mon 11/12/01	Thu 11/15/01						
41	Draft & PAR Submission Deadline	0 days	Fri 10/26/01	Fri 10/26/01						10/26
42	RevCom Meeting	0 days	Thu 12/6/01	Thu 12/6/01						12/6

Project: 00375r0P802-15_TG1-Project
Date: Sun 11/19/00

Task		Milestone	External Tasks
Split		Summary	External Milestone
Progress		Project Summary	Deadline

Page 1

ID	Task Name	Duration	Start	Finish	2000 / 2001 Timeline
1	**IEEE Std 802.15.1-[2001] Scenario A**	**692 days**	**Fri 10/22/99**	**Thu 9/13/01**	
2	**WG Ballot Phase**	**498 days**	**Fri 10/22/99**	**Fri 3/2/01**	
3	**Draft 0.6**	**134 days**	**Fri 10/22/99**	**Fri 3/3/00**	
11	**Draft 0.7.2**	**283 days**	**Wed 3/8/00**	**Fri 12/15/00**	
12	Editing D0.6 to D0.7.2	50 days	Wed 3/8/00	Wed 4/26/00	
13	Upload D0.7.1 to Web	0 days	Wed 5/17/00	Wed 5/17/00	5/17
14	Pre LB	7 days	Wed 5/17/00	Tue 5/23/00	
15	LB3 D0.7.2	40 days	Wed 5/24/00	Sun 7/2/00	
16	LB3 Comment Resolution	151 days	Mon 7/3/00	Thu 11/30/00	
17	LB6 Confirmation	15 days	Fri 12/1/00	Fri 12/15/00	
18	Draft 0.7.3	0 days	Fri 9/8/00	Fri 9/8/00	9/8
19	**Draft 0.8**	**155 days**	**Fri 9/8/00**	**Fri 2/9/01**	
20	Begin Editing	90 days	Fri 9/8/00	Wed 12/6/00	
21	BSIG Releases BT v1.1	0 days	Fri 12/29/00	Fri 12/29/00	12/29
22	**Begin Final Editing D0.7.3 to D0.8**	**21 days**	**Fri 12/29/00**	**Thu 1/18/01**	
23	SDL Final Editing BTv1.0B to v1.1	14 days	Fri 12/29/00	Thu 1/11/01	
24	Drop in BTv1.1 Derivative Text	7 days	Fri 12/29/00	Thu 1/4/01	
25	Produce D0.7.4 Proof	3 days	Fri 1/12/01	Sun 1/14/01	
26	IEEE WG Distribution	0 days	Sun 1/14/01	Sun 1/14/01	1/14
27	TG1 D0.7.4 Proof Review	4 days	Mon 1/15/01	Thu 1/18/01	
28	WG Approve D0.7.4 to D0.8	0 days	Thu 1/18/01	Thu 1/18/01	1/18
29	Upload D0.8 to IEEE Web Site	0 days	Thu 1/18/01	Thu 1/18/01	1/18
30	LB(7) D0.8	15 days	Fri 1/19/01	Fri 2/2/01	
31	LB(7) Comment Resolution	7 days	Sat 2/3/01	Fri 2/9/01	
32	Draft 0.9 (LB(9))?	21 days	Sat 2/10/01	Fri 3/2/01	
33	**Sponsor Ballot Phase**	**117 days**	**Mon 3/12/01**	**Fri 7/6/01**	
34	Draft 1.0.0	68 days	Mon 3/12/01	Fri 5/18/01	
35	Draft 1.0.1	28 days	Sat 5/19/01	Fri 6/15/01	
36	Draft 1.0.2	21 days	Sat 6/16/01	Fri 7/6/01	
37	**StD Board Approval D1.1**	**41 days**	**Fri 8/3/01**	**Thu 9/13/01**	

Project: 00375r0P802-15_TG1-Projec
Date: Sun 11/19/00

Legend	
Task	Milestone	External Tasks
Split	Summary	External Milestone
Progress	Project Summary	Deadline

Page 1