

Wireless LAN Research Labs Advisory Board

Meeting Minutes - 26 February 97 - Atwater Kent Labs, WPI

Prepared and respectfully submitted by: Craig J. Mathias, Chair, WLRL Advisory Board and acting Secretary.

1. Call to Order

The meeting was called to order at 9:05 with welcomes and introductions of those attending. Attending (in addition to WLRL staff) were:

Cushcraft - Glenn Whitehouse
DEC - Jeff Schwartz
Harris Semiconductor - Richard Antalik
Raytheon - Robert Vogt

All of the above will be listed, if they are not already, as the primary contact for WLRL. If this is not correct, please notify Craig Mathias.

Absent - Todd Smith, Aironet. A copy of the minutes and related materials will be forwarded to him.

Guests:

BBN - Bill Silva
Compaq - Ed Pinkham, Pinkham Group
M/A-COM/Amp - Ian Gifford
Spectrix - Peter Bogdonoff

Copies of the minutes will be forwarded to all of the above. In addition, the following companies have asked to receive minutes and to be kept informed of WLRL activities. Minutes will therefore be forwarded to them as well.

3Com - Jeff Abramowitz
Andrew - Richard "Koz" Korzeniewski
BreezeCom - Bruce Sanguinetti
Proxim - Dean Chang
RadioLAN - Mark Bosse
WaveAccess - Allan Scott
Wireless Data Corp. - Steve Brumer

Minutes will also be sent to anyone who requests them, and will be posted on the Web site as well. An e-mailing list will be set up and information on this will be published. Jacques beneat will look into this. Leads for anyone interested in joining are always welcome.

2. Grant from Finland

Kaveh Pahlavan announced that CWINS (the parent organization of WLRL) and the CWC at the University of Oulu, Finland, have received a grant from Nokia, the government of Finland, and local industry in Oulu in the amount of \$250,000 to study wireless LANs for UMTS/IMT-2000.

3. Presentation of Last Year's Research

Ali Zahedi discussed the work performed on benchmarking. The present product uses the TCP/IP stack from FTP software, but should work with the standard Windows 95 stack. Suggestions for improvement include 802.11 compliance and providing additional traffic profiles (representing, for example, isochronous traffic).

Prashant Krishnamurthy presented the access-point placement project. The current version is based on a statistical model, which provides relatively rapid runtimes. Possible improvements include raytracing, a more sophisticated statistical model, and interference modeling.

Detailed documentation on both of the above projects was distributed to the members.

Jared Robinson and Andrew Messier reviewed the status of the testbed installation. They also presented some of their benchmarking results and compared them to other benchmarking activities. Copies of presentation materials were distributed to attendees.

Copies of software and documentation developed in the last year were distributed to members.

4. The Web Site and Publicity

Wireless notebook computers in the conference room were used to review the Web site. Jacques Beneat has done a lot of work on the site and it is beginning to reflect our work (as we roll out more of what we have been doing). Craig has suggested the following actions:

- A press release to summarize the first year's operation and announce the progress on the research projects
- Publishing technical papers in journals, particularly refereed journals or at conferences. This activity would summarize methodology and conclusions, but not publish any materials, such as source code, proprietary to the members
- Continuing to revise the Web site
- Establishing an e-mailing list(s) at WPI for both members and friends of the Lab.

Additional comments have been solicited from the members regarding publicity that will

meet their individual needs. Comments regarding the format and content of the Web site are always welcome (and encouraged).

5. Upcoming Events

Kaveh reviewed the Wireless LAN '96 Workshop which was held at WPI last fall. Much information on this event can be found on the WLRL Web site. Feedback from attendees was excellent and we will undoubtedly consider another conference of this type in the future. Kaveh is the technical program chair and the organizer of the IEEE Personal Indoor Mobile Radio Conference (PIMRC), an international event with more than 600 attendees from more than thirty different countries representing all sectors of the wireless industry. PIMRC '98 will be held in Boston in October. We may conduct a pre- or post-conference wireless LAN workshop in conjunction with this event. Kaveh is also planning to distribute wireless LANs, as was done at our workshop in Worcester, to the audience at the conference. Members are encouraged to put this event in their planning and we will discuss how to participate in this event at future Advisory Board meetings. For more details, see the CWINS web site at <http://www.cwins.wpi.edu>.

6. Projects for the Current Year

A key focus of this meeting was establishing some parameters for the 1997 research program. No decisions as to specifics were made at this meeting, as intended. Rather, we will solicit input from the members during March. Given the current member base (five), we believe we can pursue two projects plus maintain the testbed, as we did last year. As the number of members grows, we can add additional work.

The following were discussed as potential research directions for 1997:

1. Adding 2D raytracing and possibly interference studies (simulated performance under varying conditions of interference) to the placement tool
2. 802.11 MAC tester, for compliance
3. Wireless ATM, looking at either technology or markets. There was significant skepticism expressed that ATM would be of high value in the near term
4. Explore opportunities in the unlicensed NII (U-NII) band. Craig suggested that we might be able to take a leadership role in this area, suggesting standards (physical layer, channel allocation, modulation techniques, etc.) or quasi-standards (such as Etiquettes) as appropriate. Most agreed that U-NII represents a significant opportunity for growing the wireless LAN industry in the near term
5. Security techniques
6. Voice/image/video, examining the impact of both large data objects and isochronicity

7. Real-time simulation, as an enhancement to the benchmark or placement tools

In general, there was significant interest in expanding the capabilities of the tools already created. One scenario discussed was using the site survey/placement tool to simulate an environment, including ambient and point interference sources, and then to use the benchmark tool to verify the results.

Members should get back to Craig or Kaveh ASAP on their preferences. Proposals as to what the Lab suggests we do, based on member feedback, will be sent out in early April.

7. Other

We did not have time to discuss membership status to any degree. However, non-members who are on the mailing list will be contacted regarding their interest in becoming members of the Lab.

The possible application of videoconferencing for future Advisory Board meetings was discussed. If you have access to such equipment, please forward a description of your installation to Craig. We will look into this.