IEEE P802.11
Wireless LANs

EUROPEAN RADIO LAN STANDARDISATION

Kauai, HI 8-12 July, 1991

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Source: Simon Black
Symbionics Ltd
St Johns Innovation Park
Cowley Road
Cambridge
UK
CB4 4WS

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1. Introduction

In February, ETSI Technical Committee RES (Radio Equipment & Systems) approved the establishment of an ad-hoc group to study Radio Local Area Networks. The group met twice during May and June with the objective of reporting back to the following meeting of TC RES. The meetings were attended by a total of 27 participants representing 14 manufacturers, 5 telecommunications operators and 2 regulators. During these meetings the group studied 18 submissions and created 3 output documents.

To date, the work of the group has focussed on the study areas identified in its initial terms of reference. In addition, liaison has been established with several other relevant groups, including IEEE 802.11 and the ad-hoc group studying wireless LANs within ECMA TC32. The results of this work were summarised in a report submitted to TC RES on 18-22nd June.

This paper summarises the original terms of reference, outlines the main points raised in the report prepared for TC RES and considers the future of the group.

2. Terms of Reference

The original terms of reference for the ad-hoc group defined four broad study areas for consideration :

- To identify services and classify user requirements for future radio LANs.
- To identify those sectors already supported by existing ETSI standardisation efforts and to be aware of relevant activities within other standards organisations.
- To identify those areas requiring further study necessary to assist in defining the spectrum requirements and appropriate modulation and access methods. This work to be carried out with reference to the frequency bands being considered by the CEPT.
- The recommendation of appropriate actions to TC RES.

Due to the terms of reference of the parent committee (TC RES), the scope of the group is limited to radio LANs and not wireless LANs as IEEE 802.11. The use of an infra-red physical layer has therefore not been discussed.

3. Report and Recommendations

The field of radio LANs is highly complex from both technical and market perspectives. In view of the limited time and information available to the group a definitive set of responses to the issues raised in the terms of reference was rather ambitious. However, the group did make significant progress in many areas including an initial categorisation of services, identification of related activities and recommendations to guide future work. There was a high level of agreement between participants in many areas and the final report was approved unanimously.

The group chose to divide short-range wireless data systems into three fairly broad categories to provide a basis for future work. The role of voice services was not discussed by the group. While the group recognised that many issues such as range and penetration of building structures must be considered, an initial guide to the performance requirements of such services was agreed. The categories and initial performance requirements are as follows (N.B. 1 ha = 1 hectare = 10,000 m^2):

1) A flexible service profile characterised by medium, non-critical performance. Relevant to a wide range of specialised applications from portable data capture and office data communications to domestic control and telecommand.

   Terminal bit rate in the region of 200Kbps, system density <1Mbps/ha/floor

2) A service offering high performance and good reliability combined with low bulk, cost and power consumption. Primarily aimed at addressing the specific needs of advanced, predominantly portable terminals in office networking.

   Terminal bit rate in the region of 2Mbps, system density 3-10Mbps/ha/floor

3) Very high performance services, optimised initially for the replacement of wiring in advanced distributed computing environments, with consequent demands on reliability and efficiency. It is expected that technical evolution would eventually allow portability.

   Terminal bit rate in the region of 20Mbps, system density 100-1000Mbps/ha/floor

The group has made itself aware of the related activities, both within ETSI and in other standards organisations - CEPT, ECMA, IEEE and CCIR and has made several recommendations. The relevance of DECT as an ETSI standard for category 2, was agreed and the undesirability of any duplication of standards was noted. In the case of CEPT, the existence of a radio LAN project team was noted and the group has communicated its concern that ETSI and CEPT should implement a common strategy in this area. The existence of an ad-hoc group within ECMA TC32 was also noted and the group recommended that European efforts would be enhanced if the expertise of ECMA members could be exploited within a relevant ETSI standardisation activity. With regard to IEEE 802.11, the group noted the possible conflict between the two groups and emphasises the necessity for collaboration to minimise duplication of work.

The group highlighted several study items requiring further investigation by the appropriate bodies in order to produce an optimised standard, including:

- European market requirements
- Regulatory issues
- Propagation models
- Interworking with wide area networks

- Appropriate levels of standardisation
- The balance between infrastructure costs, spectrum availability and performance

Furthermore, the group recommended the formation of a focussed task-orientated activity under TC RES to establish a standard meeting the need of category 3 services, beginning with the drafting of a 'Services and Facilities' Specification by June 1992 at the latest.

4. Regulatory Developments

As noted above, the CEPT has also set up a project team under the Frequency Management group to consider radio LANs. This group submitted a recommendation to the European Radiocommunications Committee (ERC) late in June proposing spectrum allocations at 2.4, 5.8, 17.1, 24.1 and 61GHz. This recommendation was not approved by the ERC partly due the different views expressed by ETSI. It is anticipated that future developments in CEPT will be in harmony with those in ETSI.

5. Future Activities

At the meeting of TC RES on 18-22nd June, the conclusions of the ad-hoc group were broadly accepted. In addition, the overall strategy of carrying out a full range of technical activities in Europe with suitable mechanisms to minimise divergence and duplication with IEEE 802.11 was also agreed. The ad-hoc group next meets on 27th August to review the reply from TC RES.

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Annex

The officers of the ETSI RES RLAN Ad-hoc group are:

Chairman

ANDREW BUD
OLIVETTI SIXTEL
Via Jervis 77
10015 Ivrea
Italy

Phone: +39 125 521365
Fax: +39 125 528984

Secretary

SIMON BLACK (IEEE 802.11 liaison)
SYMBIONICS LTD
St Johns Innovation Centre
Cowley Road
Cambridge
CB4 4WS
UK

Phone: +44 223 421025
Fax: +44 223 421031

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SYMBIONICS

ETSI RES RLAN AD-HOC

- Established February 1991
- Parent Group ETSI TC RES
- Two Meetings to Date
- 27 Participants
  - 14 Manufacturers
  - 5 Telecoms Operators
  - 2 Regulators

INITIAL TERMS OF REFERENCE

- Identify Services and Classify User Requirements
- Identify Existing Activities in ETSI & Other Organisations
- Identify Study Areas to Define:
  - Spectrum Requirements
  - Modulation Methods
  - Access Protocol
- Recommend Appropriate Actions to TC RES

CATEGORISATION OF SERVICES

1) Medium, non-critical performance

- Terminal bit rate 200Kbps
- System density <1Mbps/ha/floor

Wide range of specialised applications

2) High performance, good reliability, low bulk, cost & power

- Terminal bit rate 2Mbps
- System density 3-10Mbps/ha/floor

Portable office networking

3) Very high performance services

- Terminal bit rate 20Mbps
- System Density 100-1000Mbps/ha/floor

Wire replacement in distributed computing

SYMBIONICS

LIAISON

- CEPT
- ECMA TC32 Ad-hoc
- IEEE P802.11

OTHER KEY ETSI ACTIVITY

- DECT - Category 2

SPECIFIC STUDY AREAS

- European Market Requirements
- Regulatory Issues
- Propagation Models
- Interworking with WANs
- Level of Standardisation
- Balance between
  - Infrastructure costs
  - Spectrum availability
  - Performance

THE FUTURE

- Conclusions of group accepted by RES in June
- Strategy for European standardisation agreed
- Willingness to collaborate with IEEE 802.11
- CEPT/RES discussions