

September 1997 802.11 - BRAN Thursday evening meeting summary

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The Task Force of 802.11 met on Thursday evening (19:30), 11 September 1997 with ETSI delegation in Grafton Edwardian Radisson Hotel, London, England. Unfortunately no secretary was appointed, therefore this report is a recollection of what happened. Apologies to those whose names are not mentioned and for not attributing all the opinions to specific people.

From 802.11 were present: Naftali Chayat, Ron Brockmann, Dave Fisher (TF representatives), Vic Hayes, Dean Kawaguchi,, Chandos Rypinski, Jim McDonald, Maarten Hoebe, Cherry Tom and Harry Worstell, more from 802.11

From ETSI: Larry Taylor (Technology Partnership), Peter Ransome (Technology Partnership), Howard Laffling (Symbionics), Marcus Radimirsch (Bosch), others, about 8 people from ETSI.

Several items were discussed. Frequency allocation in Europe was discussed and how can 802.11 progress on that.

The history of 5 GHz allocation was discussed in both USA and European perspective. It seems that some restrictions are related to both satellite feeder links in the 5.1 GHz band and to military radars. It seems that the interference from license-exempt users to the satellite receivers is negligible, until there are several millions of users (and then the license-exempt equipment serves a viable need by itself). A more important problem may be the fear that ground stations (especially near cities) will interfere with license-exempt devices, the citizen will complain and the licensed users will have troubles from the courts. It seems that there is a similar fear related to military radars: the short high energy pulses may interfere with user equipment, users may complain in court and some antiballistic radar may get shut down (true anecdote about the gambler case in Maine). Sharing between HIPERLAN type 1 and 802.11 was mentioned as something which will give the LAN people more weight in defending the spectrum from the satellite guys.

On a more serious note, it seems that HIPERLAN type 2,3 has its own problems of coexistence with HIPERLAN type 1, due to its stringent Quality-of-Service requirements. H2 has to struggle CEPT for a frequency allocation for themselves, and it is not sure that it will be granted, since the 5.2-5.3 band (H1) is not really utilized at the moment (although HIPERLAN type 1 devices will utilize it in full once those appear on the market). Possible strategies for 802.11 were discussed, including collaborating with BRAN in order to get a new allocation for BRAN and 802.11; the possibility that 802.11 will approach CEPT with a request to share the HIPERLAN type 1 band, and have BRAN's support for that, as it will increase their chance to have an allocation of their own, or just go to CEPT and ask for sharing the HIPERLAN type 1 band without the BRAN or ETSI collaboration. It seems that the chance of having BRAN or ETSI support for sharing is almost nil, on the other hand it seems that 802.11 cannot approach CEPT directly. (FURTHER DISCUSSION)

The possibility of mutual benefit on a technological level was discussed. It seems that BRAN will be extremely reluctant to accept technology from outside, including 802.11. One possible reason is the difference in PAR's of the two projects - the BRAN is optimized towards highly coordinated network, with low overhead delivery of single ATM cells (53/56 byte payload) and very high probability of success; on the other hand, 802.11 emphasizes loosely coordinated access, with probably higher overhead tolerated; as a result BRAN people believe that the difference in requirements will lead to solutions too different to justify common PHY sublayer, as was suggested by 802.11. Another possible reason may be related to the tight schedule of BRAN WG3 and the will to capitalize on experience of the several European consortia and research programs participating in BRAN, such as ATM-mobil (Germany), "Magic WAND" (ACTS) and more. On the other hand, 802.11 members are perceived by BRAN

members as people with significant radio expertise, and they may contribute in that and in channel modeling.

Discussion about HIPERLAN type 1 developed, mainly due to the fact that Larry Taylor and Peter Ransome were deeply involved in development of H1 standard. Questions by 802.11 about particular choices made in H1 were raised. Regarding GMSK vs. OFDM they commented that in indoor environments the break-even point was about 20 Mbit/s, so both approaches may be used. The main reasons for disfavoring OFDM in H/1 standardization (done in 1993) were peak-to-average power ratio (in terms of back-off needed for PAs, efficiency and linearity requirements) and phase noise in synthesizers.

Regarding OFDM sensitivity to phase noise, it was mentioned that it seems that during the development of "Magic WAND" prototype (OFDM) an attempt was made to reuse RF hardware from the HIPERLAN type 1 (GMSK) program and the phase noise turned out to be inadequate and improvements were needed. The efficiency of H1 was questioned in view of the LBR (Low Bit Rate part of the message) and the relatively long HBR preamble (450 bits). The reasoning provided regarding the 450 bit preamble was that given that the LBR part is quite long and the receive-transmit interval is of similar duration, there was no justification to cut on the HBR preamble and preclude by that simpler synchronization algorithms.

Propagation models were discussed. Naftali asked about H1 experience in modeling, informed about 802.11's intent to use Exponentially Decaying Rayleigh Channel for comparison of modulation methods. Peter Ransome said that ETSI developed quite elaborate models of time varying channels for mobiles, but he believes that for static indoor environment the Exponentially Decaying Rayleigh Channel is adequate.

Directional antennae and benefits of it were discussed. ETSI people believe that directional antennae DO reduce multipath delay spread significantly even in indoor environment (contrary to Naftali's intuition that the gain is not significant in indoor environment) and probably there are products being developed which utilize this property to simplify baseband processing.

Regarding H1 equipment availability, the comments were that probably in second half of 1998 first products may appear.

Larry Taylor and Peter Ransome volunteered to present a tutorial on HIPERLAN type 1 during the Nov 98 Montreal Plenary. 802.11 welcomed this proposition; decided that we will try to allocate a time slot on Monday evening for presentation to whole 802, and then make a half day presentation/discussion to 802.11 on Tuesday afternoon.

The meeting adjourned about 10 in the evening.