



EENGM4221: Broadband Wireless Communications

Lecture 10: The 802 'Family'

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- The Institute of Electronic and Electrical Engineers (IEEE) is a professional body based in the USA
- IEEE develop and publish a variety of standards within its area of interest
 - See <http://grouper.ieee.org/groups/>
 - This includes many Wireless Communications Standards (look at the IT section)
 - Not all Wireless Communications standards are controlled by IEEE
 - IEEE standards are nominally for USA but are effectively International
 - Nevertheless, many IEEE standards have equivalents published by other organisations - e.g. ETSI in Europe

802



- IEEE's LAN/MAN standards committee is designated 802.
 - 802 standards cover both wired and wireless
 - 802 standards actually cover more than just LAN and MAN (e.g. PAN and WAN as well!)
 - An overview of the entire 802 activity is available at:
<http://grouper.ieee.org/groups/802/index.shtml>
 - 802 defines its own rules for the (essentially democratic) process of developing and agreeing standards

802 Working Groups



- Different Working groups within 802 focus on different aspects of communications systems:
- Each group has a unique number and takes its name from the concatenation of that number with the 802 number, separated by a ‘.’
 - Not all groups are active
 - Of particular relevance to this course are 802.11, 802.15 and 802.16; the WLAN, WPAN and WMAN groups respectively
 - Each of these also has sub-groups.
 - Sub groups take their name either by appending a letter, a ‘.’ and another number or even both

802.11



- 802.11 is the WLAN working group
- 802.11 standards are backed by the WiFi industry consortium and marketed under the WiFi brand
- 802.11 has a plethora of Task Groups within it
- For this course, the focus is on:
 - The original 802.11 standard
 - The a,b, and g extensions for higher speed data transmission
 - The e extension for QoS
- Other enhancements exist (all the way to az) with n, ac, ad, ax and ay of interest but beyond the scope of this unit

802.15



- 802.15 is the WPAN working group
- 802.15.1 is Bluetooth; this is the focus of interest for this course
- Other Task Groups in 802.15 consider:
 - High Speed WPAN (802.15.3)
 - Low Power WPAN (802.15.4), known as ZigBee

802.16



- 802.16 is the WMAN Working Group
- Many of the working group standards (including 802.16a) were included in a revision of the ‘core’ standard released in 2004
 - This is known as 802.16-2004 and is the focus of interest for this course
- It contains 4 different PHY layer specifications and lots of MAC options!
 - 802.16-2004 only considers fixed WMAN
 - 802.16e will add mobility

Review of Lecture 10



- We have introduced the IEEE standards activity
 - Its massive!
 - Thankfully we don't need to know all of it...
- We have highlighted 802.11, 802.15 and 802.16 as the standards we will now look at in detail as our case studies for the rest of the Broadband Wireless Communications
- We took a quick 'guided tour' of the 802 'Grouper' Site to appreciate its scope and structure.