Wireless Multimedia Systems Fall, 2008 (Final Topic)

Professor Eric Hsiao-kuang Wu (hsiao@csie.ncu.edu.tw)

1. **Today's topic:**
   Power Issues & Energy Efficient& Wimax

Suggested Reading:

Required Reading:

- [Jones2001] C. E. Jones, K. M. Stvalingam, P. Agrawal, J. C. Chen, "A Survey of Energy Efficient Network Protocols for Wireless Networks", Journal of Wireless Networks 2001
- [Ekuland 2002] C. Eklund, R. B. Marks, Ke. L. Standwood, S. Wang, "IEEE Standard 802.16: A Techinical Overview of the WirelessMAN Air Interface for Broadband Wireless Access", IEEE Communications Magazine 2002.
- [Porcino2003] D. Porino, W. Hirt, "Ultra-Widband Radio Technology: Potential and Challenge Ahead", IEEE Communications Magazine, July 2003.
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Reference Papers

- [Bambus98] Bambus, "Power Sensitive Architecture in Wireless Network, Concepts, Issues and Design Aspects, IEEE Personal Communications Magazine, 1998

- [Gomez2001]J. Gomez, A.T. Campbell, M. Naghshineh, C. Bisdikian, "Conserving Transmission Power in Wireless Ad Hoc Networks"
- [Chen2001]B. Chen, K. Jamieson, H. Balakrishnan, R. Morris, " Span: An Energy-Efficient Coordination Algorithm for Topology Maintenance in Ad Hoc Wireless Network

a) Wireless MAN

The wireless MAN offer an alternative to cabled access such as fiber optic links, coaxial system using cable modems and digital subscriber line (DSL) links. For instance, a central BS may someday exchange medium access control (MAC) protocol data with an individual laptop computer in a home.

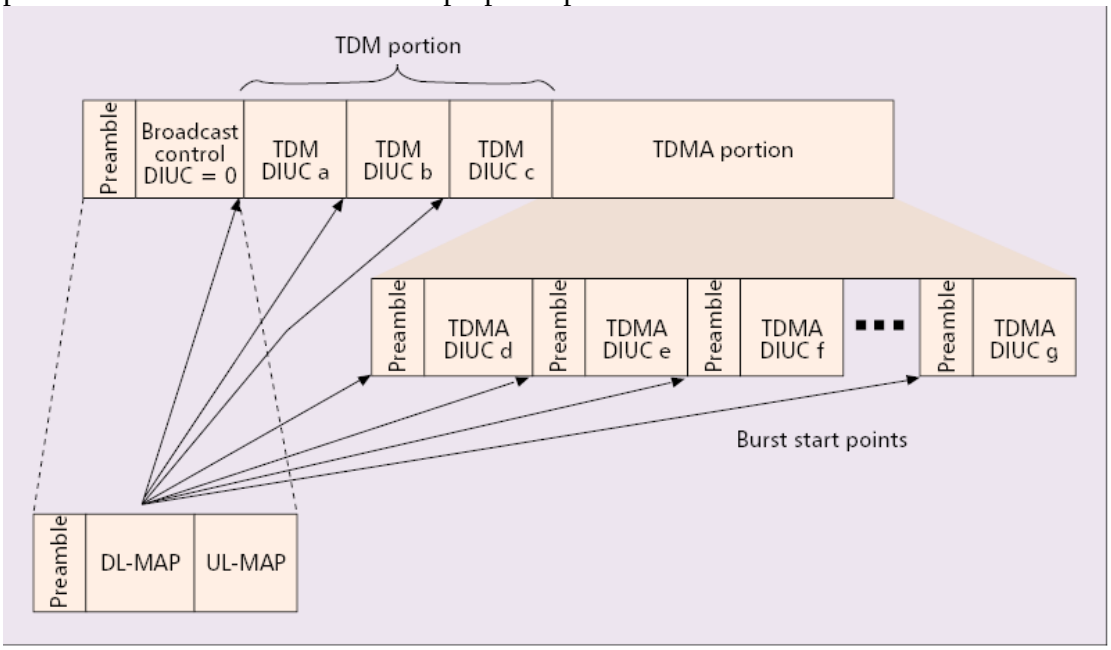

Figure 1. *The downlink subframe structure.*

Both TDD and FDD alternatives support adaptive burst profiles in which modulation and coding options may be dynamically assigned on a burst-by-burst basis.
LOS (Line of Sight) 10-66 GHz
NLOS (None Line of Sight) 2-11 GHz
DIUC (Downlink Interval Usage Code)
UIUC(Uplink Interval Usage Code)

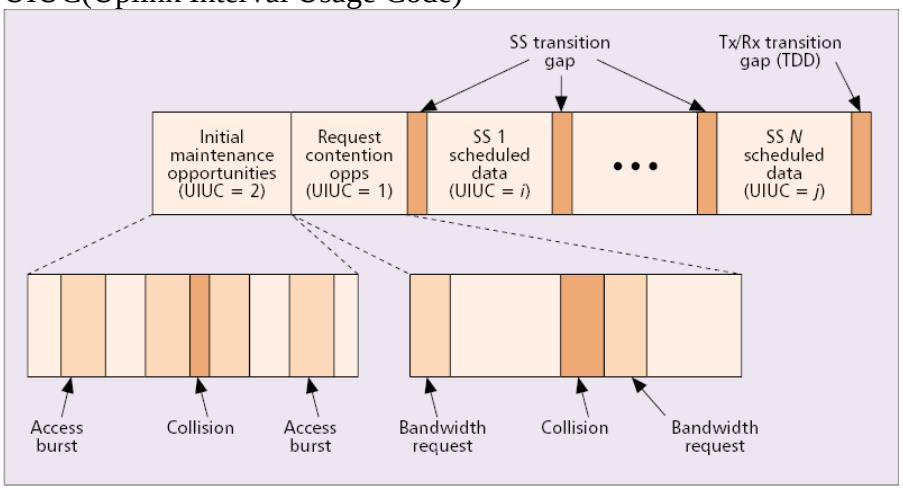

Figure 2. *The uplink subframe structure.*

b) UWB PAN (802.15.3)

The approach employed by UWB radio devices is based on sharing already occupied spectrum resources by means of the overlay principle, rather than looking for still available but possibly unsuitable new bands.

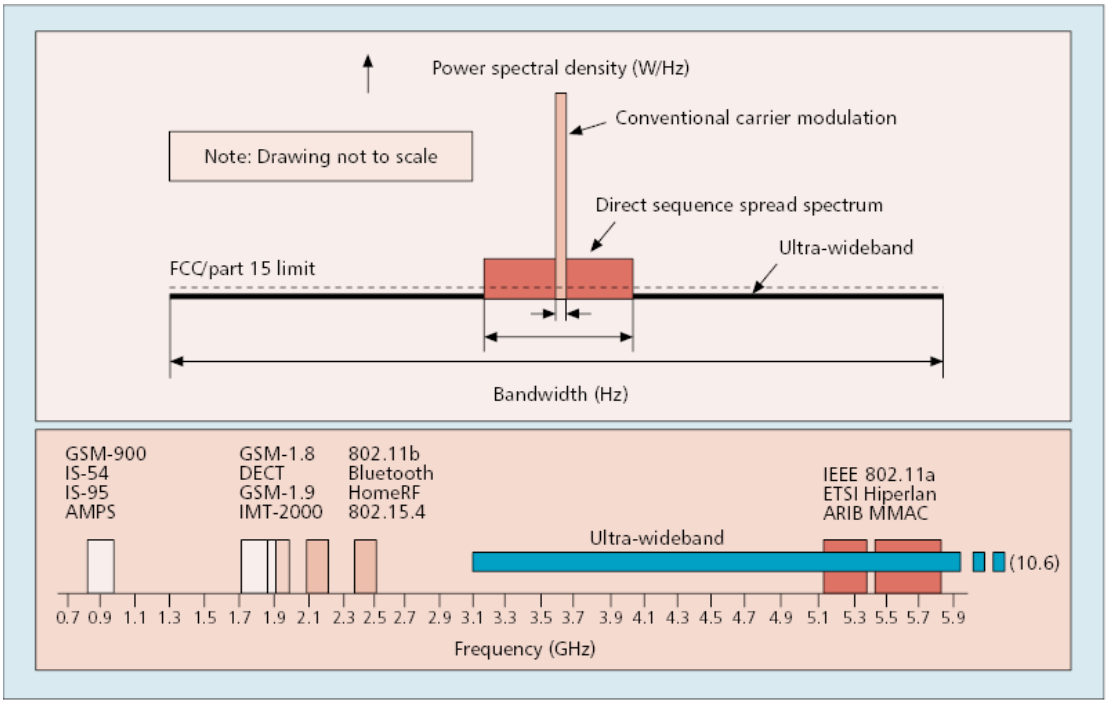

Figure 2. *Ultra-wideband radio technology: bandwidth comparison of different types of wireless systems (top); spectrum overlay principle (bottom).*