Wireless Videoconferencing System Design and Propagation Measurements

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Videoconferencing allows people in two or more locations to simultaneously correspond via audio and video transmissions. Examples of such technology include online videoconferencing for academia at the university level and also through the business office. Videoconferencing is used for educational purposes, including at Virginia Tech and in the Montgomery County, Virginia public schools, and this project involves design of a wireless system to allow live videoconferencing from remote locations.

Some of the major components identified as being crucial to design such a link system are full comprehension of antennas, radio channels, transceivers, receivers and amplifiers. The most important criteria for this project is the efficiency of the actual link which will make it important to conduct field tests of usable access points as well as measurements of received signal strength. This research will provide information on 2.4 GHz radio wave propagation via measurements in which a GPS system is used to associate received signal levels with corresponding locations.

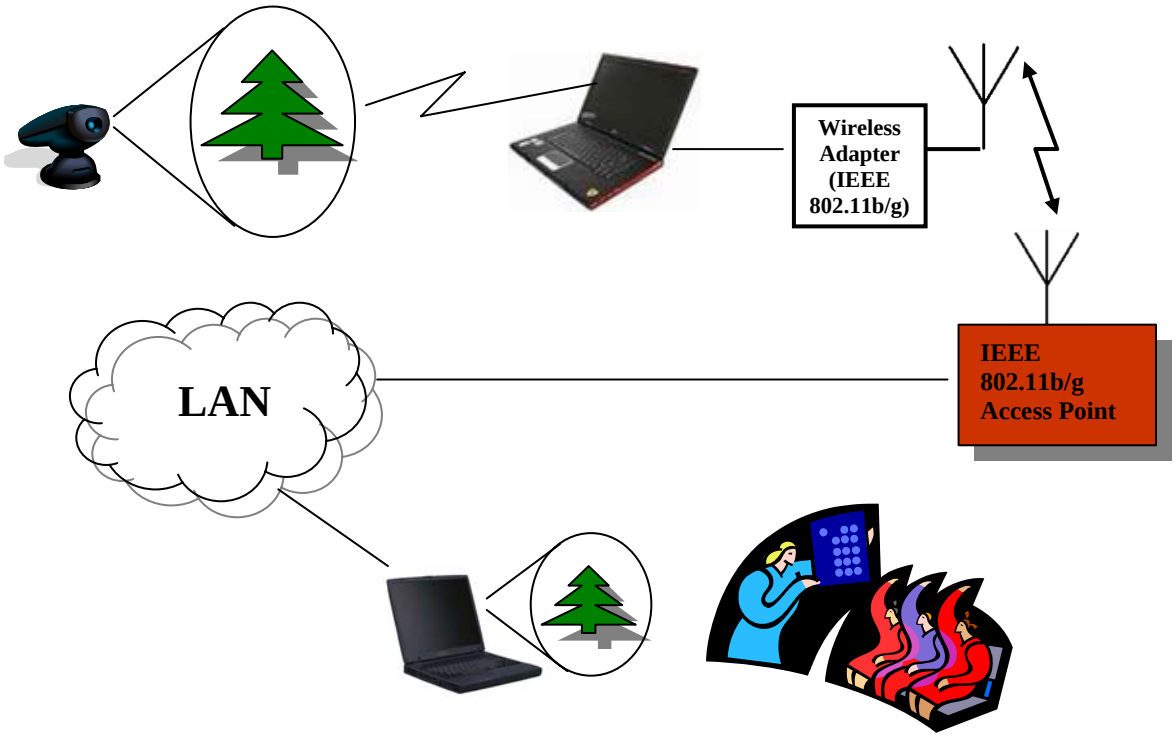

Figure 1. Example of classroom use for wireless videoconferencing system.

The main purpose of this research is to design a radio frequency (RF) link that can be used for internet protocol (IP) video conferencing to provide a real-time virtual field trip capability so that students in the classroom as well as those in the field can interact as shown above in Figure 1. A relatively long-range wireless link will be designed and implemented to provide internet connectivity via an IEEE 802.11 b/g access point in the Blacksburg/Montgomery county, VA area to extend the range of possible data communications.

The research for this project is still taking place. Preliminary results will be presented in the poster session.