

## **Challenges in Pervasive Wireless Access**

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Pervasive wireless access networks provide ubiquitous wireless connectivity for a variety of heterogeneous nodes. They are based on short range wireless communication technology. Existing systems include Wireless Local Area Networks (WLAN), Wireless Personal Area Networks (WPAN), Wireless Sensor Networks (WSN), RF identification (RFID) and automotive communication. Pervasive wireless networks introduce fundamentally new characteristics and requirements. They challenge many "proven" approaches to wireless network design. In the first part of the talk we will discuss the notion of Pervasive Wireless Access and outline some relevant new characteristics and requirements. In the second part we will review key results and future challenges in Physical and Data Link layer design for Pervasive Wireless Access. Specifically we will focus on information theoretic limits, cooperative adaptive diversity and scheduling, and cooperative spatial multiplexing in the rich array/poor scattering regime.