

**IST 043**  
**Multi-tier Wireless Networks for Rural Development**

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**Abstract**

In this long-term investigation, we will develop analytical methods that account for signal processing, radio resource allocation, and access control techniques, which jointly enable multi-tier systems to deliver the desired ubiquity and capacity. We will study numerous centralized and non-centralized ad-hoc systems, where terminals communicate with each other by hopping (i.e., by relaying data through multiple wireless terminals). By addressing various network topologies, this research will be valuable to a host of service providers who wish to assign multifaceted roles to vastly different wireless systems. Partner organizations include AT&T, the County Commissioner's Office (Susquehanna County, PA), the Department of Economic Development (Susquehanna County, PA), and the Community Information Network (Susquehanna County, PA).