Mobile ACcess Project

RWTH Aachen University
Communication and Distributed Systems
Coverage: Wi-Fi Access Points in Aachen (city center)

#Access Points (estimated)

- T-Mobile: 67
- RWTH: 300
- ÖcherWLAN: 900
- Individuals: 2400

3.600 APs / 3 km²
→ 1 AP / 30 m

(Sources: T-Mobile, Fon, BITKOM, Öcher WLAN)
Concept of Wi-Fi Sharing Communities

- **Idea:**
  - Users open and share their own Internet connection to community members
  - A community member can use all other Wi-Fi access points of the community

- **Initially grass-root movements**
  - Freifunk

- **Commercial use**
  - fon
  - Wippies (Elisa)
Tunnel-based Wi-Fi Internet Sharing

- Encrypted tunnel serves the AP owner as well as the mobile guest
  - Security and privacy for all parties
  - Solves legal liability problem
  - Transparent mobility support
  - Scalable, decentralized solution
Software Components

• 2 Parts
  – HIP: Security, mobility, device identities
  – PiSA: Address space management, service access

• Software components for
  – Mobile device
  – Router / Firewall
  – Router / Trust point
  – Services (MuniFi services)
Roaming between independent APs
Technology Demo
Localize Me!

[Image of a store front named "Karls-Apotheke"]