

# The Dynamics of User- initiated Innovation in ICT networks

Nelly Oudshoorn (UT)

Ellen van Oost (UT)

Valerie Frissen (EUR/TNO)

Stefan Verhaegh (UT)

# Back ground and research aims

- In traditional innovation and technology studies:
  - the user as passive consumer
  - at the end of the innovation chain
- More recently:
  - Users as active shapers of new technologies (telephone, radio, minitel, email, sms)
- Aim of the research :  
gain insight into the dynamics of user-initiated innovation.

# Theoretical framework: multi-disciplinary / three scientific domains

- **Technology Studies:**  
socio-technical networks, aligning both human and non-human actors, heterogeneous engineering (bijker, pinch, oudshoorn)
- **Innovation Studies:**  
lead user, innovation communities (van Hippel)  
innofusion (Fleck)
- **Media Studies:**  
Domestication and appropriation (Silverstone, Haddon, Frissen)

# Research design

- Case studies: complexity of dynamics of growth
- Envisioned cases:
  - Infrastructure: Wireless Leiden and Amsterdam Network Collective
  - Content: Wikipedia (NL) and peer-to-peer content sharing
  - Commercially oriented case: e.g. marktplaats
- Survey (quantitative and qualitative) research among a daily users of new technology: studying potential sources of innovative ICT-appropriation

# Case Study Wireless Leiden

- Core innovation: wireless backbone infrastructure
- Primary theoretical aim: understanding dynamics of innovation *communities*
  - *Structure and growth (different type of users)*
  - *Role of ideology in innovation community dynamics*
  - *Understanding the relation/interaction between shape of the innovation and the shape of the community*

# Wireless Leiden: concise overview

## ■ Characteristics:

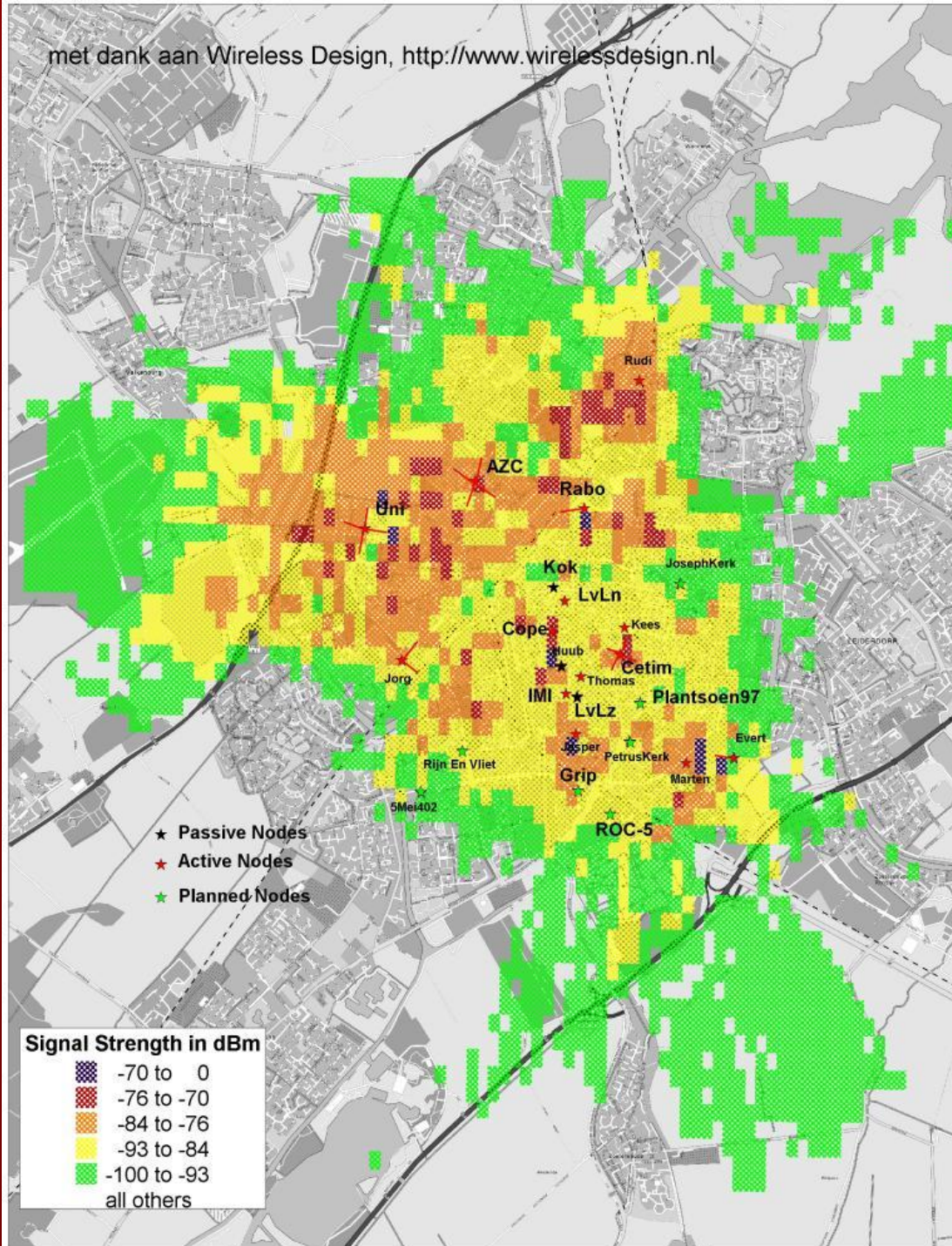
- Fully wireless infrastructure: combination hotspots (access) and interlinks (backbone)
- Based on free radio frequency IEEE standard 802.11b (WiFi)
- Own developed router software (LVrouteD)
- Appr. 80 nodes within 500 km<sup>2</sup>
- 1500 – 2500 users
- Free internet proxy access (3 ADSL lines of Demon)







met dank aan Wireless Design, <http://www.wirelessdesign.nl>







# Wireless Leiden: origins

- 2001: idea born at HCC days; aligning group of 5 Leiden residents with various backgrounds/competences
  - Combining ideology, PR and management, hardware and software knowlegde
- Summer 2001: first nodes, website and wiki
- Summer 2002: establishing foundation Wireless Leiden

# Wireless Leiden: growth of network and community

- Aligning new nodes *and* node-adoption volunteers
- End 2005: appr. 80 nodes and node adoption volunteers



Stichting Wireless Leiden

Open bijeenkomst 8 februari 2004

**"Hoe sluit ik me aan?"**  
Het thema van de tweede  
Open Bijeenkomst  
van Wireless Leiden in 2004.

**Richt Antennes**

Deze vormen een goedkope en krachtige oplossing bij onvoldoende ontvangst.  
Dit type antenne is vooral geschikt voor montage buiten.  
Door haar ontwerp is ze weersbestendig en bestand tegen hoge windsnelheden.  
Dit type antennes is bijvoorbeeld goed toe te passen op antennemasten en daken.  
De Richt antenne wordt toegepast om verbindingen op te zetten.

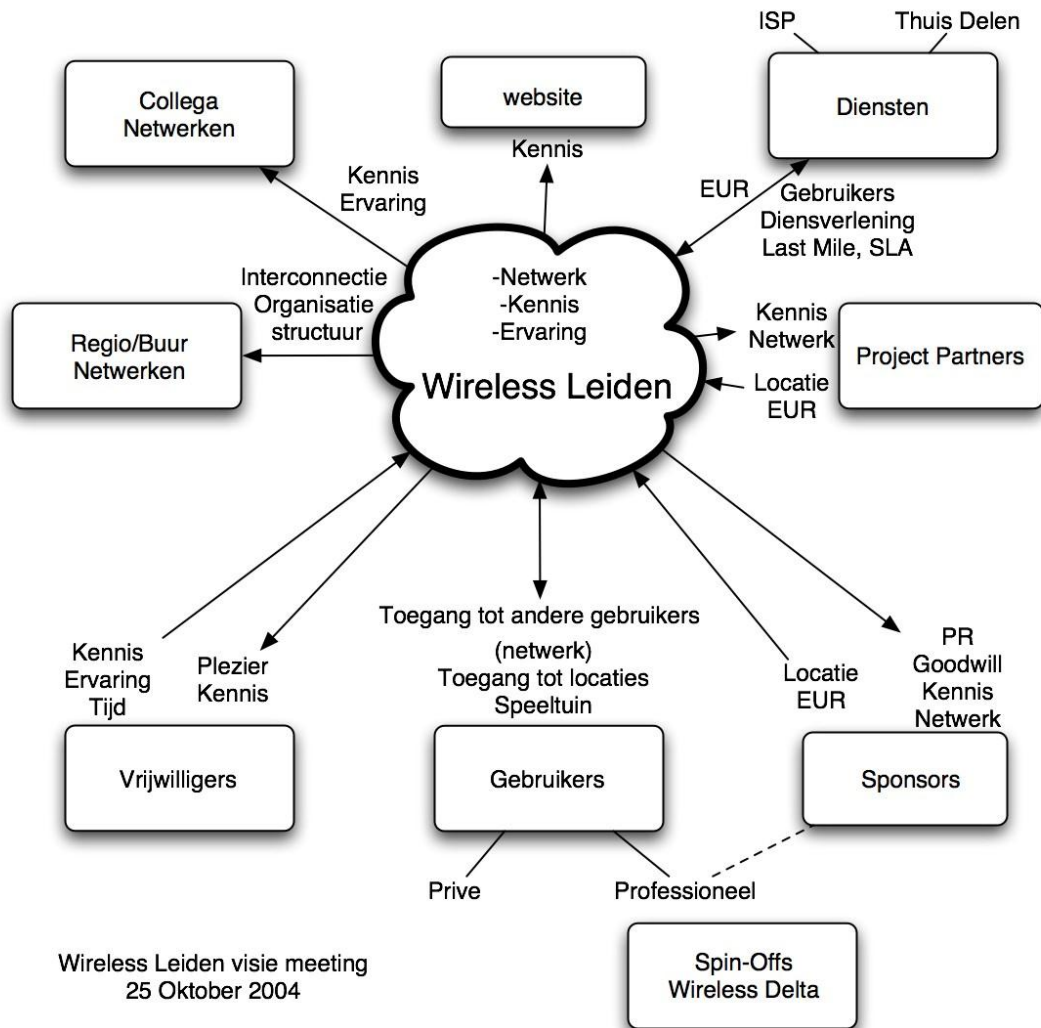
**Omni Antennes**

Omni Antennes geven, in tegenstelling tot gaas an paneel antennes  
zend en ontvangst signaal in een hoek van 360 graden.  
Hierdoor zijn deze antennes zeer geschikt om in de direct omgeving  
van een lokatie een groot ontvangst gebied te creeren.

<http://www.wirelessleiden.nl>  
Societeit De Burcht, Burgsteeg 14, 2312 JS Leiden

# Wireless Leiden: alignment strategies

- Good PR
- IRL meeting/social activities/community building
- Alliances with local organisations (schools, libraries, churches, companies)
- Full transparency and open knowlegde (organisational and technical)
- Aligning *and* creating various material actors





# Conclusions dynamics innovation community

- Inherent and seamless socio-technical network, creating and aligning human and material actors (node + node adoption volunteers + contract)
- Lead users as heterogeneous “engineers”
- Balancing
  - ideology (free access/open software) and
  - management (PR, contracts, legal constructions, social meetings)

# New theoretical notions

- Elaboration concept of "innovation community" into "*community innovation*"
- Elaboration concept of "heterogeneous engineer" to *heterogeneous user-producer*" (different types of alignment strategies bottom-up versus top-down)

# Further research on Wireless Leiden

- Survey (quantitative and qualitative) of “end-users” on appropriation of WL use in daily practice (sources of new innovative use practices)