

Broadband in the Netherlands

examples of municipal networks

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BReATH workshop Athens, Greece, 4 September 2006

Outline



- Municipal broadband networks in the Netherlands
 - Almere Fiber City
 - Wireless Leiden
- Listing other examples
- Contact information
- Questions

Almere Fiber City



- In 2002-2004 in total > € 7 M government funding to 8 Dutch towns incl. Almere to deploy and operate broadband networks and services
 - Almere started 05/2002 with open FttH infra
- Almere Fiber City
 - Build a city-wide fiber network, bundle broadband demand
 - Cooperation of municipality with housing agencies, investing parties and market organizations
 - Phase I: connecting 150 municipal and social organizations, by April 2006
 - Phase II: connecting all company sites in Almere with data rates starting at 100Mbps

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Almere Fiber City



- Almere Fiber Net
 - Glass fiber pair to each customer
 - Connects public organizations including hospital, fire brigade, police and library
 - Star-shaped passive infrastructure, ready in 02/2004
 - Dedicated Network Management System
 - Companies can connect other parts of town to this backbone, benefiting from bundled demand
 - 1700 households and 500 businesses connected
 - Organizing the deployment of fiber networks proved costly and difficult, especially for existing buildings

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Almere Fiber City



- Ownership and exploitation of network are split
 - Competition at service level; no monopoly positions
 - Almere Fiber Company (currently only the municipality) owns the passive infrastructure
- Services:
 - UNET (originated from Almere Fiber City project) develops and implements services
 - As of Spring 2004, subscribers use the services
 - Digital interactive encyclopedia
 - VPN and Remote Backup for businesses: € 2 per month to backup 1GB of data
 - Camera surveillance from anywhere
 - Flevo Hospital: Selfcare project to make an appointment electronically

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Almere Fiber City



- Center for Broadband Services
 - Opened in September 2004
 - Demo house showing possibilities
 - Stimulates local sales of services
 - Leverages international contacts
- Business users can now enter at € 59 a month instead of having to pay € 250 for all services
- Home users pay € 59 a month for 10Mbps, or € 79 a month for a 30Mbps connection in combination with Triple Play services
- Selling glass fiber services is difficult
 - Users are unfamiliar with the possibilities
 - High threshold for consumers to make the switch

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Wireless Leiden



- One of the world's first (2002) and largest independent and completely wireless community networks, started by 3 enthusiastic residents
- Objectives
 - Create cheap and fast open wireless network for Leiden and surrounding area, for internal communication and access to the Internet
 - Stimulation/facilitation of commercial activities such as spin-offs.
- Wireless Leiden is a not-for-profit foundation that owns the wireless network
 - Use as much as possible cheap hardware, open standards, Open Source software and public knowledge
 - Set up a network at very low cost price.

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Wireless Leiden



- Initial focus on connecting professional users
 - Companies wishing to offer VPN services to their employees at home
 - Multiple-site schools
 - Libraries with multiple sites and/or a library bus
 - Social and health care centres
- Later also home users were connected
- Wireless Leiden helps with the technology and organization of wireless community projects in surrounding municipalities, connected to Wireless Leiden
- Completely run by ~70 volunteers who build, expand, operate, maintain and promote the network and secure funding for their activities

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Wireless Leiden



- Funding:
 - Founders used own financial resources to set up the network in the beginning
 - Then Wireless Leiden built interest among individuals, companies and other organizations to sponsor installation and maintenance of the network
 - Financially
 - Through products
 - Example: node with one access point and three interfaces to other nodes would cost a sponsor around € 1,200.-
 - Covers all costs for the node
 - Leaves a little margin to Wireless Leiden, which it uses to cover other expenses

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Wireless Leiden



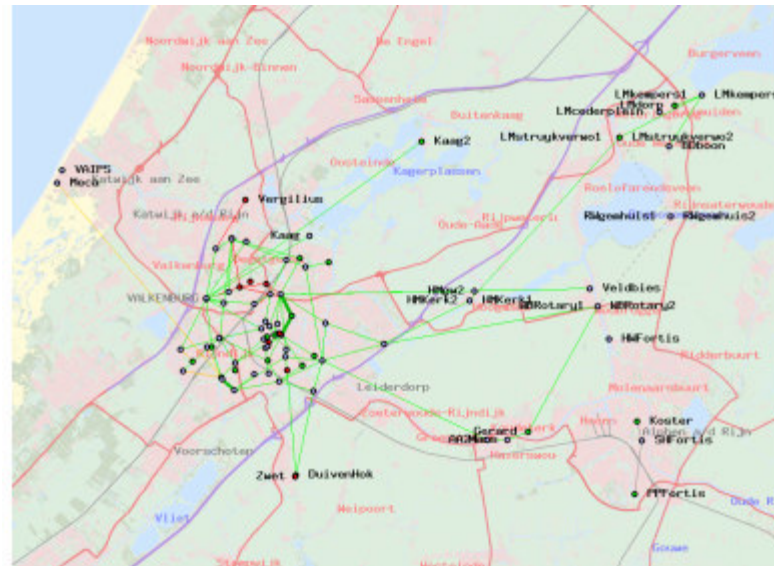
- Example: connectivity measurements at home
 - Voluntary customer donation on average around € 10
- Example: donation of PCs, rack servers and network monitoring software by institutions and companies
- Use of Wireless Leiden is completely free, both internal communication and Internet access
- Promotion through lectures, weekly information meetings, website/wiki, press releases
 - All primary schools in and around Leiden interconnected; great promotion through children

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Wireless Leiden



- Wireless network:
 - Based on IEEE 802.11b
 - ~100 nodes
 - three 8Mbps gateways provided for free by commercial ISP
 - Static and local frequency planning; shift to dynamic, network-wide planning upcoming
 - Customized version of OSPF for routing



Wireless Leiden



- Services:
 - Not main focus of Wireless Leiden, yet doing experiments
 - Streaming of webcam video and local popmusic
 - Jabber messaging
 - Time synchronisation
 - Game servers
 - H.323 VoIP
 - Additional external service providers welcomed, beside the ISP that currently offers its services.
- Wireless Leiden suffers from interference with private IEEE 802.11b access points and other ISM devices
 - Tests with IEEE 802.11a to overcome this problem

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Other municipal networks



- Amersfoort
- Appingedam*
- Den Haag
- Deventer
- Dordrecht
- Enschede
- Gooi
- Haarlem
- Hillegom
- Hilversum

• *Plans for this FttH network were recently prohibited by the EC regulator because "the municipality provides State Aid in a region where broadband is already available"*
→ <http://europa.eu.int/>

- Rotterdam
- Tilburg
- Utrecht
- ...

Contact information



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-= Thank you for your attention =-