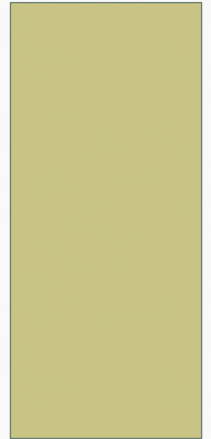


Building Broadband Infrastructure from the Grassroots: the Case of Home LANs in Belarus

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SI on the 'First Mile of Broadband Connectivity'



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Research Setting

EASTERN EUROPE, MINSK, BELARUS



Methodology

- Qualitative historical case study
(Eisenhardt 1989; Yin 2009)
- Multiple data sources:
 - **72 in-depth interviews** (40 minutes each on average)
 - **Documents**
 - **Archival data**
 - **Observations**
- Process theory methodology
(Langley 1999; Pettigrew et al. 2001)

Story in-brief (1994 - 2010)

State Provider



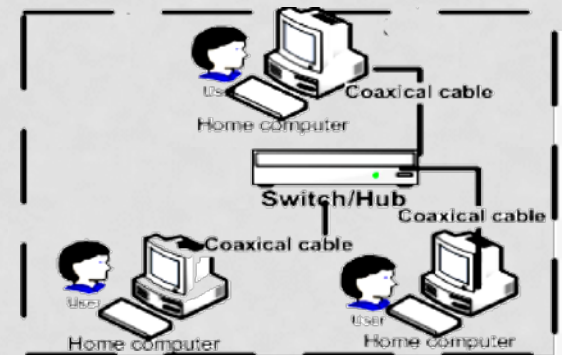
1.

Private Providers



2.

Home Local Area Networks (LANs)



3.

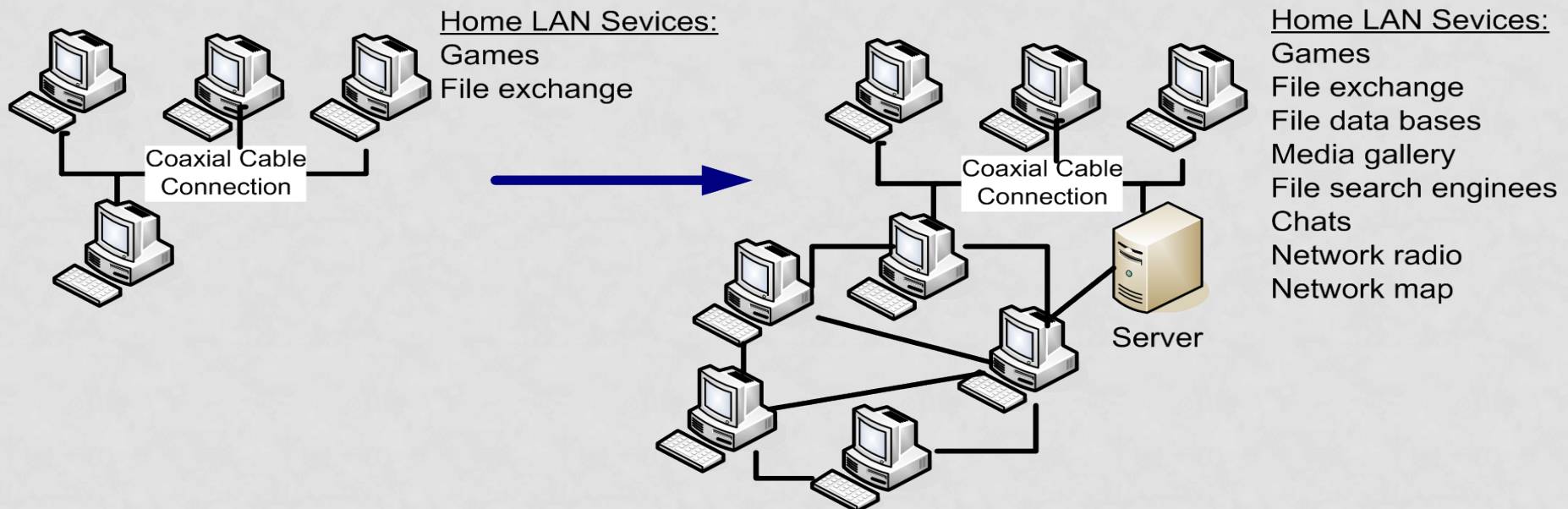
GRASSROOTS ORGANIZATIONS

Private Providers

Part of Private Providers'
Infrastructures

Underground
(Continue as illegal organizations)

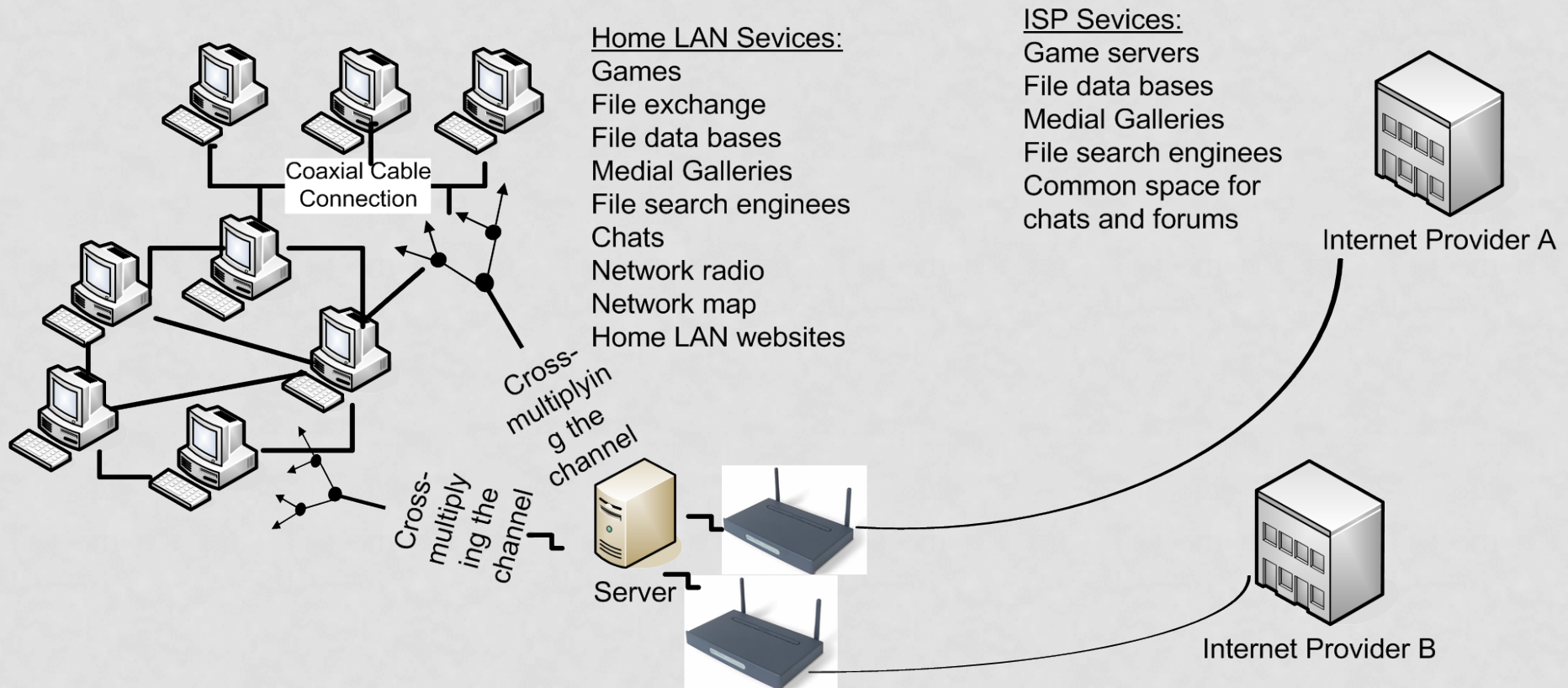
Evolution of home LAN architectures and services in 1994 - 2000



Illustrations from the Field



Home LAN architecture enabling broadband residential access



Summary of Home LAN innovations and services (1)

- **Data bases of internal home LAN documents** such as home LAN statutes, local community-developed documents prescribing such aspects as network goals, mission, users' rights, networking rules, etc.
- **Videos** created by administrators that provided step by step instructions on typical set up questions.
- **Internet radio**, initially based on switches and later on servers, network radio combined transmission from over the air radio stations with programs, news and discussions created by the home LAN users.
- **File search engines**, which provided daily up-dated databases of files open for sharing at the computers of users.
- **Network forums and chats** (IRC-based chats and forums, IRC++ technologies).
- **Backup services** to save information on servers from loss in a case of damage.
- **Technical and social maps of home LANs**, developed to assist users and provide information on the network architectures, topologies, communication and equipment.(technical maps) and personal information on users (social maps).
- **Programs stimulating resource openness and communication** in the network (Fly link DC++) and setting up a threshold of information open to other users (in Gbs).

Summary of Home LAN innovations and services (2)

- **Shared Internet access** enabling the signal from the modem to be multiplied, reinforced and used by multiple users. Home LAN servers were programmed to distribute Internet traffic between several network modems in order to stabilize the load.
- **Links with several providers to the same network**, allowing a majority of home LANs to negotiate with ISPs more effectively by not creating a monopoly for one.
- **Fiber optic connections.**
- **Radio links** enabling long-distance (up to 2km) connections to neighboring home LANs or multistory buildings within the network. Radio links were created on the basis of switches with Wi-Fi functions, replacing their small antennas with larger antennas.
- **Local home LAN websites** (like <http://dom15.narod.ru/users.html>).
- **National website of home LANs**, (<http://homenet.tut.by/>, opened in 2002 and which remained active at the time of writing. With the website, innovations developed in a particular home LANs were easily spread to another. The website contained a database with addresses of all home LANs and contacts for their administrators.
- **DNS and DHCP data** on the PCs of network users with their IP addresses.

THANK YOU!