Freedom of Information "builds" in the infrastructure

Open standards and close regulations

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What is the Internet?

Federal Networking Council (DoD, NASA et al), *Internet Monthly Reports, October 1995* agrees that the following language reflects our definition of the term "Internet".

"Internet" refers to the global information system that:

- is **logically linked together by a globally unique address** space based on the Internet Protocol (IP) or its subsequent extensions/follow-ons;

- is **able to support communications using** the Transmission Control Protocol/Internet Protocol **(TCP/IP)** suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and

- provides, uses or **makes accessible, either publicly or privately, high level services** layered on the communications and related infrastructure described herein.

We, the "**linked**"…

The Internet Model – "The CONNECTED"

Applications
- We can present the information
(mail, web, VoIP, video streaming)

TCP/IP
- We can send/receive data to/from "connected"
(IP addresses, routing)

Link layer
- We can access a "connected"
(cables, terrestrial radio links, satellite…)

"The UNCONNECTED"

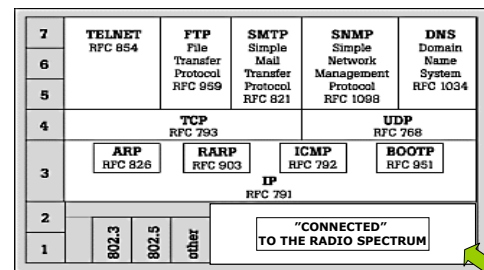**Applications**
- Blocking/Filtering/Closing websites, e-mails.

TCP/IP
- IP Filtering, Blocking Services (peer-to-peer, VoIP…)

Link layer
- **NO LINK** (cost, licensing)

"Connected" to the radio spectrum protocol…

Connected ➡ VSAT, Land lines to National Carriers

Cost, licensing, technical competence

1997-2003
The Personal Wireless
1997 (IEEE 802.11), 1999 (IEEE 802.11b), 2003 (IEEE 802.16)

Wi-Fi: The radio technology

- 2.4 Ghz radio band
- Following the ETSI regulations
- Unlicenced spectrum
- Running IEEE 802.11b (WiFi).
- Using Open Source code (GNU/Linux)
- PtP links ~ 2000 USD

IEEE 802.11 (Wi-Fi)

WiFi — The Standard for Wireless Fidelity.

- Used for terrestrial outdoor link
- Connecting to the "connected" (range of 1-30 Kms)
- Low power (100 mW – 1W)
- Requires line-of-sight
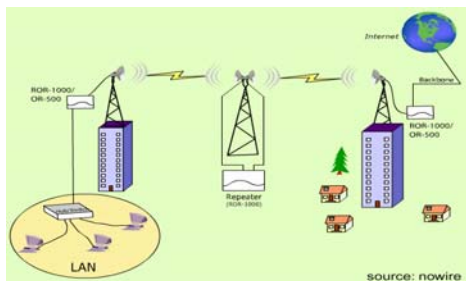- Mass-produced equipment, "open" standard

DVB (Digital Video Broadcast)

- Sending Wi-Fi (LaoTel)
- Receiving (DVB-IP)

- Sending VSAT (SCPC)
- Receiving (DVB-IP)

Wi-Fi: PtP Radio link with repeater

Wi-Fi: Hardware

- Antennas
- Low loss cable
- Connectors
- Radio transcivers
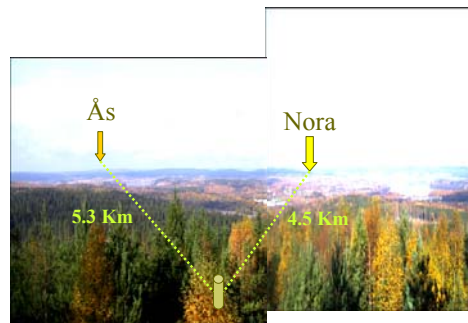- Radio Bridges
- (Linux) Routers
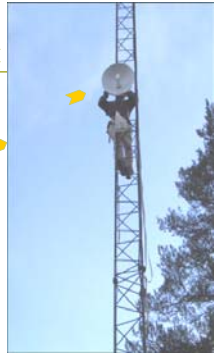
Wi-Fi: Radio Equipment

Wi-Fi: Radio Kits

Wi-Fi: Radio Kits (Supermarket technology)

Wi-Fi : Nora-Digerberget-Ås

Ås

Nora

5.3 Km

4.5 Km

Wi-Fi: Ås - Digerberget

Wi-Fi: Ås school

Wi-Fi: The case of Laos

- First Internet ISP Sep 2001
- 3 Mbps (1 Mbps 7000 USD/month)
- IP Infrastructure mostly Wi-Fi

Recommendations

1. Capability of building/expanding infrastructure by anyone.

2. "Open" models in the wire and wireless world (independency of physical, transport, services layers)

3. Radio spectrum needs to serve "Freedom of the Information in the infrastructure", the "right TO communicate"