Promoting Broadband:

The case of Iceland

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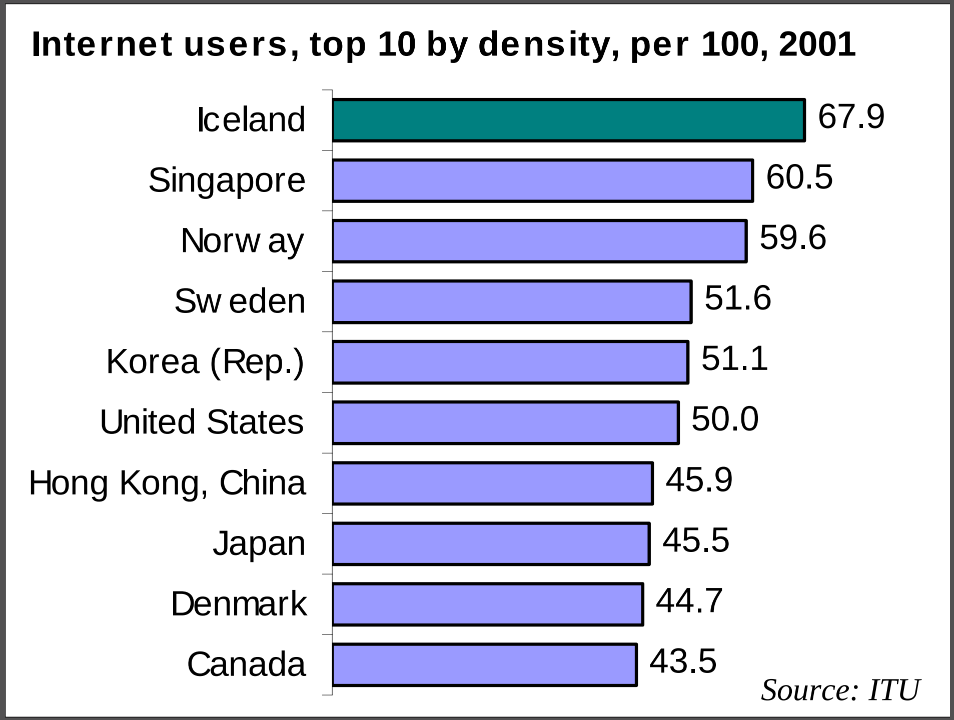
Iceland in brief

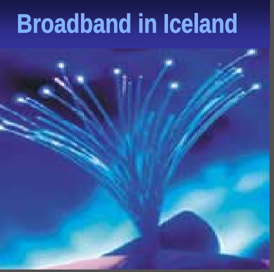
- One of the least populated and most isolated of Nordic countries
  - 288’000 inh. (density: 2.79/km^2)
  - Highly-educated, urbanized, tech-savvy population
- High standard of living (ranks 7th on UNDP 2002 HD Index)
- Rich in natural resources, e.g. geothermal power
- EEA agreement signed in 1994: Iceland adopts decades of regulatory precedent from the EU (1998 – full competition introduced)
- Privatization: Attempt to privatize incumbent operator in May 2001

The Internet in Iceland

- International connectivity provided through CANTAT-3 built in 1994. International capacity seen as insufficient, and a new cable (FARICE) is now planned
- Iceland connected to the global Internet in 1986
- 2001 (end): Iceland had highest Internet penetration in the world & the highest combined fixed, mobile & Internet density
- Broadband penetration higher than other Nordic countries & in top 5 worldwide (8.7%)

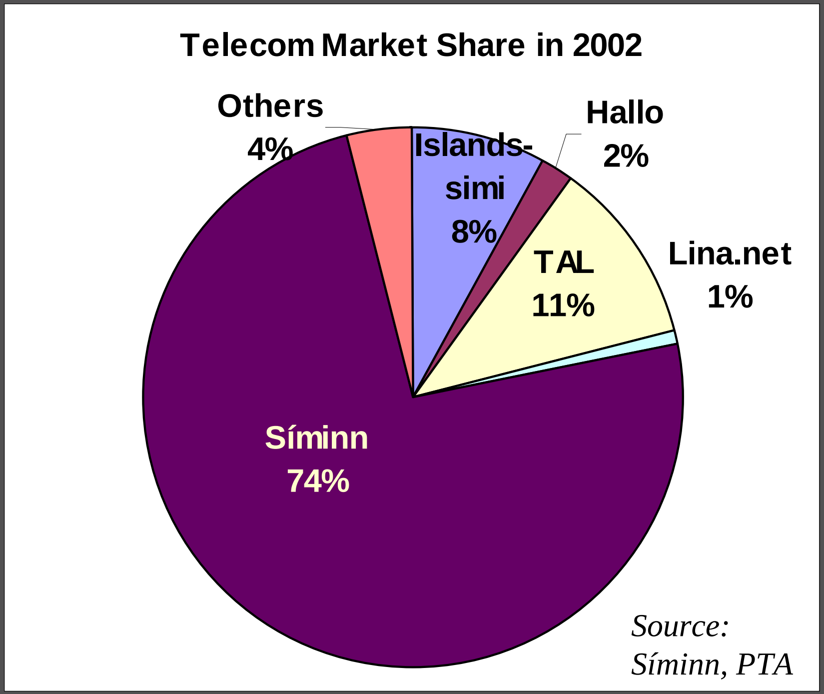


International
Telecommunication
Union



Broadband market structure

- Market characterized by a strong duopoly: **Síminn** (historical operator) & **Íslandssími** (since 1999)
- In 2002, Islandssími acquired providers Halló + TAL, giving it:
  - 21 % of the total market
  - 31 % of the DSL market
  - 37 % of the entire data market



- Other key players: **Reykjavik Energy (OR)** , whose operations are through **Lina.net**, and National Power Company, through **Fjarski**

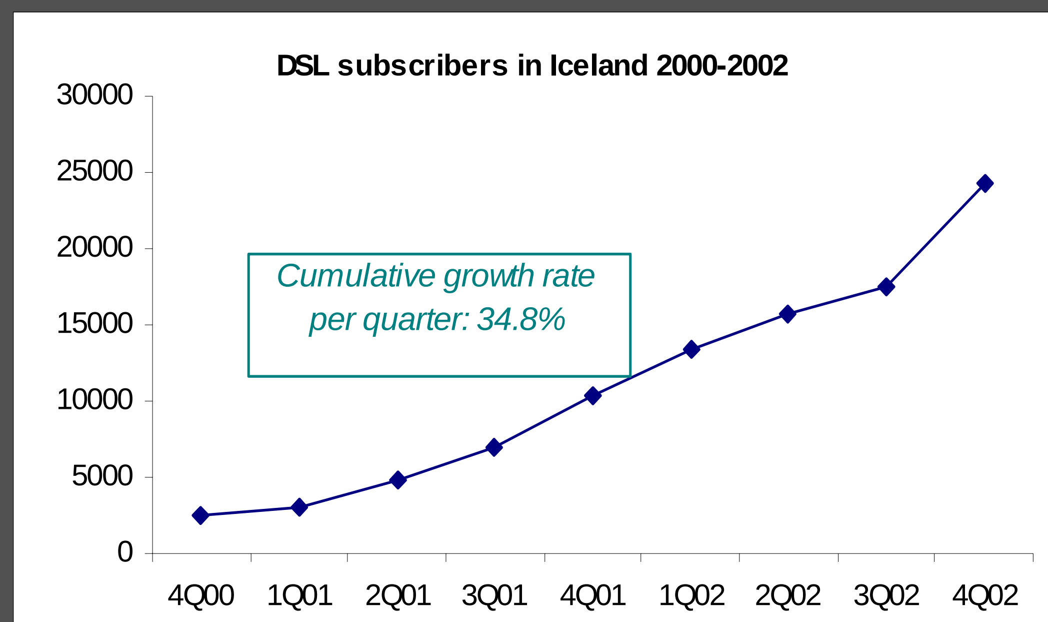
International Telecommunication Union

The main players at a glance

Síminn	Íslandssími	Lina.net - OR	Fjarski (Landsvirkjun)
Full-service provider National Fibre ring & city networks, ATM, IP… Services: FTTx (including FTTH) , DSL WLAN, corporate solutions… State-owned incumbent operator	Full-service provider Fibre city network with Lina.net, ATM, IP… Services: FTTB, DSL, WLAN, Corporate solutions Privately-owned, main competitor to incumbent	Mainly corporate solutions provider Fibre (owned by OR), ATM, IP, Power grid, FWA Services: FTTB, DSL, FWA, Switched Wi-Fi, WLAN, Power line connections, corporate solutions 70-80% owned by Reykjavik Energy (municipality) (OR)	Corporate solutions provider Fibre/microwave network between power plants , FWA Services: Corporate dedicated Internet access, dark fibre, FWA 100% owned by National Power Co. (Landsvirkjun)

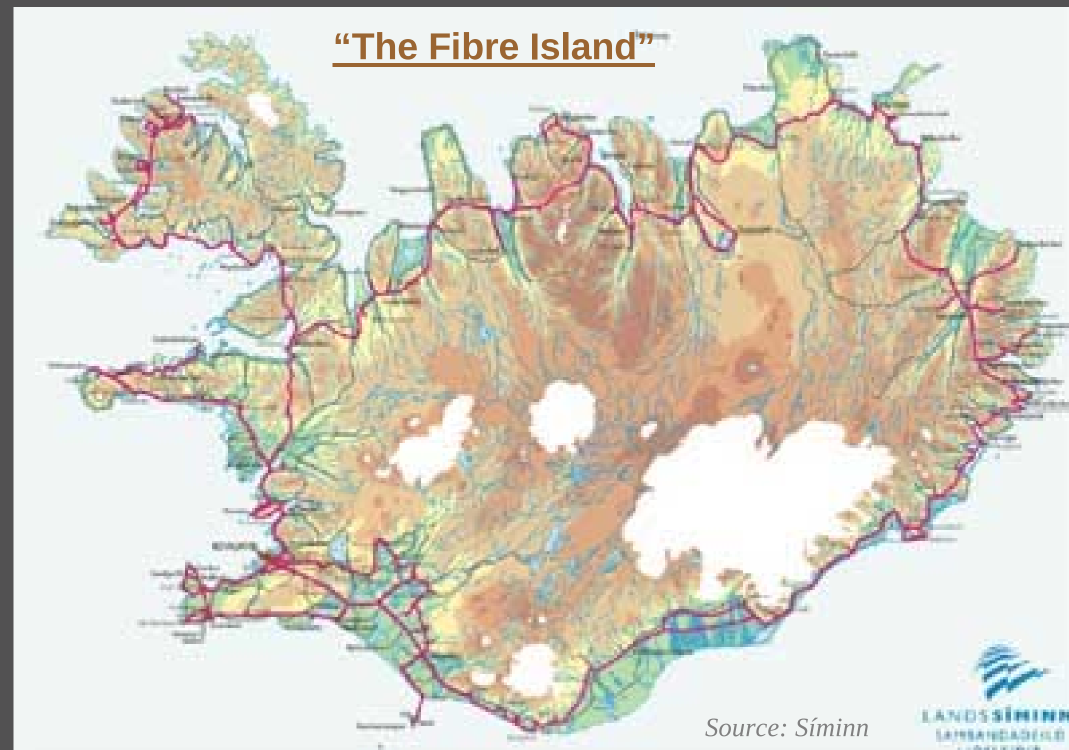
DSL (Copper)

- Introduced April 2000. 86% of population now has access:
  - in Jan 2003: every town 1000+ had access
  - by Dec 2003: every town 500+ will have access
- Duopoly: Síminn + Íslandssími. Market share: 69% - 31%
- Íslandssimí resells a number of Síminn’s connections (~ 40% of total). Plans to migrate these to own network end 2003
- Monthly packages range from 37-50 US$
- Currently, there is a cap on downloads from abroad (e.g. 500 Mb)
- 24’270 subs at end 2002, and like in many other countries, fastest growth in last part of 2002



Source: PTA

Fibre networks



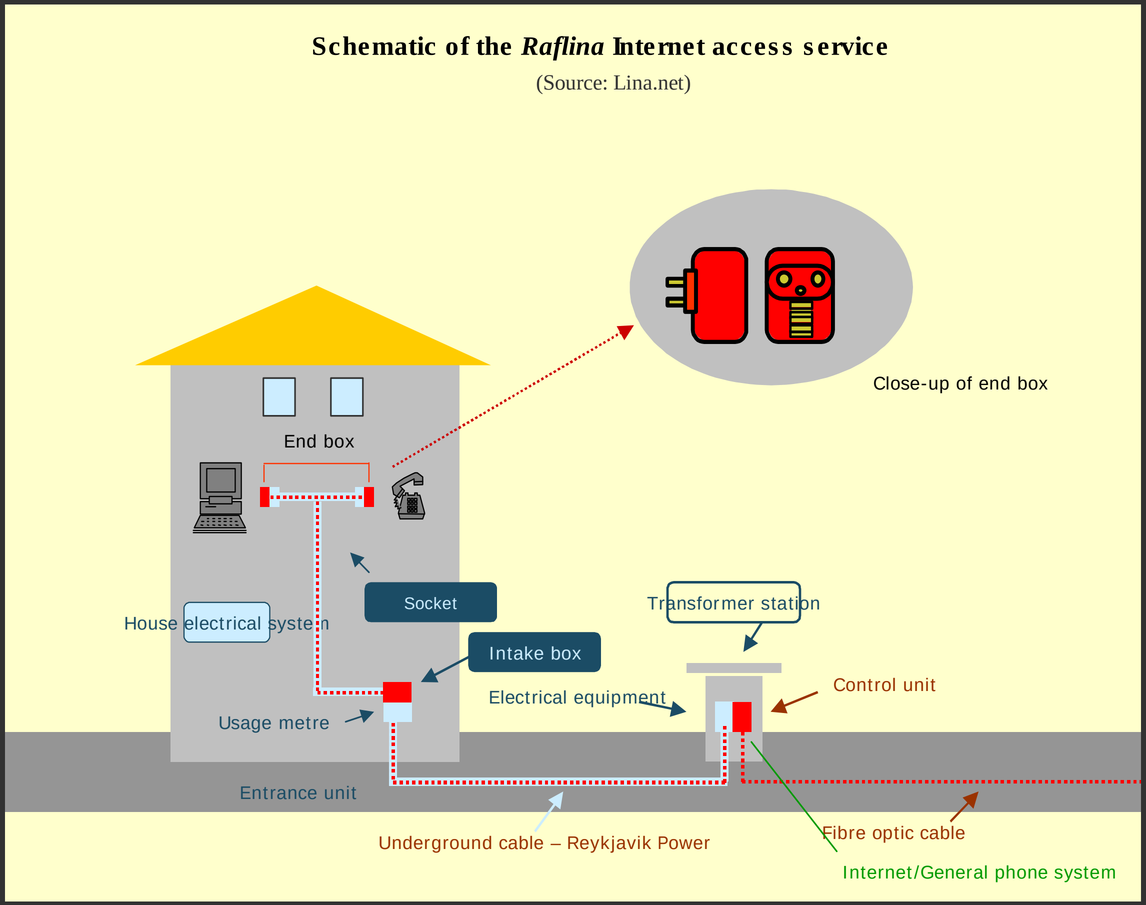
- National backbone: Siminn’s fibre ring around Iceland (1986)
- 2 metro fibre access networks in Reykjavik: Siminn’s “Breiðband” (‘95) & OR/Lina.net (‘01)
- OR/Lina.net also own fibre from Reykjavik to CANTAT-3. Fjarski owns fibre link from Reykjavik to Akureyri
- Fibre initially deployed for re-broadcasting analogue TV signals

FTTx (Fibre)

- New buildings:
  - since 1995, all are equipped with FTTC (curb)
- Old buildings:
  - With > 6 apts: FTTB (building) + coaxial between floors
  - With < 6 apts: FTTC + coaxial to building/between floors
- Síminn offers residential fibre access - I*u*B (512/128 kbit/s):
  - Since June 2002. 500 subscribers in Jan 2003
  - 15’000 households have access to I*u*B (30’000 by end 2003)
- Íslandssími and Lina.Net offer fibre connections mainly to corporate customers (primarily through FTTB)

Raflína: Internet over power lines

- OR (through Lina.Net) originally deployed its fibre network for the purposes of providing Internet connections over power lines
- Service branded as “Raflína” went live in Spring 2001 - it uses the company's distribution stations and power grid to connect to the metro fibre network.
- Guaranteed symmet. b/width 256 kbit/s, but max is 4.5 Mbit/s.
- 400 subs. in Jan 03 (mostly residential)



Wireless Access

- Loftlína: Lina.Net offers broadband wireless access services in the 3.5 Ghz band (in Reykjavik) since November 2000:
  - At first, primarily residential. Now, more take-up among SOHO/SMEs
  - 6’000-7’000 users (500-600 subscribers) as of year-end 2002
- Jan 2002: Lina.Net and Fjarski were allocated Broadband Wireless Access (BWA) licenses for the 3.4 – 3.6 Ghz band
- Wireless LAN routers on sale since Nov 2000 in Iceland. And Síminn plans to explore business case for Wi-Fi (802.11b) hotspots sometime in 2003

- … Future plans…

Elements of success: Demographics and Infrastructure

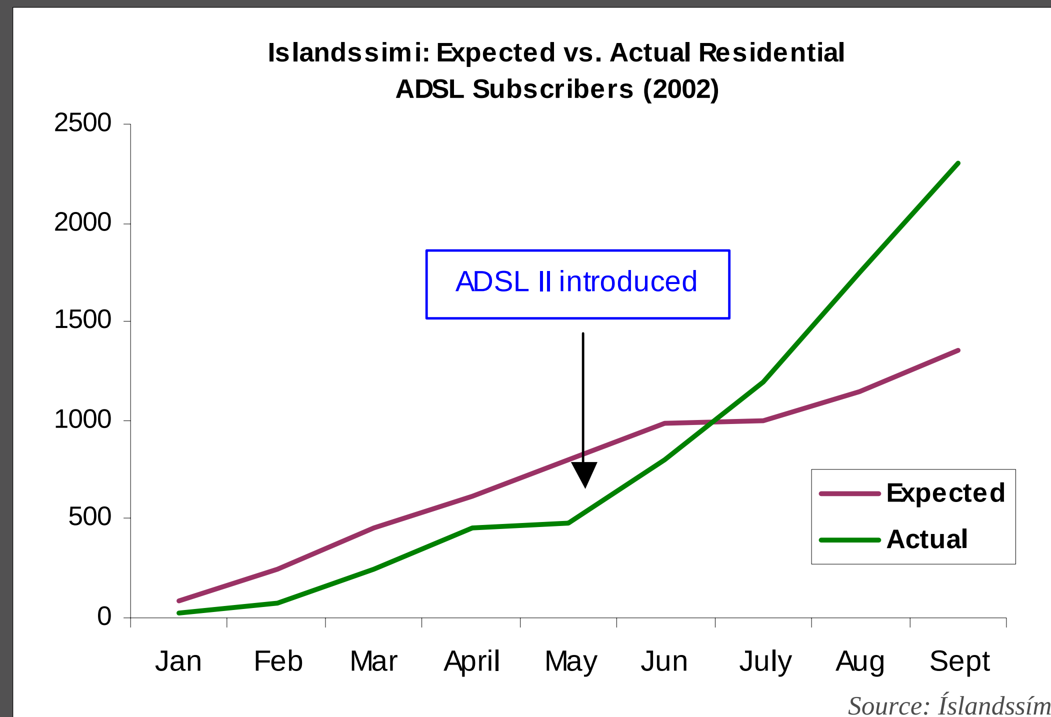
- Demographics
  - Small, concentrated, highly-educated population
  - Geographic isolation
  - Receptivity to technology
- Infrastructure
  - Fibre rollout mostly state-funded, through incumbent operator, power company
  - Focus on penetration of PCs and broadband in educational institutions
    - e.g. FSNet and “broadband model schools project”

Elements of Success: Regulation and Policy

- Enabling regulatory framework
  - Unbundling the local loop
  - infrastructure sharing (e.g. co-location and ‘co-mingling’)
- Evolution of universal service
  - “ISDN policy”: all homes to have minimum of 128 kbit/s ISDN connection (Mar 2003: 98 % universal service)
- Cost
  - LLUB charges & rural access (2 mbit/s proposal)
  - Low-cost subscription charges for e.g. DSL due to competition
- National Information Society Policy
  - 1996 policy and evolution
- Creation of Information Society Task Force (ISTF)
  - Set up in 1998 under PM’s office with specific mandate
  - Budget allocation for a number of information society projects

Elements of Success: Marketing and Promotion

- Íslandssími's "ADSL II" promotion:
  - "Twice the speed but only one price"
  - Slower 256 kbit/s service discontinued
  - Doubled subscriber base in the 2nd half of 2002

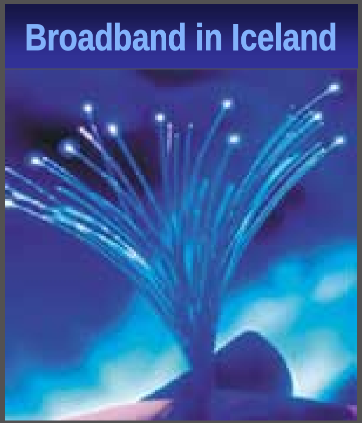


Source: Íslandssími

- Íslandssími's faster "ping" campaign
  - Targeting the gamers

The road ahead

- This year will mark the end of the extended mandate of the IS Task Force. What next?
- 14 March 2003: Icelandic Parliament adopts new legislative package in line with new EU package
  - In the future: availability of bit stream access will be considered and must-carry obligations for digital TV
- Challenges
  - Cap on foreign download
  - Finding the content…and *”who owns what”*
  - How to shift from an ‘early adopter’ economy to a mass market…



thanks

…takk fyrir…

www.itu.int/broadband