

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/km²)
 - 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

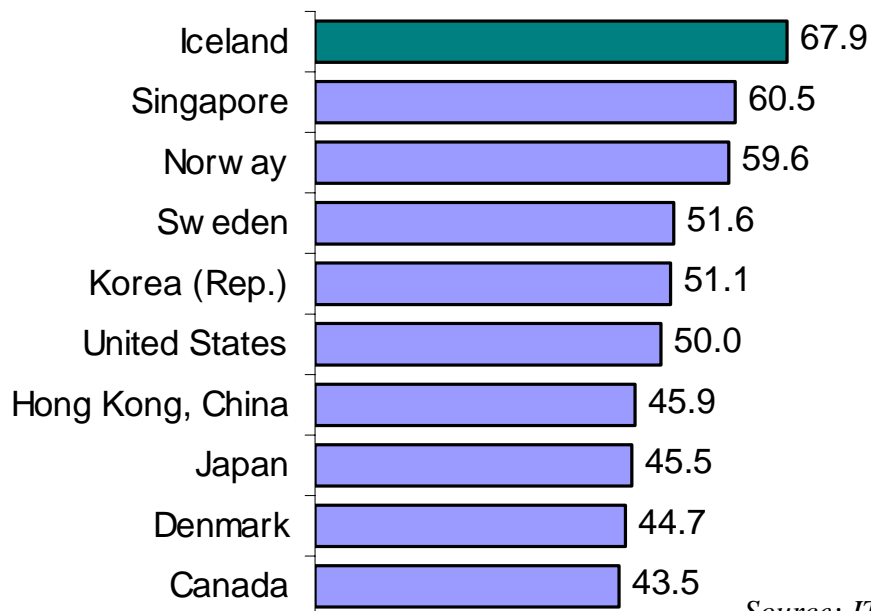




The Internet in Iceland

- 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%)

Internet users, top 10 by density, per 100, 2001



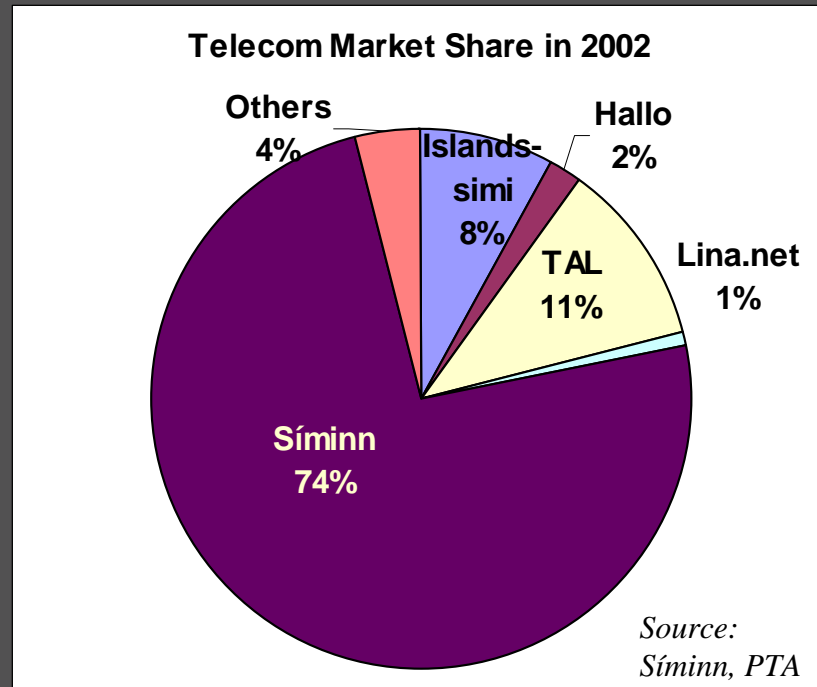
Source: ITU





Broadband market structure

- Market characterized by a strong duopoly: **Síminn** (historical operator) & **Íslandssími** (since 1999)
- In 2002, Íslandssími 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**





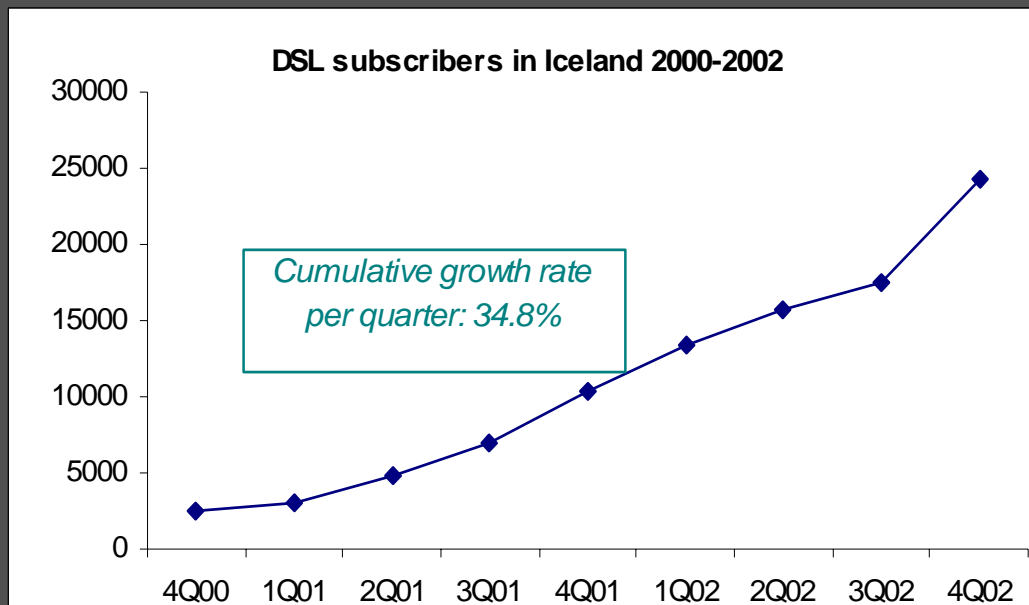
The main players at a glance

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



DSL (Copper)

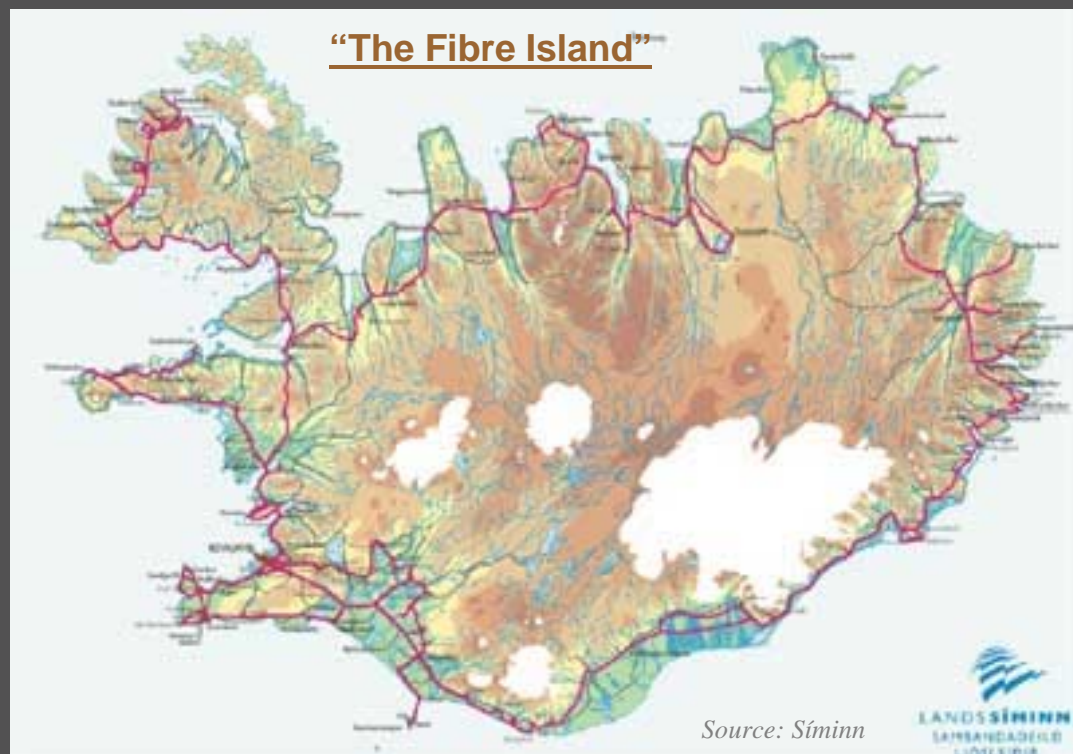
- Introduced April 2000. 86% of population now has access:
 - in Jan 2003: every town 1000+ had access
 - by Dec 2003: every town 500+ will have access
- Duopoly: Síminn + Íslandssími. Market share: 69% - 31%
- Íslandssímí resells a number of Síminn's connections (~ 40% of total). Plans to migrate these 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

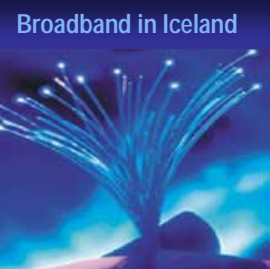




Fibre networks

- National backbone: Síminn's fibre ring around Iceland (1986)
- 2 metro fibre access networks in Reykjavik: Síminn'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)

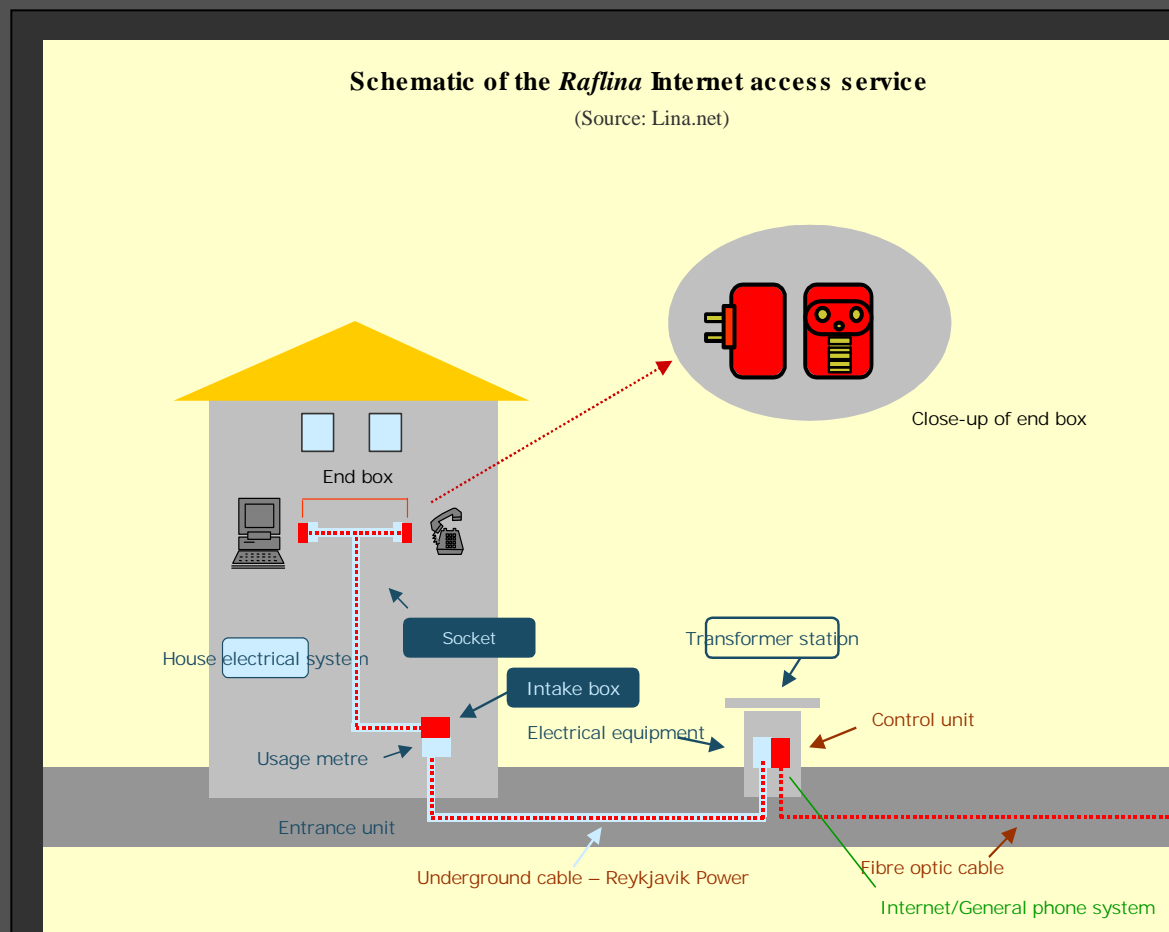
- New buildings:
 - since 1995, all are equipped with FTTC (curb)
- Old buildings:
 - With > 6 apts: FTTB (building) + coaxial between floors
 - With < 6 apts: FTTC + coaxial to building/between floors
- Síminn offers residential fibre access - 1uB (512/128 kbit/s):
 - Since June 2002. 500 subscribers in Jan 2003
 - 15'000 households have access to 1uB (30'000 by end 2003)
- Íslandssími and Lina.Net offer fibre connections mainly to corporate customers (primarily through FTTB)

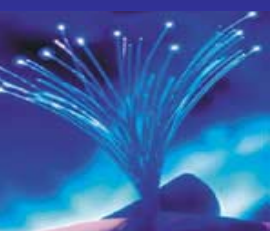




Raflína: Internet over power lines

- 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

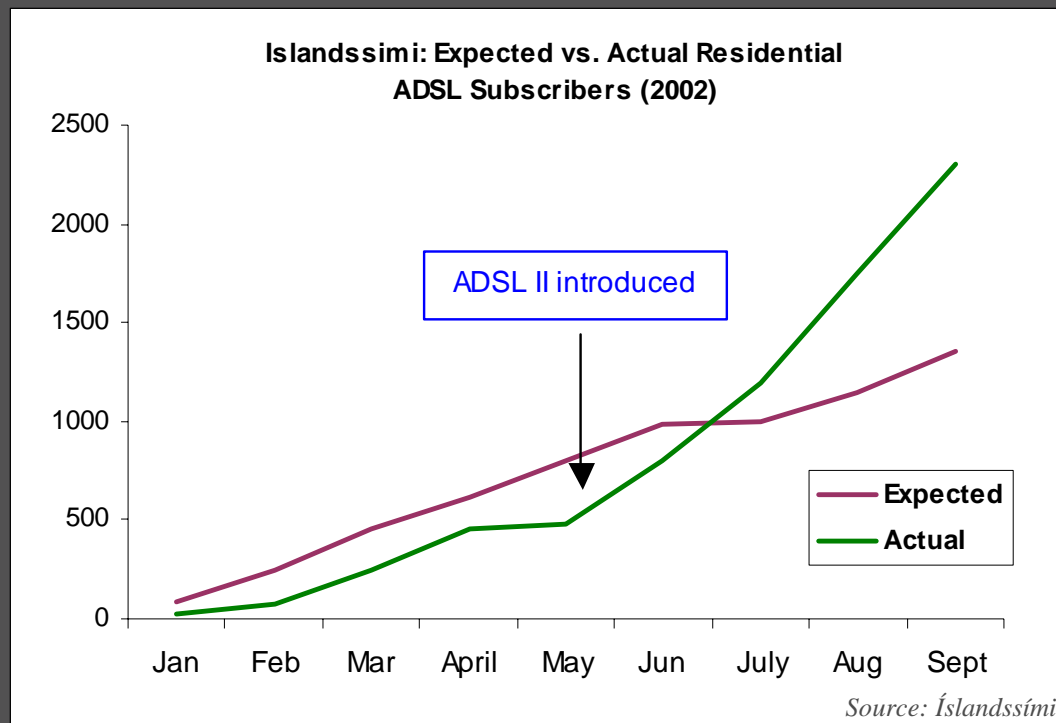




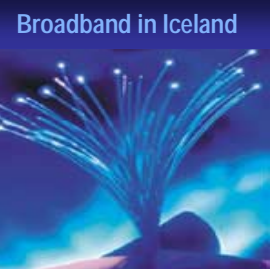
Elements of Success: Marketing and Promotion

- 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



- 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...



Broadband in Iceland



t h a n k s

...takk fyrir...

www.itu.int/broadband

