BOOSTING BROADBAND

and the case of Iceland
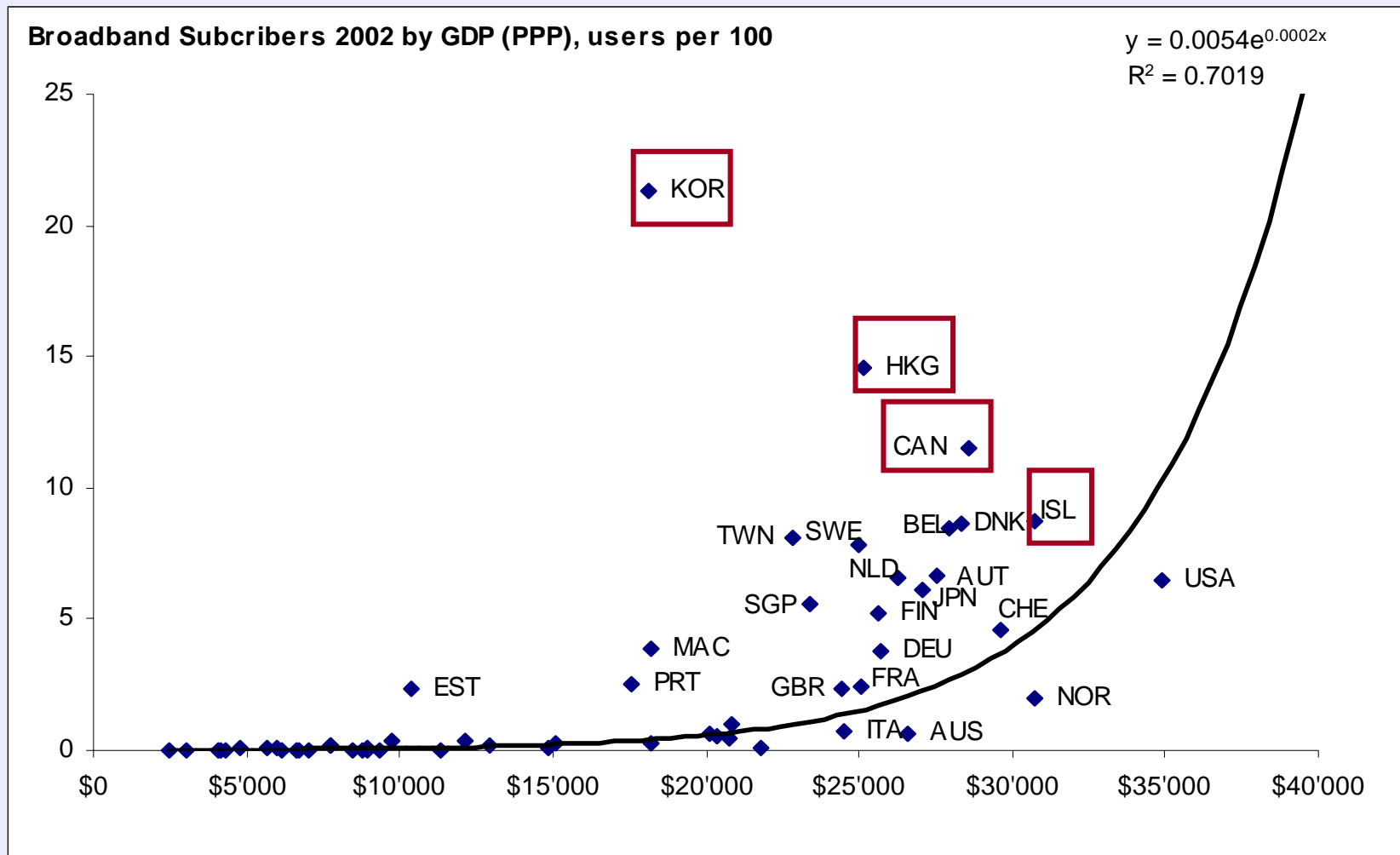

IIR 2003
20th May 2003
Madrid (España)

Lara Srivastava, Policy Analyst
International Telecommunication Union (ITU/UIT)

The birth of broadband: GDP

Broadband Subcribers 2002 by GDP (PPP), users per 100
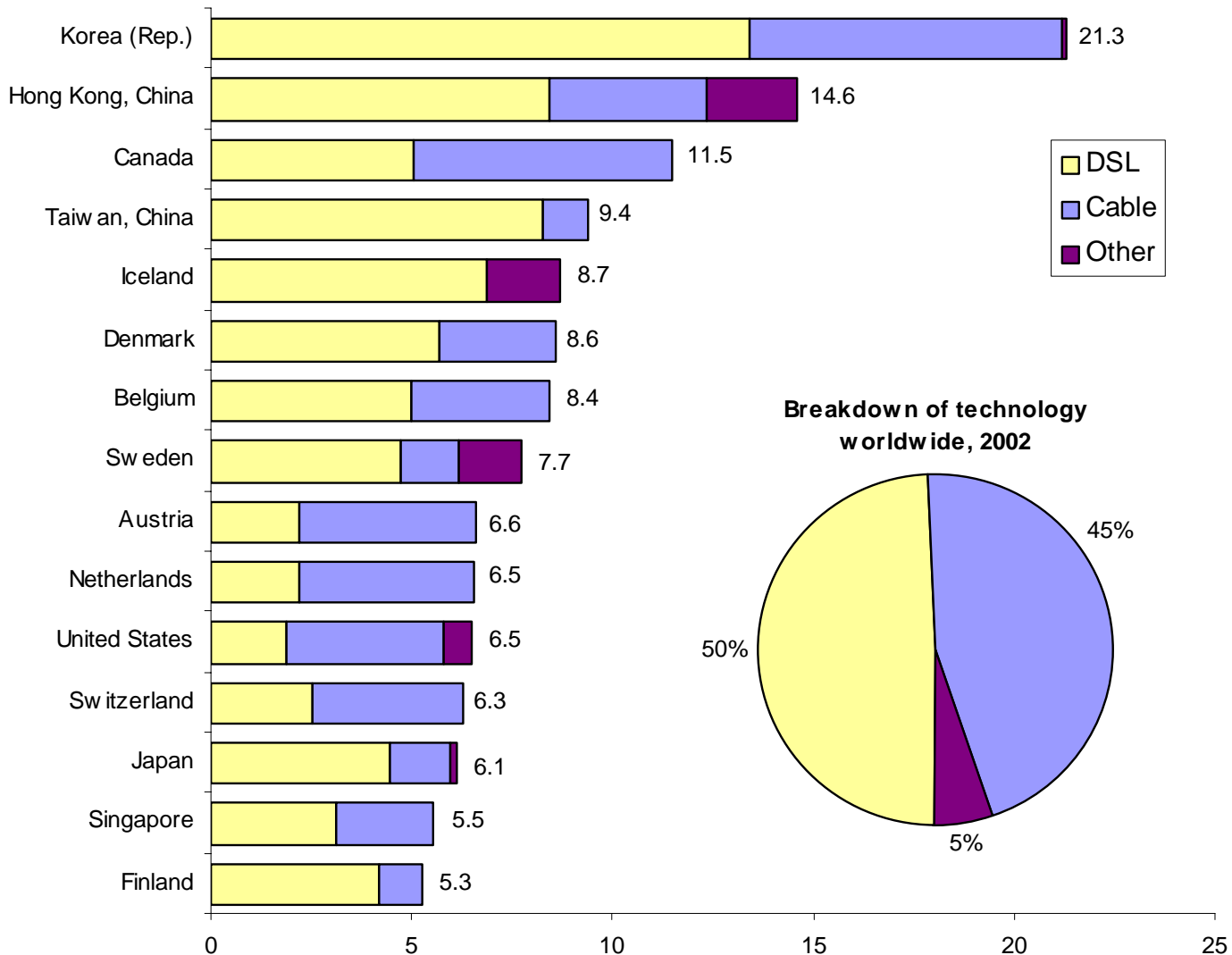
$y = 0.0054e^{0.0002x}$

$R^2 = 0.7019$

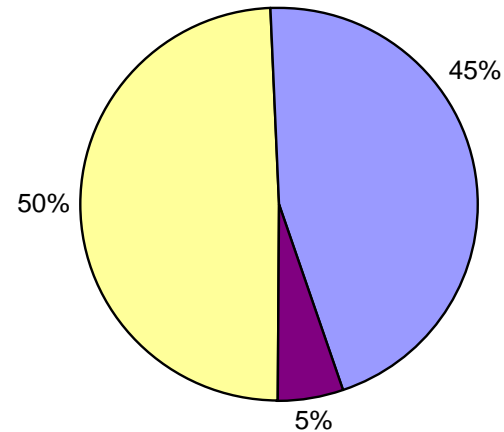*Source: OECD and ITU data, GDP values from the World Bank.*

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The birth of broadband: Top 15

Broadband penetration, subscribers per 100 inhabitants, by technology, 2002

Country	Value
Korea (Rep.)	21.3
Hong Kong, China	14.6
Canada	11.5
Taiwan, China	9.4
Iceland	8.7
Denmark	8.6
Belgium	8.4
Sweden	7.7
Austria	6.6
Netherlands	6.5
United States	6.5
Switzerland	6.3
Japan	6.1
Singapore	5.5
Finland	5.3

Legend:
- DSL
- Cable
- Other

x-axis: 0, 5, 10, 15, 20, 25

Breakdown of technology worldwide, 2002

- DSL 50%
- Cable 45%
- Other 5%

Success Factors

➢ **Demand-side factors**

➢ **Supply-side factors**

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Governments Promoting Broadband

- Different levels of governmental intervention to promote broadband

- Loans and subsidies

- Direct involvement in developing infrastructure
  - E.g. Iceland
- Building certification programs
  - e.g. Korea

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A case in point: Iceland

- One of the least populated and most isolated of Nordic countries

  - 288'000 inh. (2.79/km^2)
  - Highly-educated, urbanized, tech-savvy population

- Rich in natural resources, e.g. geothermal power

- EEA agreement signed in 1994: Iceland adopts decades of regulatory precedent from EU

- Privatization: Attempt to privatize incumbent operator in May 2001

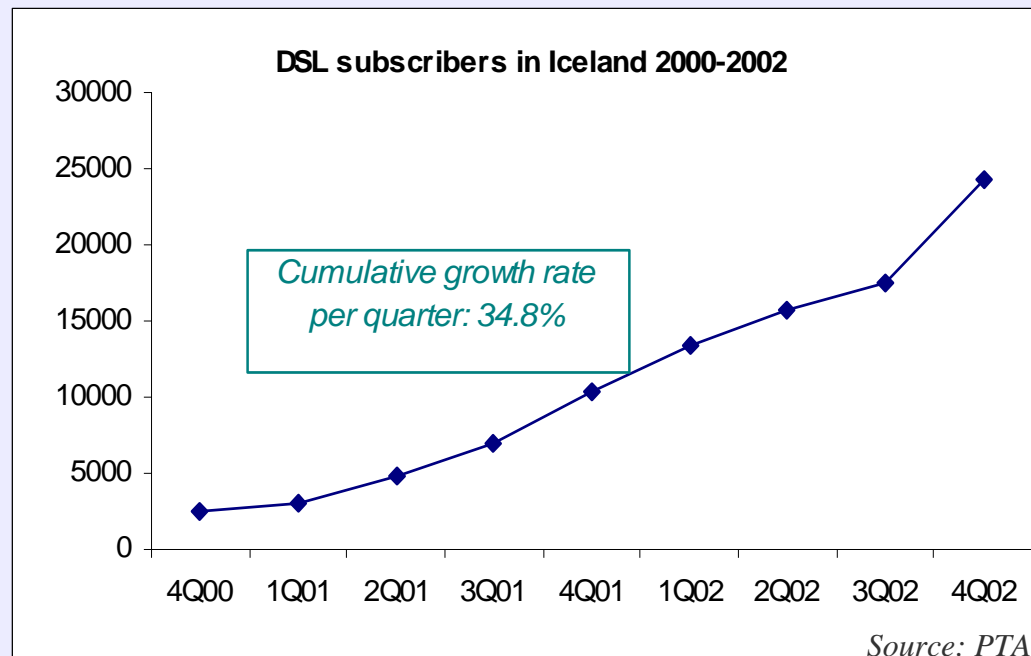Unión Internacional de Telecomunicaciones

The Internet in Iceland

- International connectivity provided through CANTAT-3 (1994), but capacity seen as insufficient, and new cable (FARICE) now planned

- 2001 (end): highest Internet penetration in the world (also 2002 end) and highest combined fixed, mobile & Internet density

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

Country	Value
Iceland	67.9
Singapore	60.5
Norway	59.6
Sweden	51.6
Korea (Rep.)	51.1
United States	50.0
Hong Kong, China	45.9
Japan	45.5
Denmark	44.7
Canada	43.5

Source: ITU

- Broadband penetration higher than other Nordic countries & in top 5 (world)

- Market structure = strong duopoly: Síminn (incumbent) and Íslandssími (since 1999)

- Other key players: Reykjavik Energy (OR), through Lina.net, and National Power Company, through Fjarski
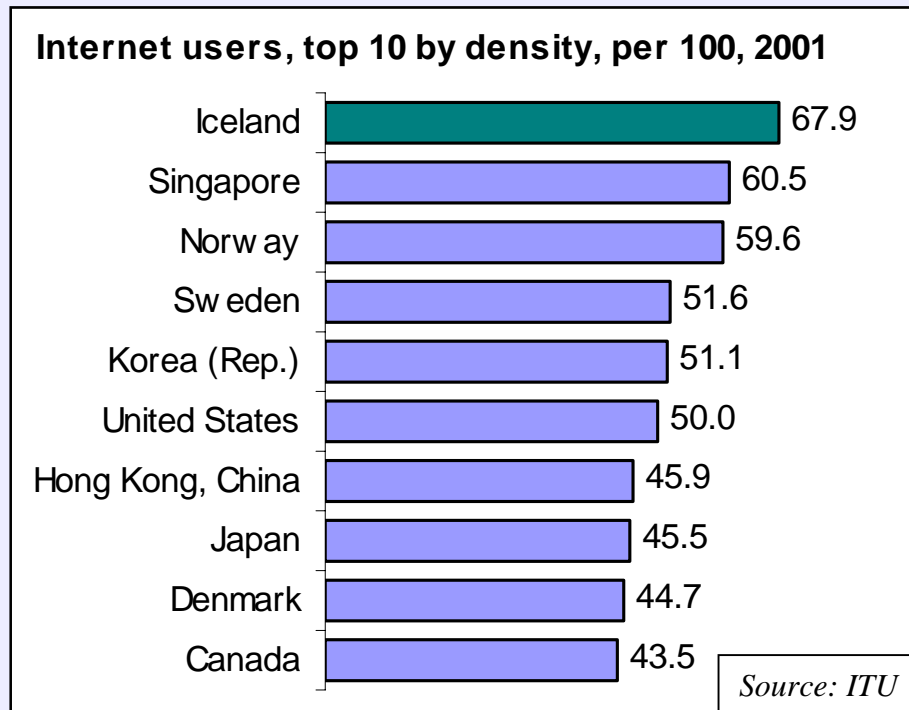
DSL (Copper)

- 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 OECD countries, fastest growth was in last part of 2002

DSL subscribers in Iceland 2000-2002

Cumulative growth rate per quarter: 34.8%

Fibre networks and FTTx

- National Backbone: fibre ring around Iceland (Síminn '86)
  - Also 2 metro access networks (Síminn '95, Lina.net '01)

- Fibre initially deployed for rebroadcast of analogue TV

- New Builldings: Since 1995, all equipped with FTTC (curb)

- Old Bldgs

  - With > 6 apts: FTTB + coaxial between floors

  - With < 6 apts: FTTC + coaxial to building/between floors

- Síminn offers resid. fibre access - IuB (512/128 kbit/s):

  - Since June 2002. 500 subscribers in Jan 2003
  - 15'000 homes have access to IuB (30'000 by end 2003)

"The Fibre Island"

Source: Síminn

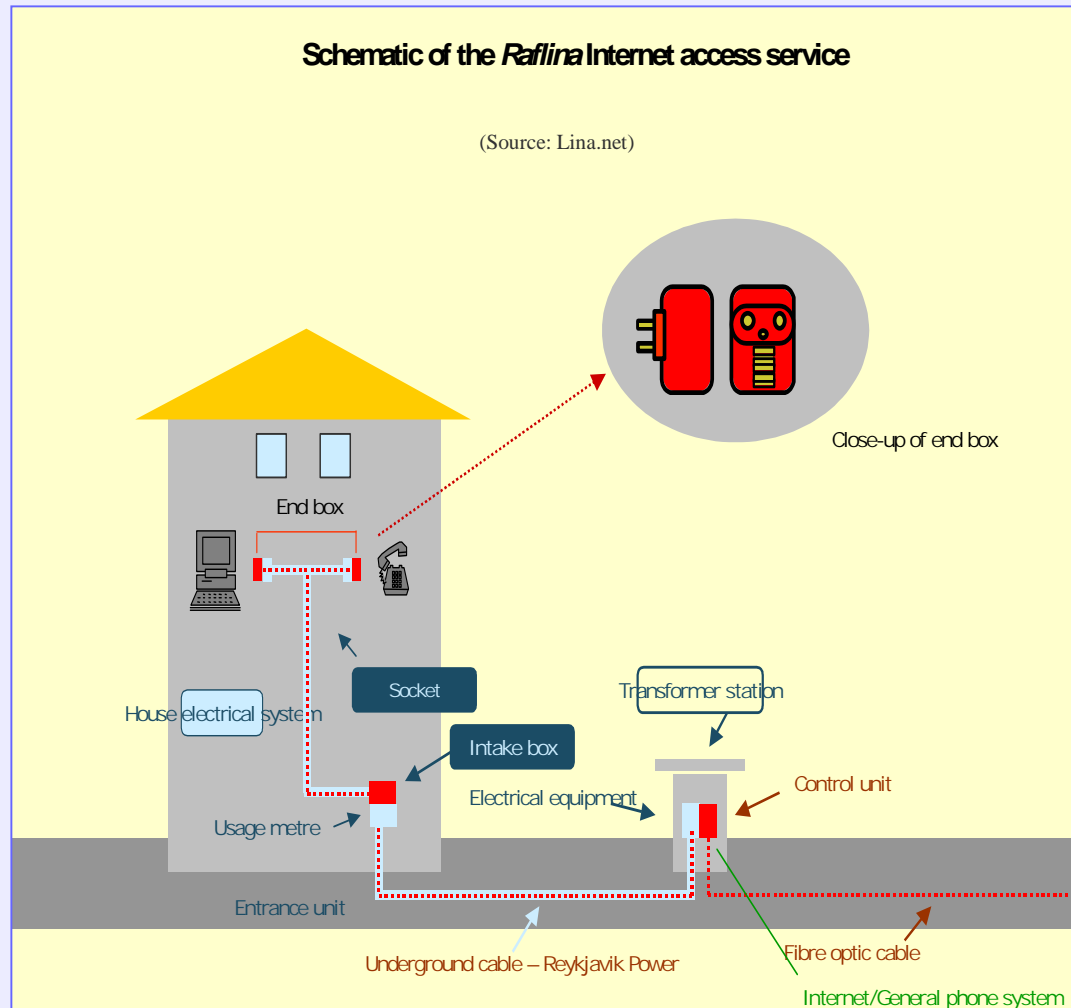Unión Internacional de Telecomunicaciones

Broadband 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)

Schematic of the *Raflina* Internet access service

(Source: Lina.net)

Close-up of end box

End box

House electrical system

Socket

Intake box

Usage metre

Transformer station

Electrical equipment

Control unit

Entrance unit

Underground cable – Reykjavik Power

Fibre optic cable

Internet/General phone system

Wireless Broadband 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…

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- ## Demographics

  – Small, concentrated, highly-educated population

  – Geographic isolation

  – Receptivity to technology

- ## Infrastructure

  – Fibre rollout mostly state-funded, through incumbent operator or public utility company

  – Focus on penetration of PCs and broadband in educational institutions

    – e.g. FSNet and "broadband model schools project"

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Elements of Success: Regulation and Policy

- **Enabling regulatory framework**
  - Unbundling the local loop (ULL)
  - 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)
- **Low wholesale and retail charges**
  - LLUB (monthly charges near EU average and low set-up)
  - DSL subscription and rural access (2 mbit/s proposal)
- **National Information Society Policy**
  - 1996 policy and evolution
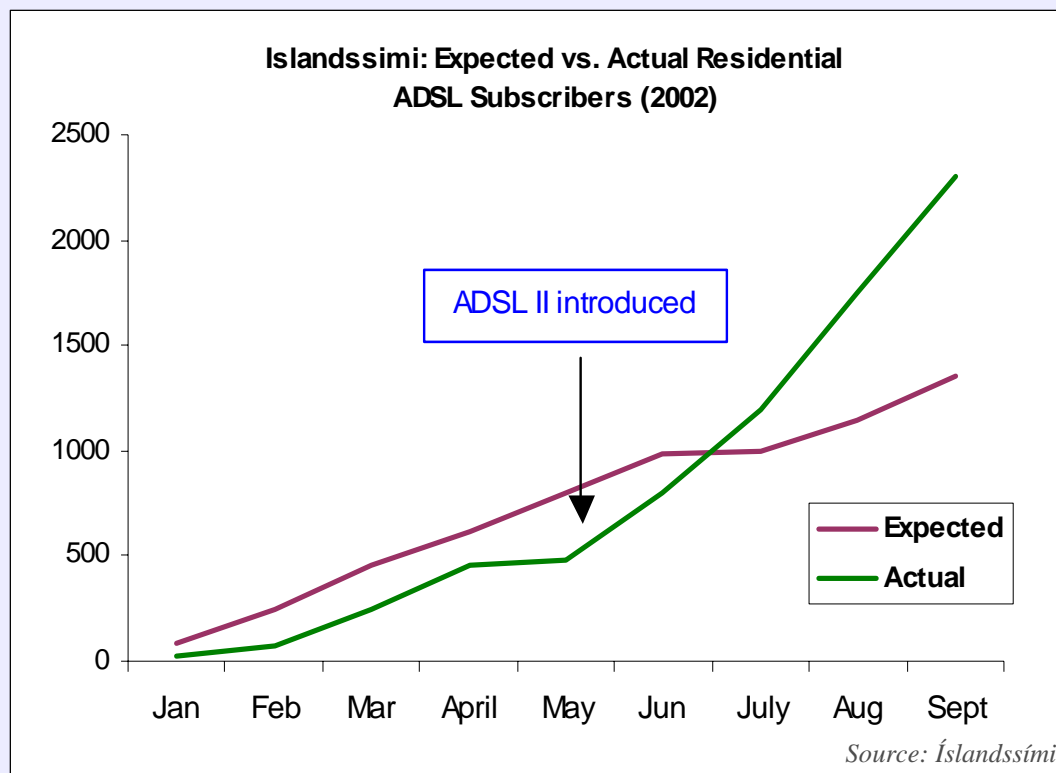- **Creation of Information Society Task Force (ISTF)**
  - Set up in 1998 under PM's office with specific mandate
  - Budget allocation for a number of information society projects

Elements of Success: Marketing and Promotion

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

Islandssimi: Expected vs. Actual Residential ADSL Subscribers (2002)

ADSL II introduced

Expected
Actual

Source: Íslandssími

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

The road ahead for Iceland

- This year will mark the end of the extended mandate of the Info Society 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

- Specific challenges:

  - Cap on foreign download

  - Increasing competition on LLU

- Other (more universal) challenges:

  - Finding the content…and *"who owns what"*

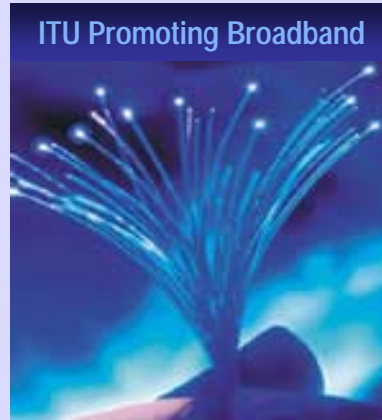 - How to shift from an 'early adopter' economy to a mass market…

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Concluding Remarks

1. **Competition**

2. **Demand and supply**

3. **The role of government**

4. **Marketing initiatives**

5. **Partnerships**

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ITU Promoting Broadband

g r a c i a s – t h a n k s

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www.itu.int/spu/broadband

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