INTUG

INTUG, Broadband 26 x 2004

www.INTUG.net

broadband

a global user perspective

Ewan Sutherland

Executive Director

International Telecommunications Users Group

ewan@intug.net

INTUG contents

- about INTUG
- benchmarking broadband
- Africa
- Republic of Korea
- Japan, China and India
- European Union
- IP telephony
- conclusions

INTUG what is INTUG?

- members
  - national associations
  - corporations
  - individuals
- activities
  - ITU and WTO
  - OECD
  - APEC TEL, CITEL and the European Union

INTUG our aims

- real and effective competition
- genuine choice for users
- lower prices
- higher quality
- more innovative services
- constructive co-operation with
  - international bodies
  - governments
  - regulators

INTUG priorities

1. open access to global mobile networks
2. regulatory best practice
3. liberalization
4. universal access
5. **broadband**
6. leased lines
7. IP telephony
8. numbering

INTUG broadband priorities

- access to incumbent operator networks
  - advocacy of local loop unbundling
  - support for wholesale broadband products
- infrastructure competition
  - separation of the ownership of potentially competitive networks, such as cable television and the PSTN
  - ensuring that licensed and unlicensed spectrum is available for operators and users
- statistics
  - rapid reporting of numbers of lines and users
  - regular reporting and review of quality of service

INTUG benchmarking countries

- against:
  - G7/G8 and OECD
  - European Union
  - Japan and Korea
  - China and India
- technologies and services:
  - teledensity and growth
  - prices and line speeds
  - advanced technologies
  - revenues

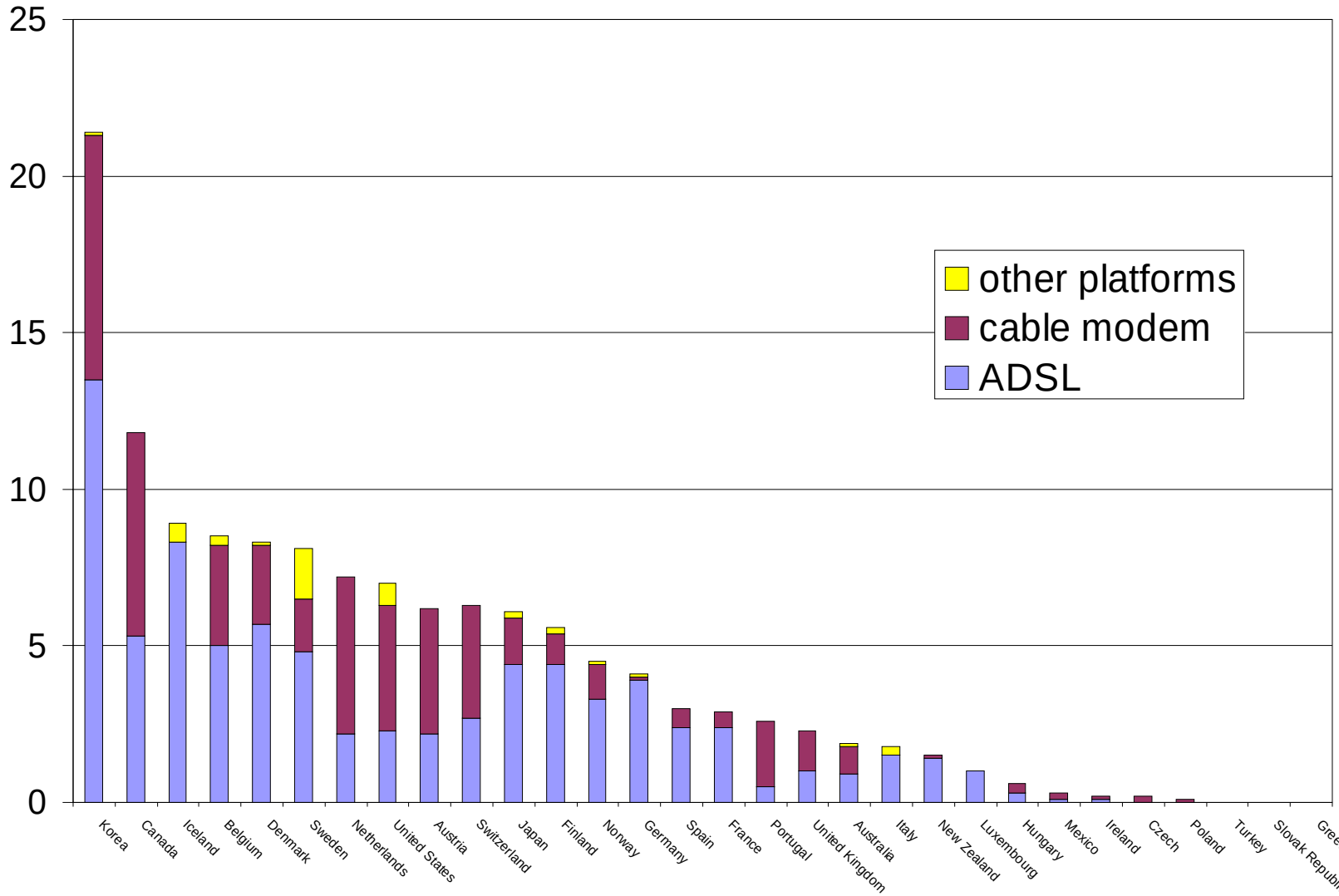
INTUG africa

- fixed network growth has been minimal
- GSM with pre-paid cards has driven growth
  - but how can it migrate to broadband?
  - will pay per minute work?
- traditionally long delays in adoption of new technologies and services
- high cost of International Internet Connectivity (IIC) because of:
  - lack of competition in international leased lines
  - incumbent operators overcharging or blocking access to submarine cables and VSAT

ADSL now available in

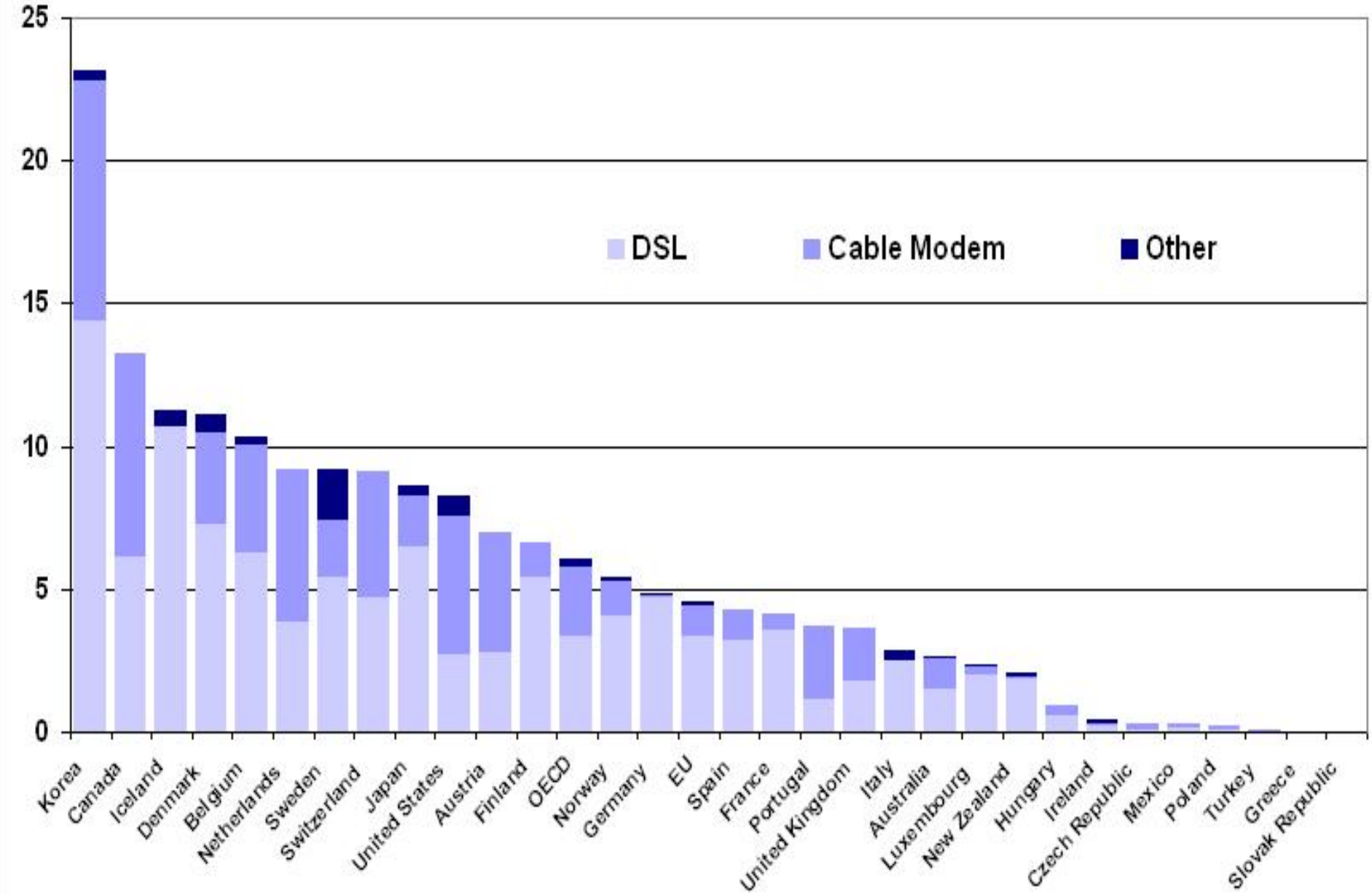
- Morocco
  - Maroc Telecom and Wanadoo
- Algeria
  - Wanadoo & Asila (Telecom Algerie + Daewoo)
- Tunisia
  - TopNet ADSL and Tunet
- Egypt
  - Glory “Don't Slow Life” (DSL)
  - Mena ADSL and Internet Egypt ADSL
- Libya
- Senegal
- South Africa

INTUG OECD at end of 2002

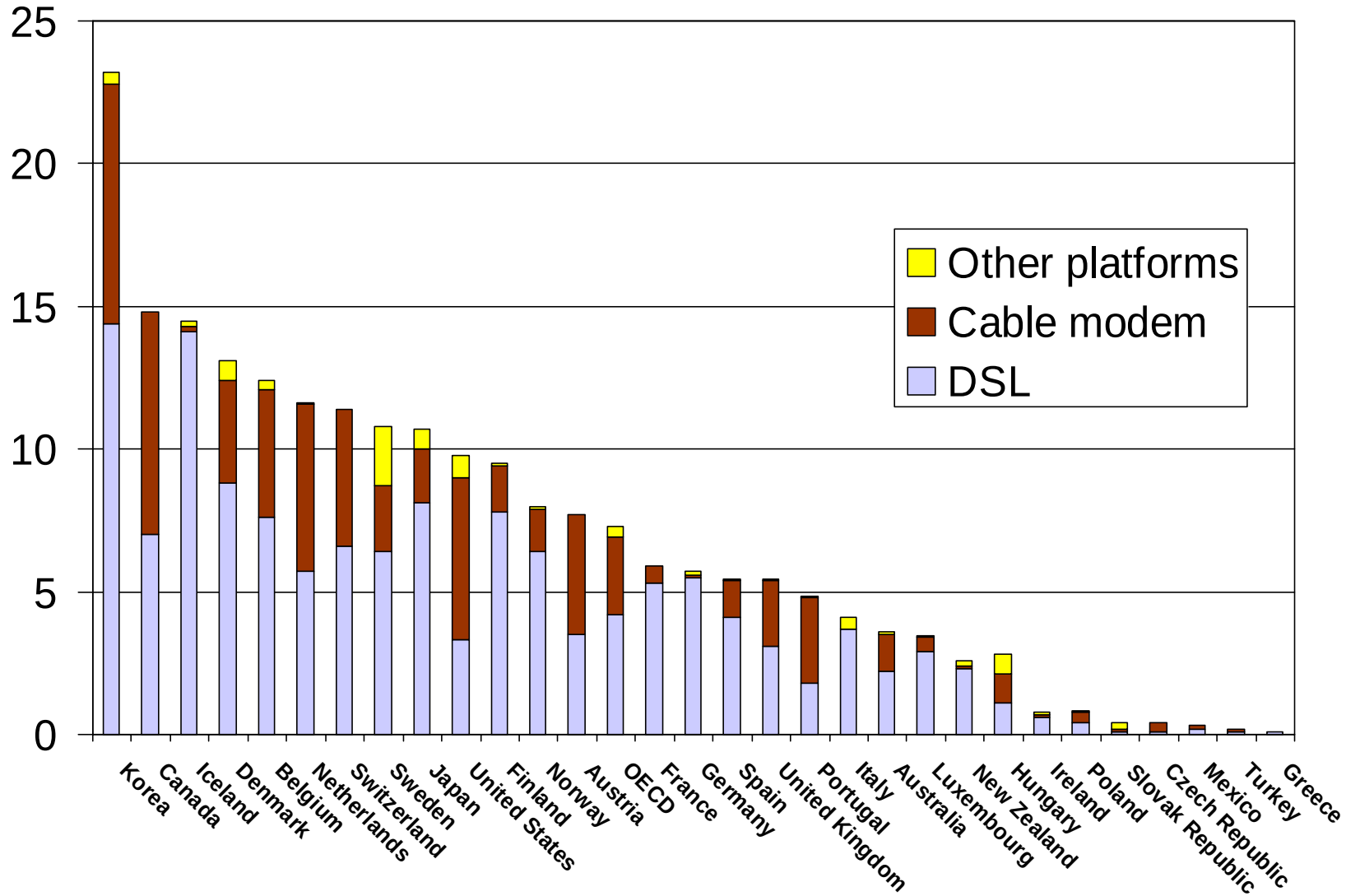


Broadband access in OECD countries per 100 inhabitants, June 2003

Source: OECD

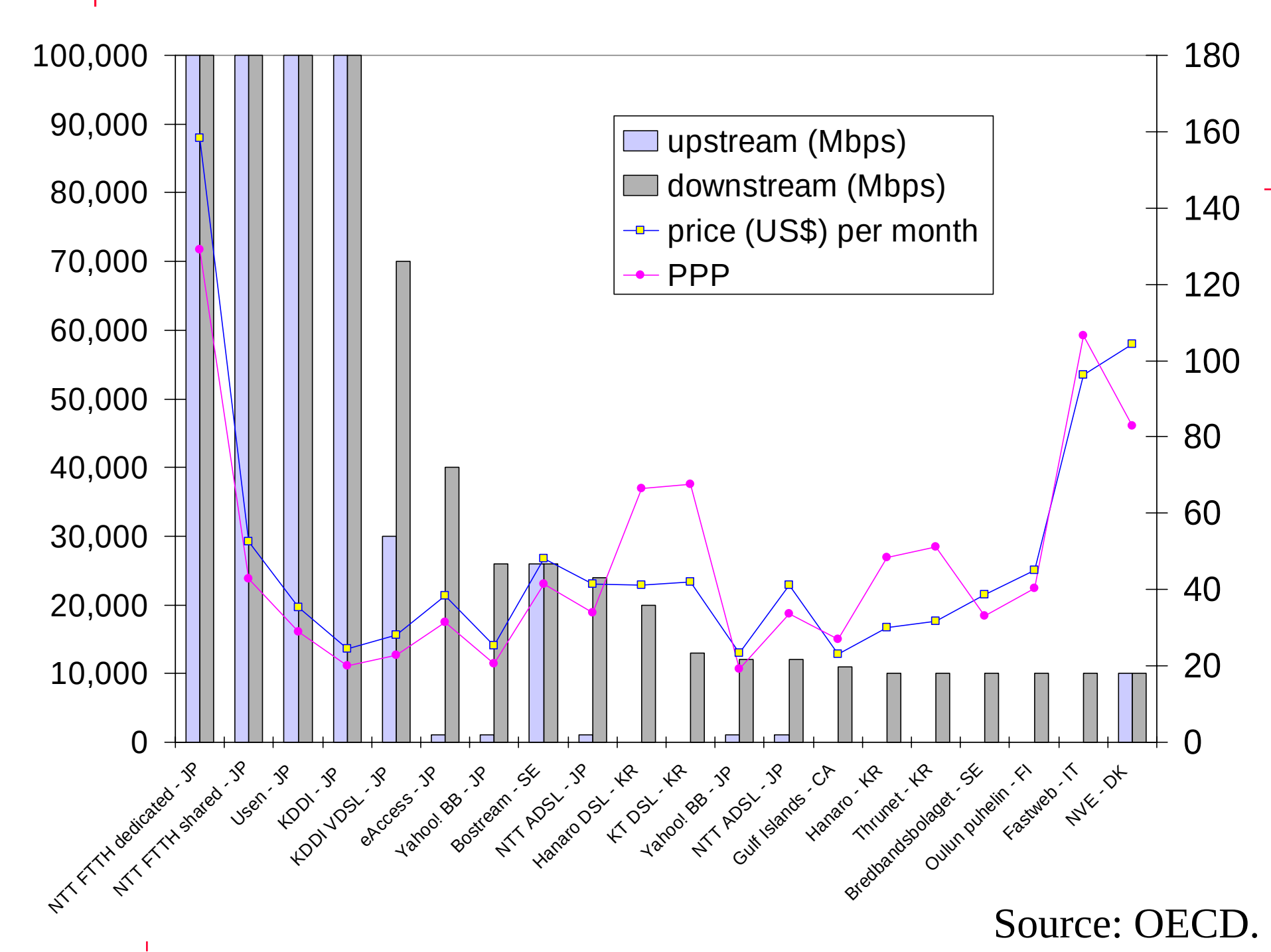


INTUG OECD at end of 2003



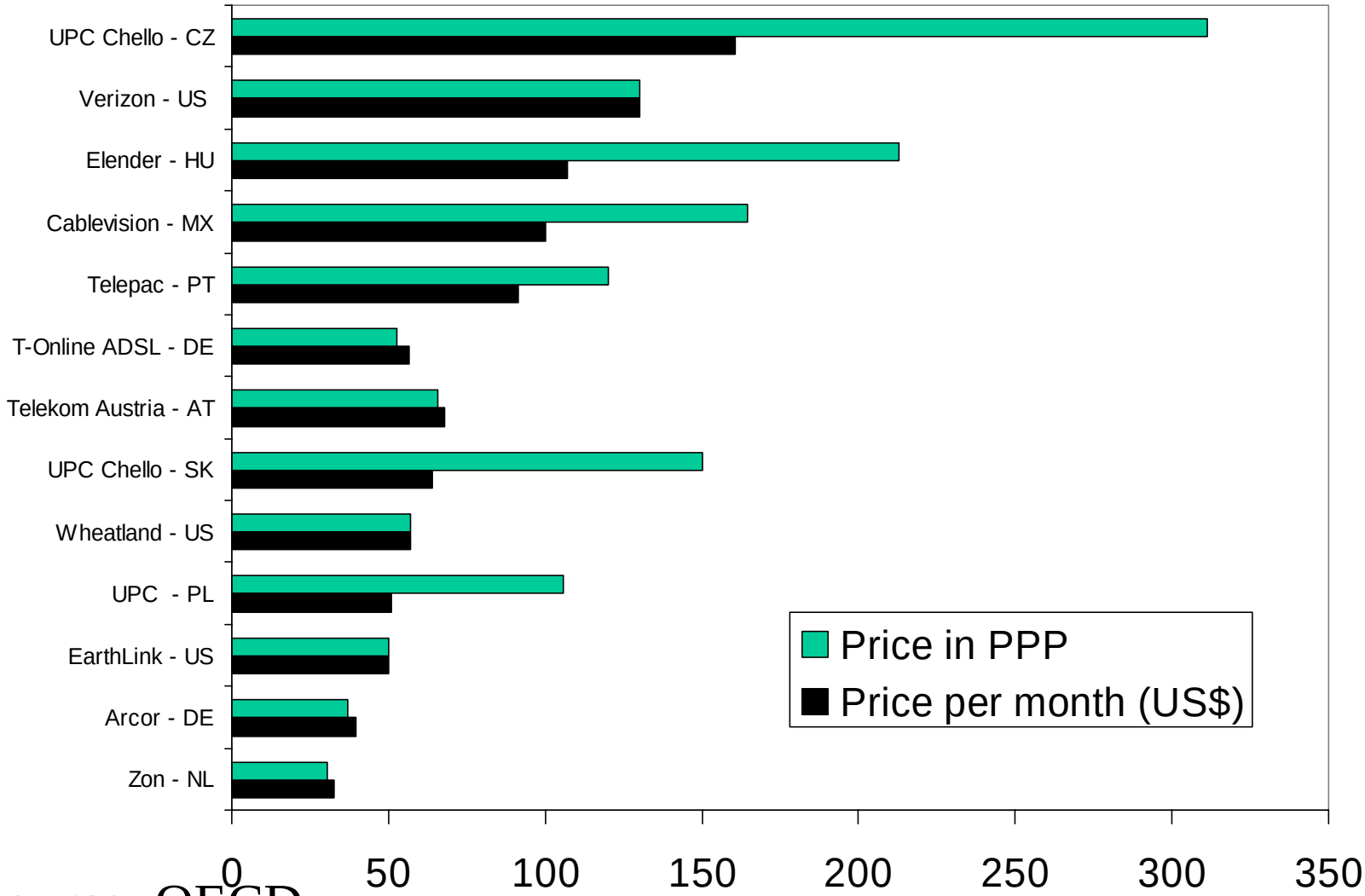
OECD price study

- prices are as at the end of 2003
- a key indicator in assessing the state of broadband development
- Japan and Korea are significantly ahead of the rest of the OECD having the lowest prices and highest capacity available.
- followed by Canada and the United States where prices are low and levels of baseline capacity offers exceed most other countries
- in Europe, prices are generally higher and baseline and premium services set at lower capacity levels.
  - Belgium is the leading European country in terms of baseline offers
  - Sweden is emerging as the European pace setter at higher speeds


100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
180
160
140
120
100
80
60
40
20
0
upstream (Mbps)
downstream (Mbps)
price (US$) per month
PPP
NTT FTTH dedicated - JP
NTT FTTH shared - JP
Usen - JP
KDDI - JP
KDDI VDSL - JP
eAccess - JP
Yahoo! BB - JP
Bostream - SE
NTT ADSL - JP
Hanaro DSL - KR
KT DSL - KR
Yahoo! BB - JP
NTT ADSL - JP
Gulf Islands - CA
Hanaro - KR
Thrunet - KR
Bredbandsbolaget - SE
Oulun puhelin - FI
Fastweb - IT
NVE - DK

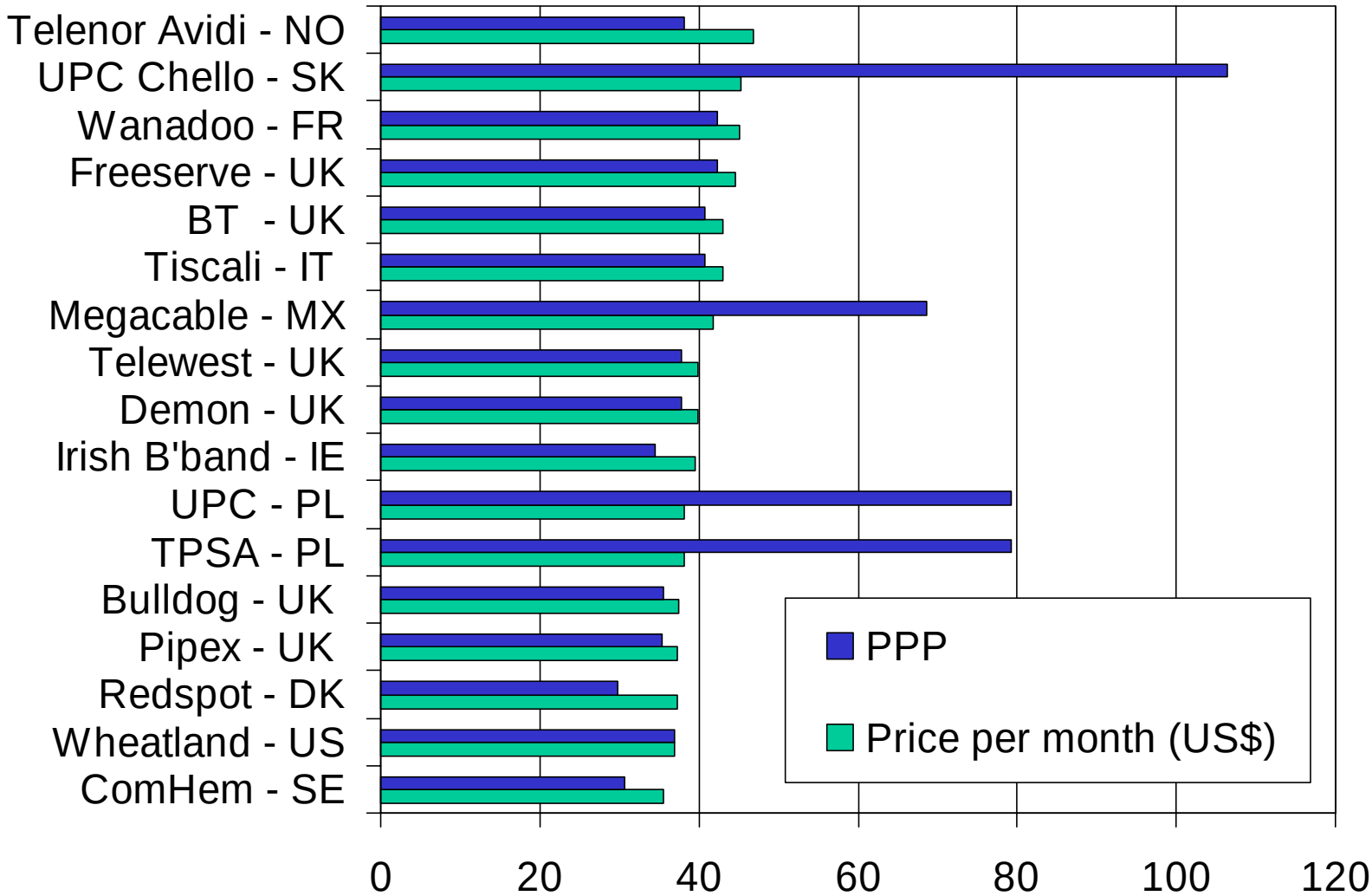
Source: OECD.

INTUG 768kbits/s unlimited download



Source: OECD.

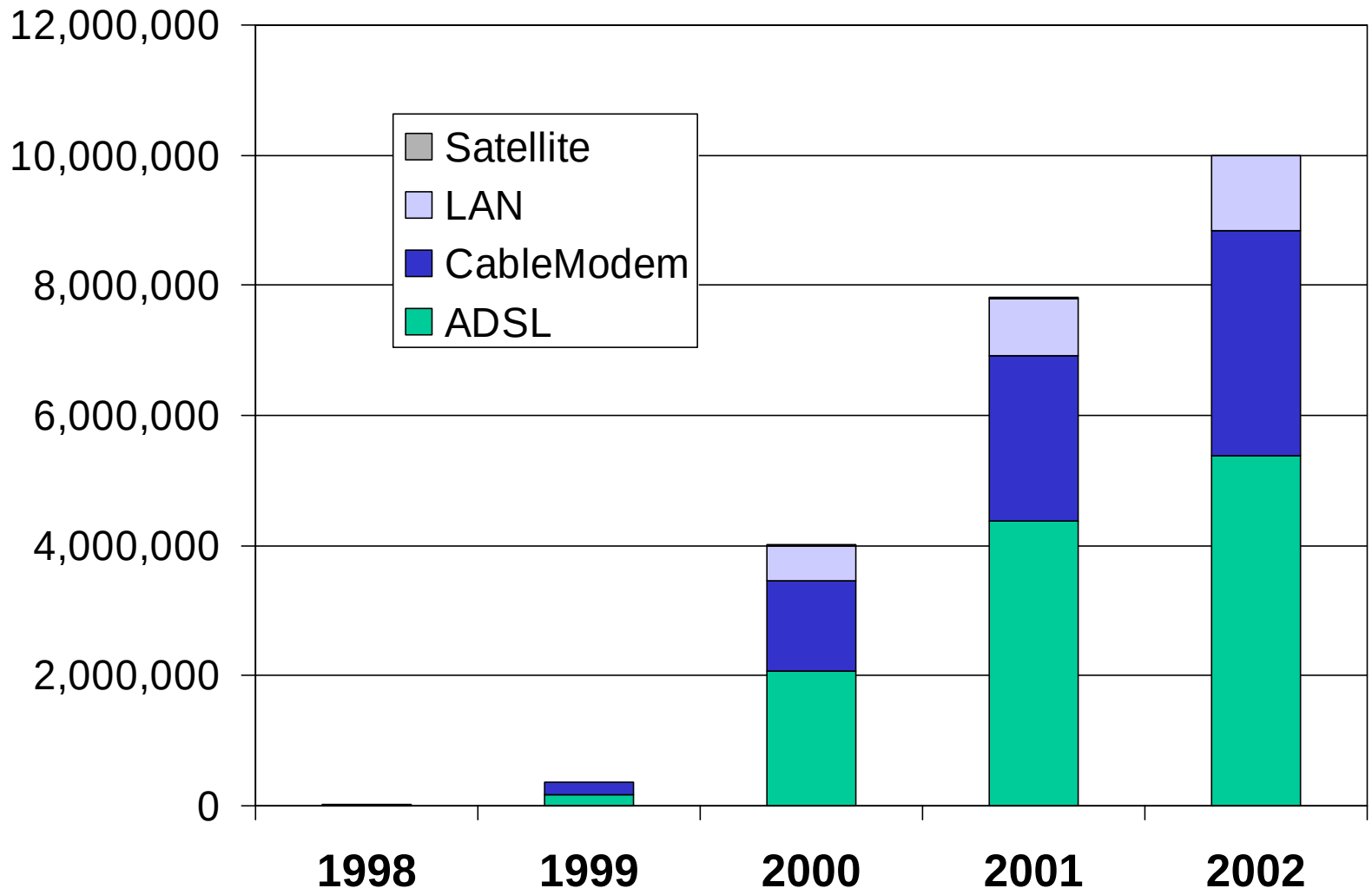
INTUG 512kbits/s unlimited download



Republic of Korea

- economic growth since Korean War
- strength and depth in electronics
- cellphone exports in 2003 were US$ 50Bn
- global broadband leader:
  - market saturated Q4 of 2002
  - 11M lines at 8Mbps at US$ 25 per month
  - very high proportion of high-rise apartments
  - very high level of home PC ownership
  - plus 25,000 WLAN hot spots

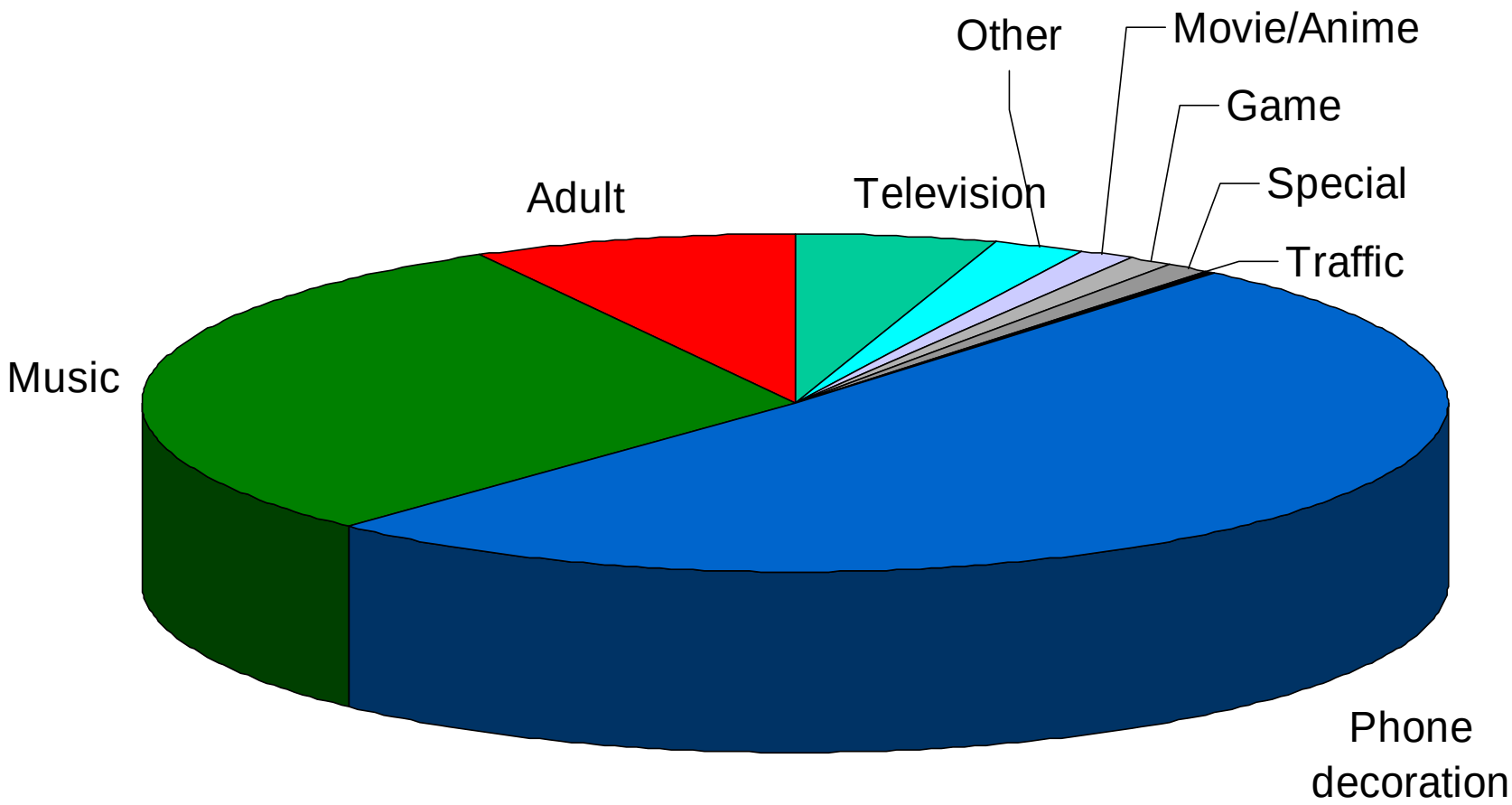
INTUG Korean broadband growth



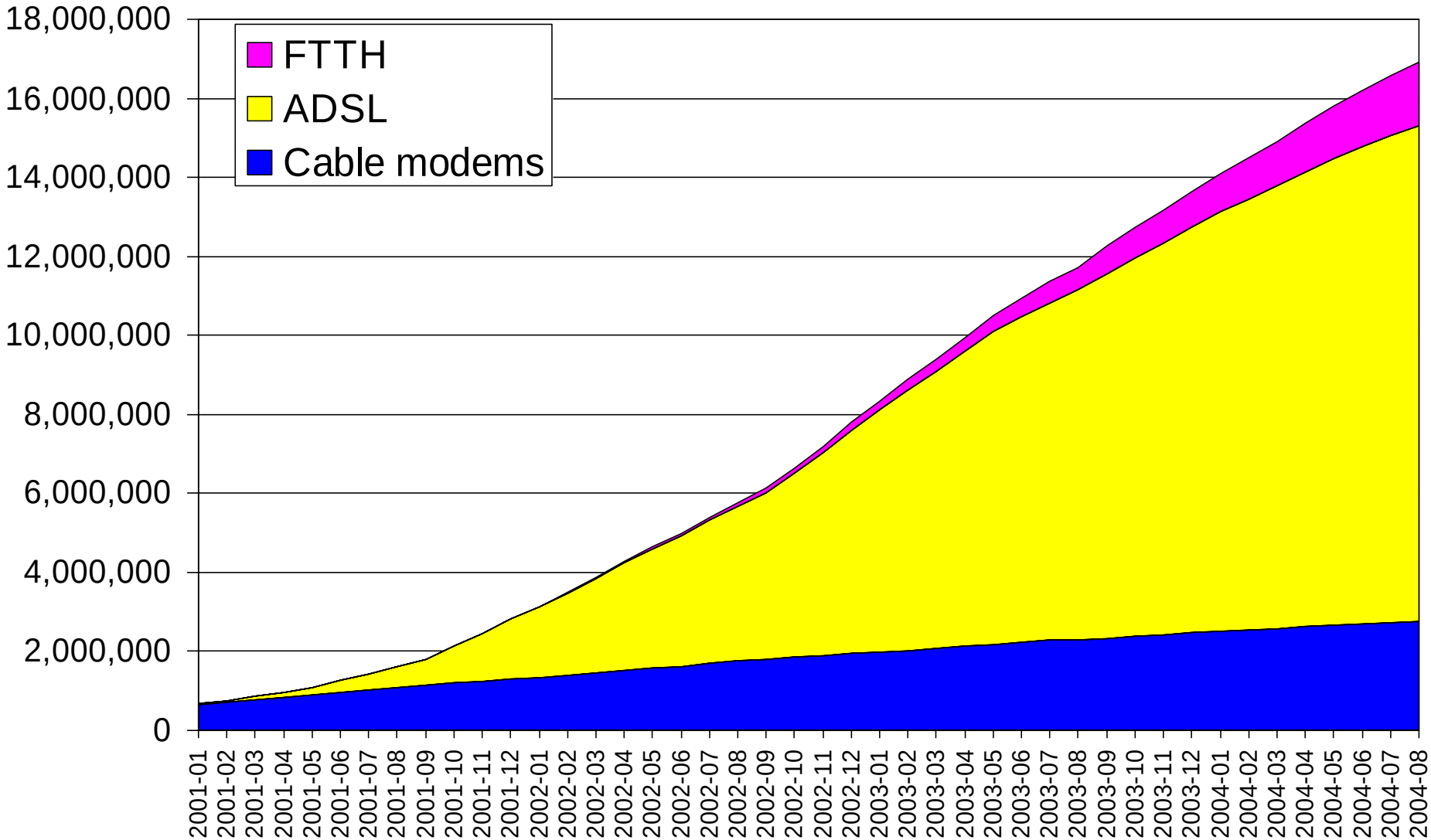
Korea next generation

- 3G deployed and fully operational
- ADSL migrating to VideoDSL (20+ Mbps)
  - KT Megapass
    1.4M VDSL lines at end of 2003 (of 5.5M)
  - Hanaro Hanafos (20M down, 6M upstream)
    0.2M VDSL lines at Feb 2004 (of 2.7M)
- broadband convergence network:
  - IEEE 802.16 on 2.3 GHz
  - will assign spectrum February 2005
  - three operators

INTUG SKTelecom “June” 3G hits

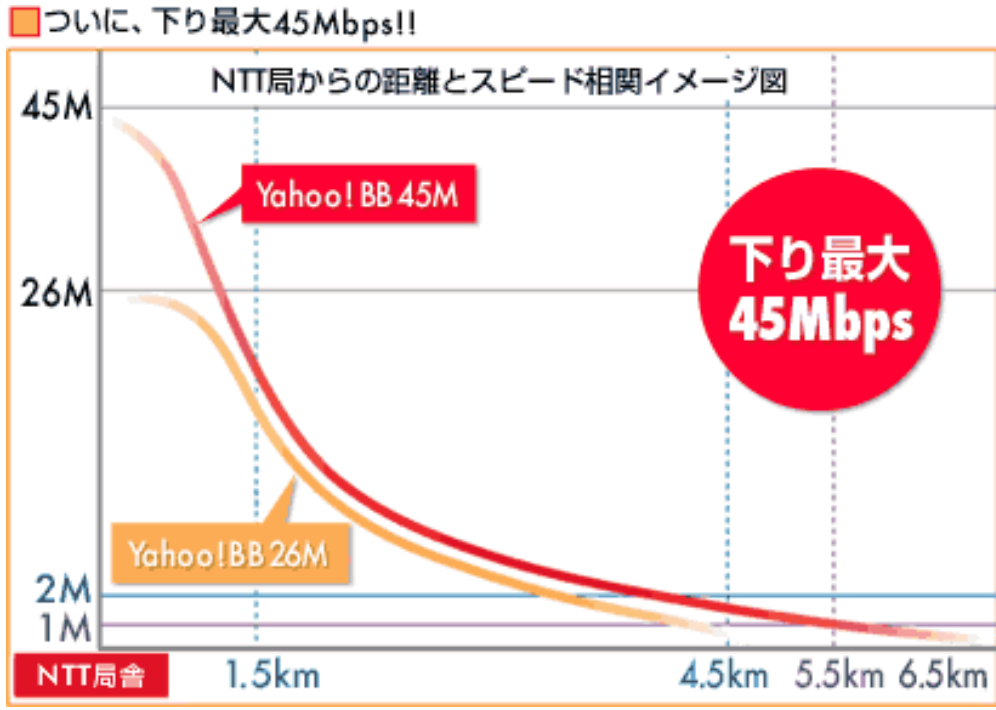


INTUG Japanese broadband



INTUG some monthly charges

- Yahoo! BB ADSL
- latest offer
  - 50Mbps (down)
  - 3Mbps (up)
  - ¥ 4,122
- 26Mbps ¥ 4,017
- 12Mbps ¥ 3,702
- 8Mbps ¥ 3,128
- Reach ¥ 3,128 0.96Mbps (up and down)

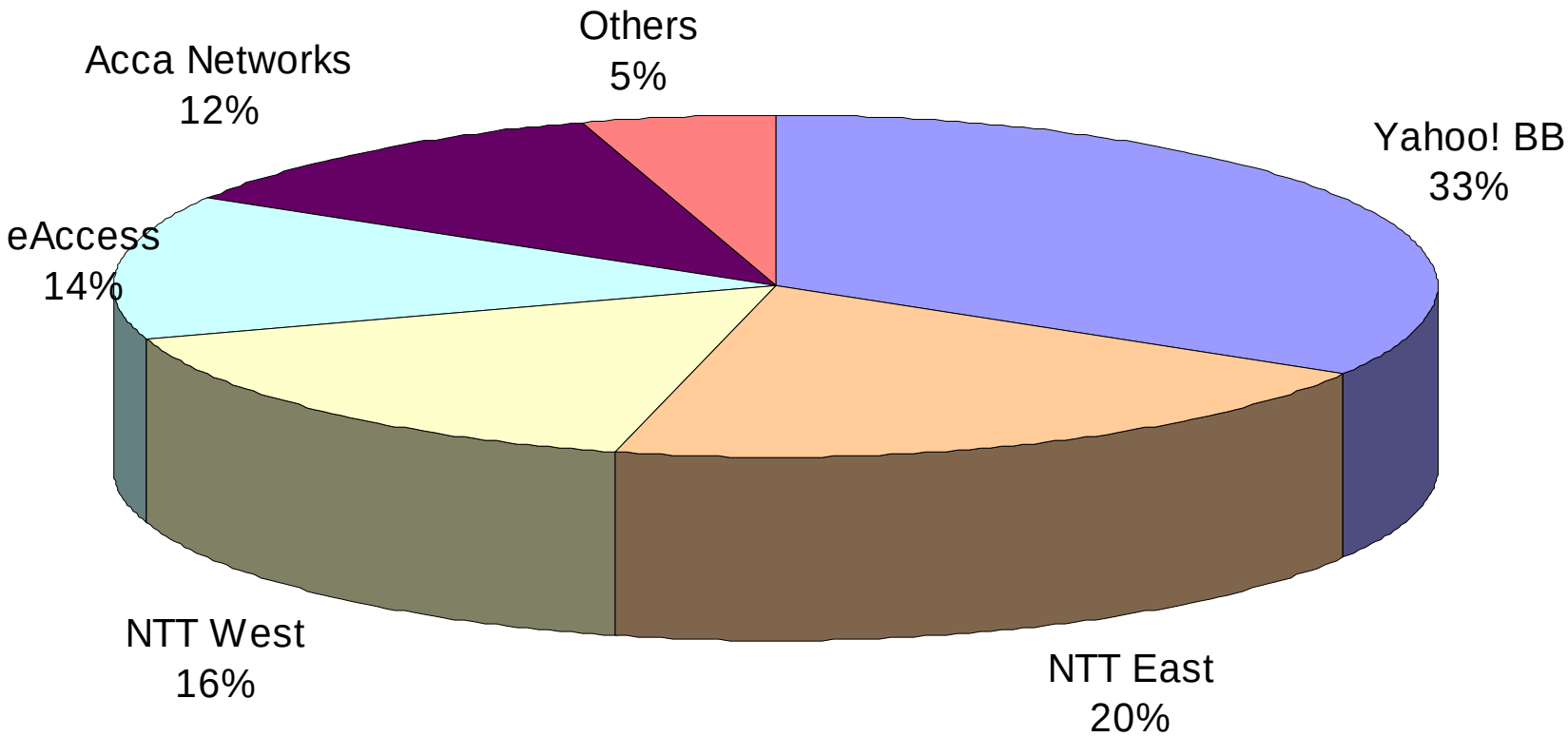


US$ 0.91 = ¥ 100 = EUR 0.74

INTUG residential Wi-Fi

- fixed broadband bandwidth is too much for one user
- increase access with Wi-Fi
- ¥ 1,000 per month for router rental
- originally 802.11b (11Mbits/s)
- increased to 802.11g (54Mbits/s)
- adding public hot spots and related services

INTUG ADSL market shares



INTUG FTTx

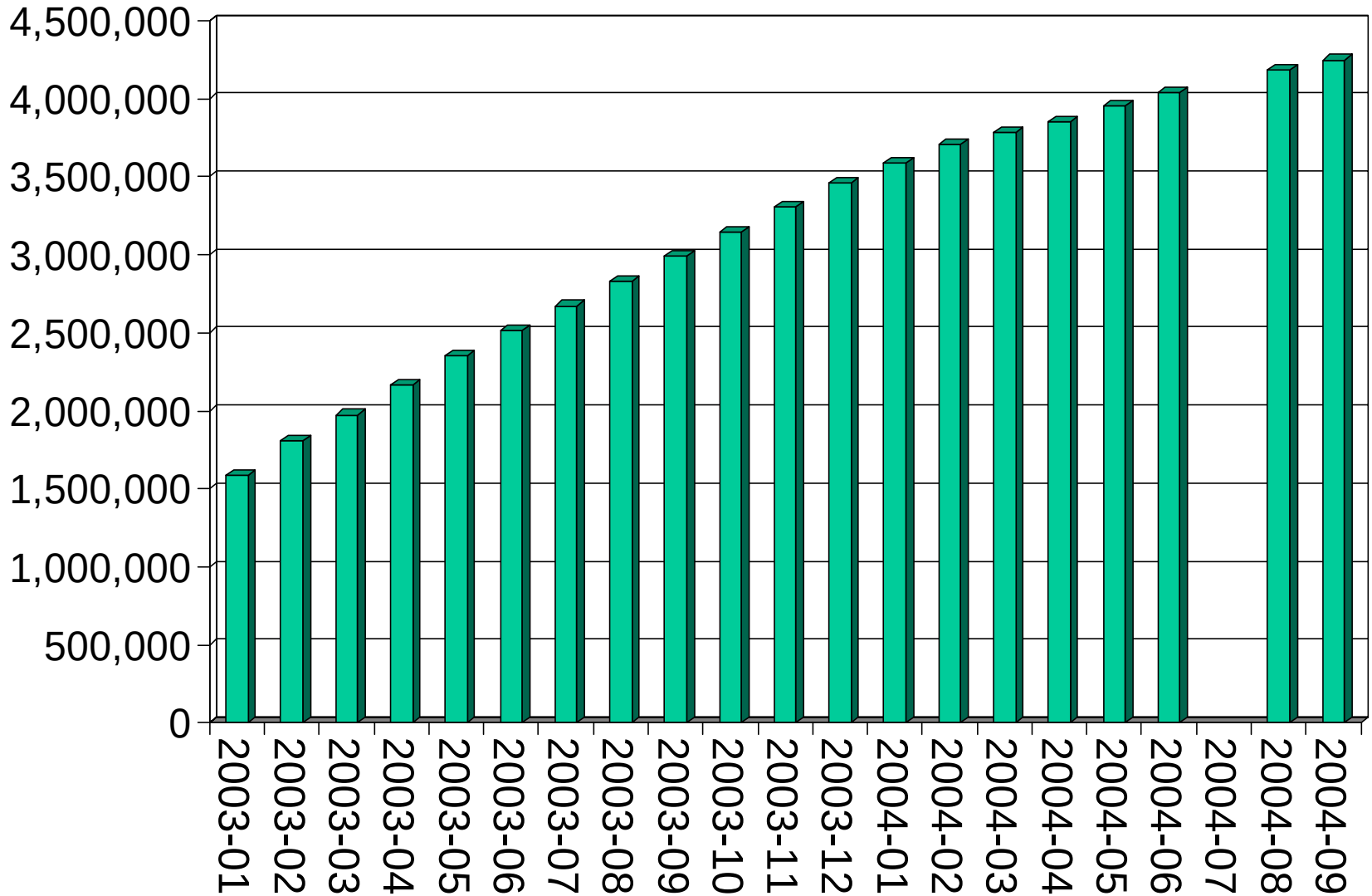
- fibre in incumbent backhaul network opened to competitors
- Fibre To The Home (FTTH)
- Fibre To The Building (FTTB)
  - market leader NTT B-FLETS
  - Tokyo Electric Power Company (TEPCO) 100Mbps for FTTH ¥6,480 per month
  - Yahoo! BB Hikari launched October ‘04
- also Usen, a cable television network

US$ 0.91 = ¥ 100 = EUR 0.74

Voice over IP

- Yahoo! BB launched in August 2002
- NTT launched in February 2003
- some operators peering August 2003
- free on-net calls offer benefits for large operators
- dedicated 050 number range
- cheap gateways to PSTN

INTUG Softbank BBphone (lines)



japanese 3G

- needs to be fast, given ADSL speeds
- strong anti-spam measures
- flat rate prices for handset services, but charge per kilobyte for attached devices
- KDDI
  - up to 2.4 Mbps downlink and 144kbps or more uplink (best efforts)
- NTT DoCoMo FOMA
  - change of CEO and price cuts
- Vodafone KK
  - launch due soon?

ubiquitous network

- at any time
- in any place
- with any object

- its construction will have a major effect on the revitalisation of the Japanese economy
- the idea is a rediscovery of “ubiquitous computing” conceived at Xerox PARC
- a paradigm and not an element

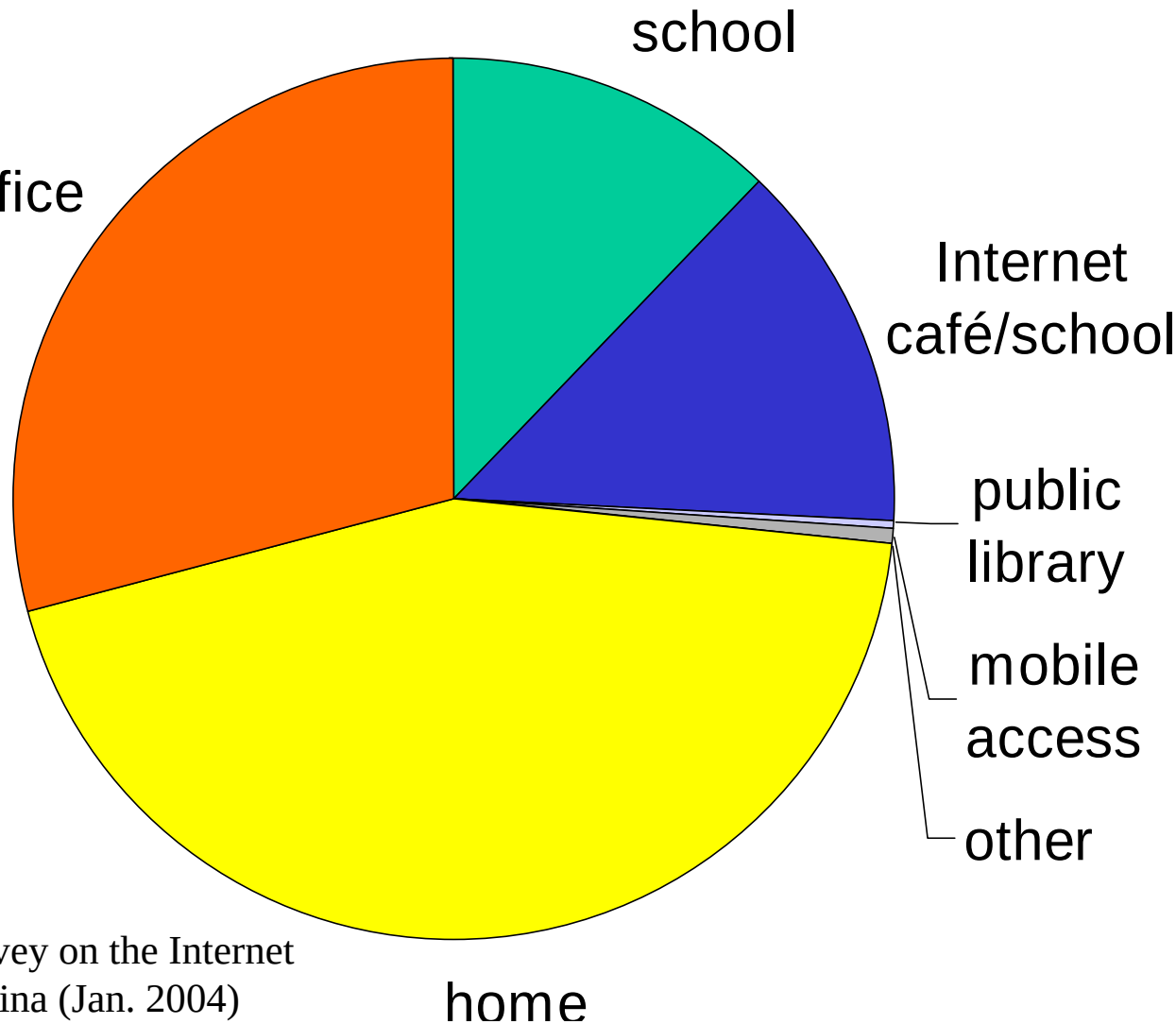
INTUG japan - overview

- chasing Korea very hard
- economies of scale:
  - network operators
  - manufacturers
    - modems
    - broadband appliances
  - application and service providers
- finding out what innovative customers and service providers are doing
- creating an economic cluster around a vision

INTUG china

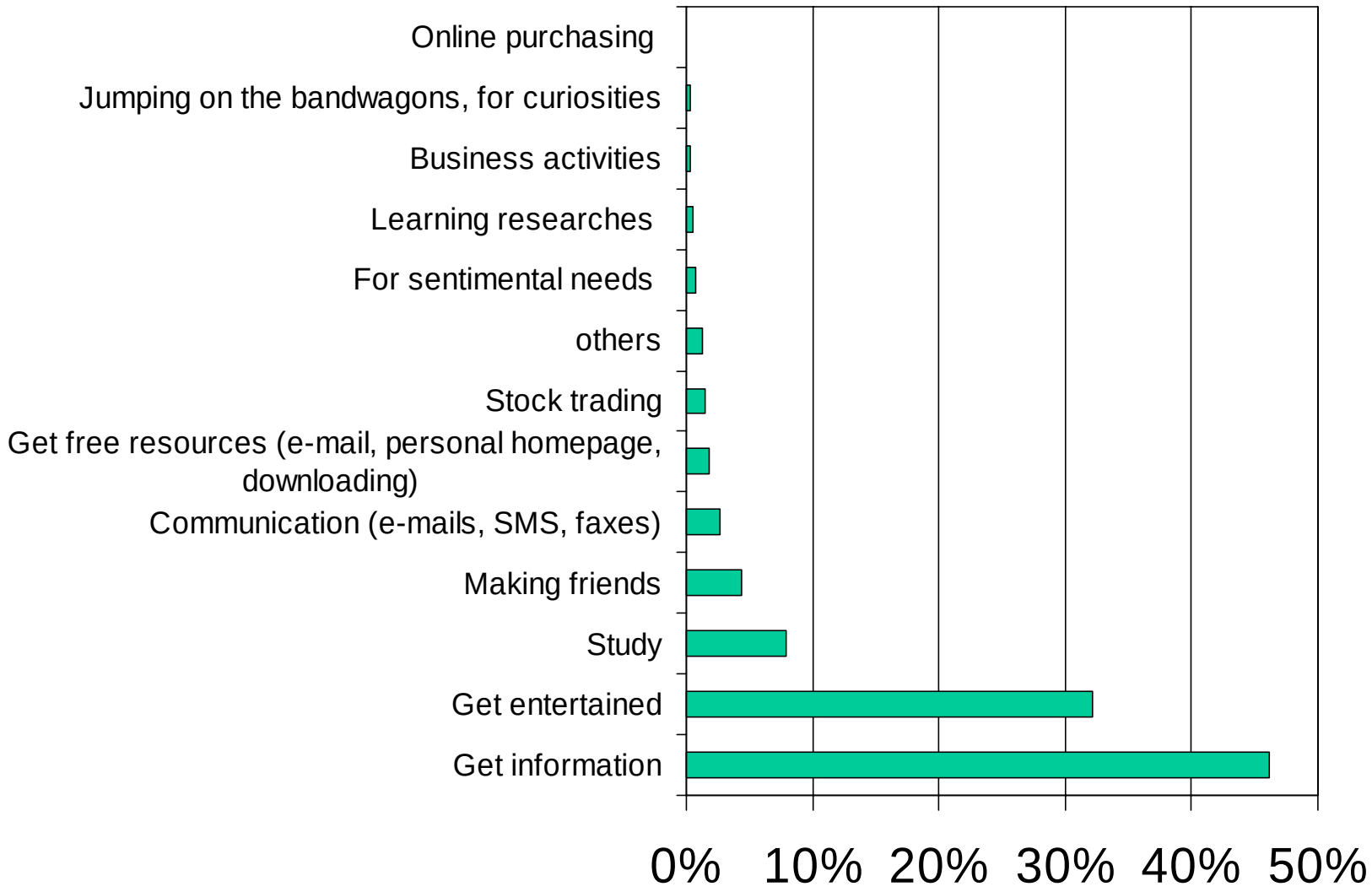
- very rapid growth
- huge economies of scale
- cheap domestically manufactured equipment
- using many different technologies
- multi-storey apartment blocks easily connected
- huge regional disparities

INTUG china - place of access



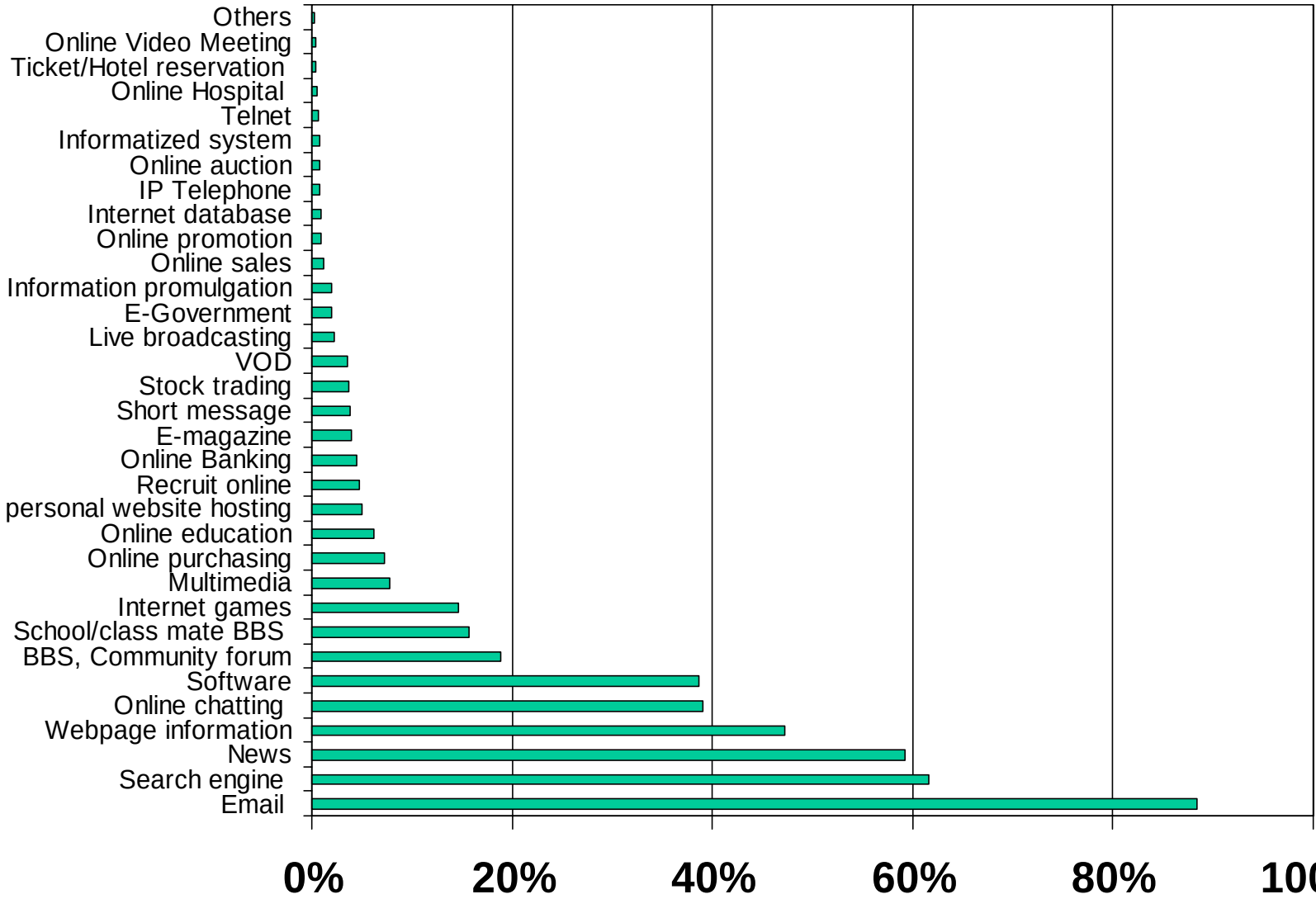
13th Statistical Survey on the Internet Development in China (Jan. 2004)

INTUG primary goal in accessing the Internet

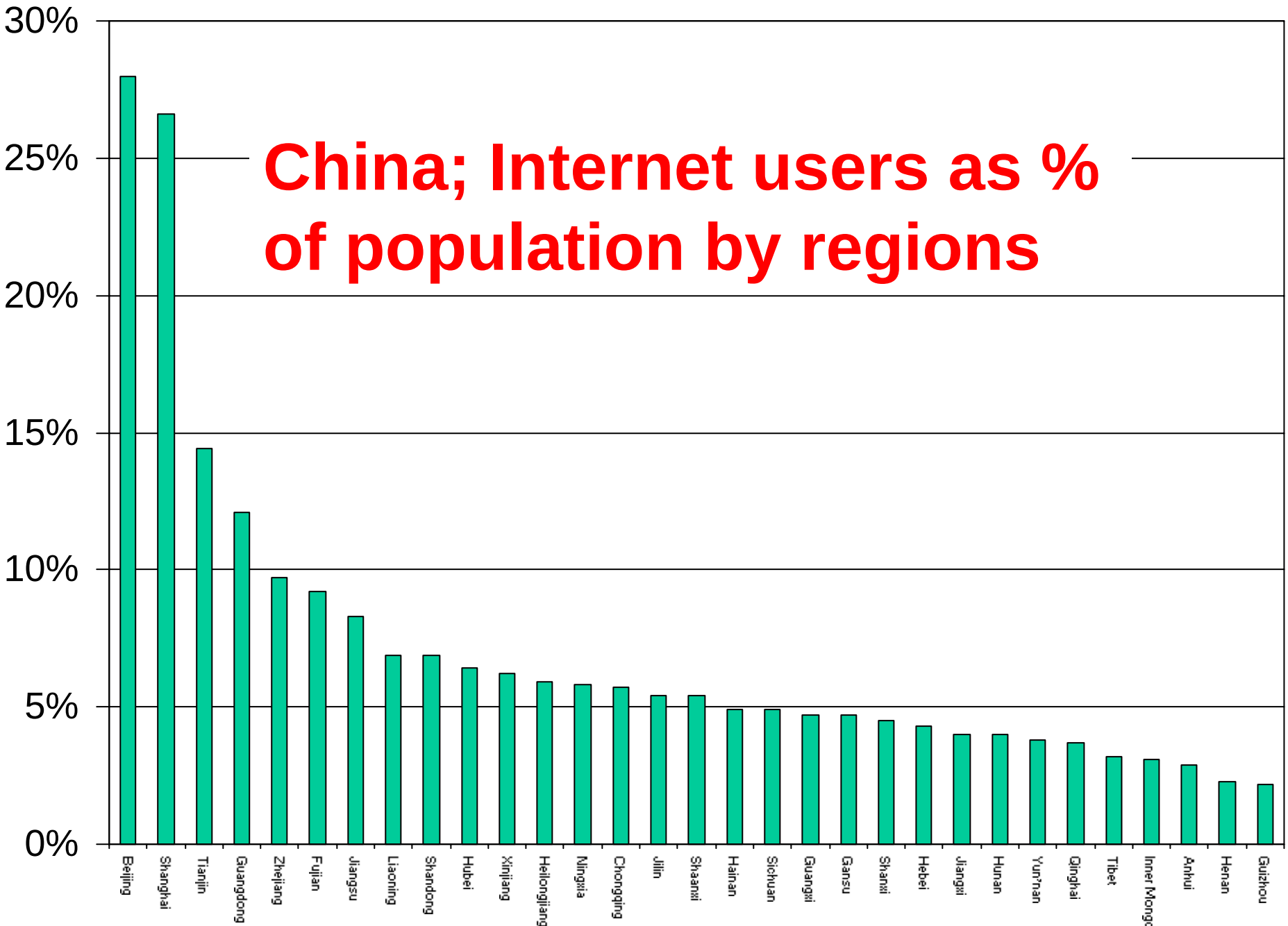


most frequently used services (multiple choice)

INTUG



China; Internet users as % of population by regions



13th Statistical Survey on the Internet Development in China (Jan. 2004)

china broadband

- 11 million ADSL lines at end of 2003:
  - 7.4M China Telecom Group
  - 3.5M China Netcom
  - 0.3M China Railcom
- will add:
  - 11 million in 2004
  - 15-20 million in 2005
- cable modems (1M?)
- BWA on 3.5GHz (1M “lines”?)
- still adding a lot of dial-up users
- immense growth potential

INTUG singapore

- early push on core infrastructure, but cannot get competition
- Singtel ADSL:
  - 256k SG$ 57.75 or 512k for SG$ 78.75
- Starhub cable modem:
  - 1.5M for $58.80 or 3M for $79.80
- government as Temasek Holdings controls:
  - SingTel
  - ST Telemedia which owns 50% of Starhub
  - a number of electricity and gas companies
  - MRT (railway company)

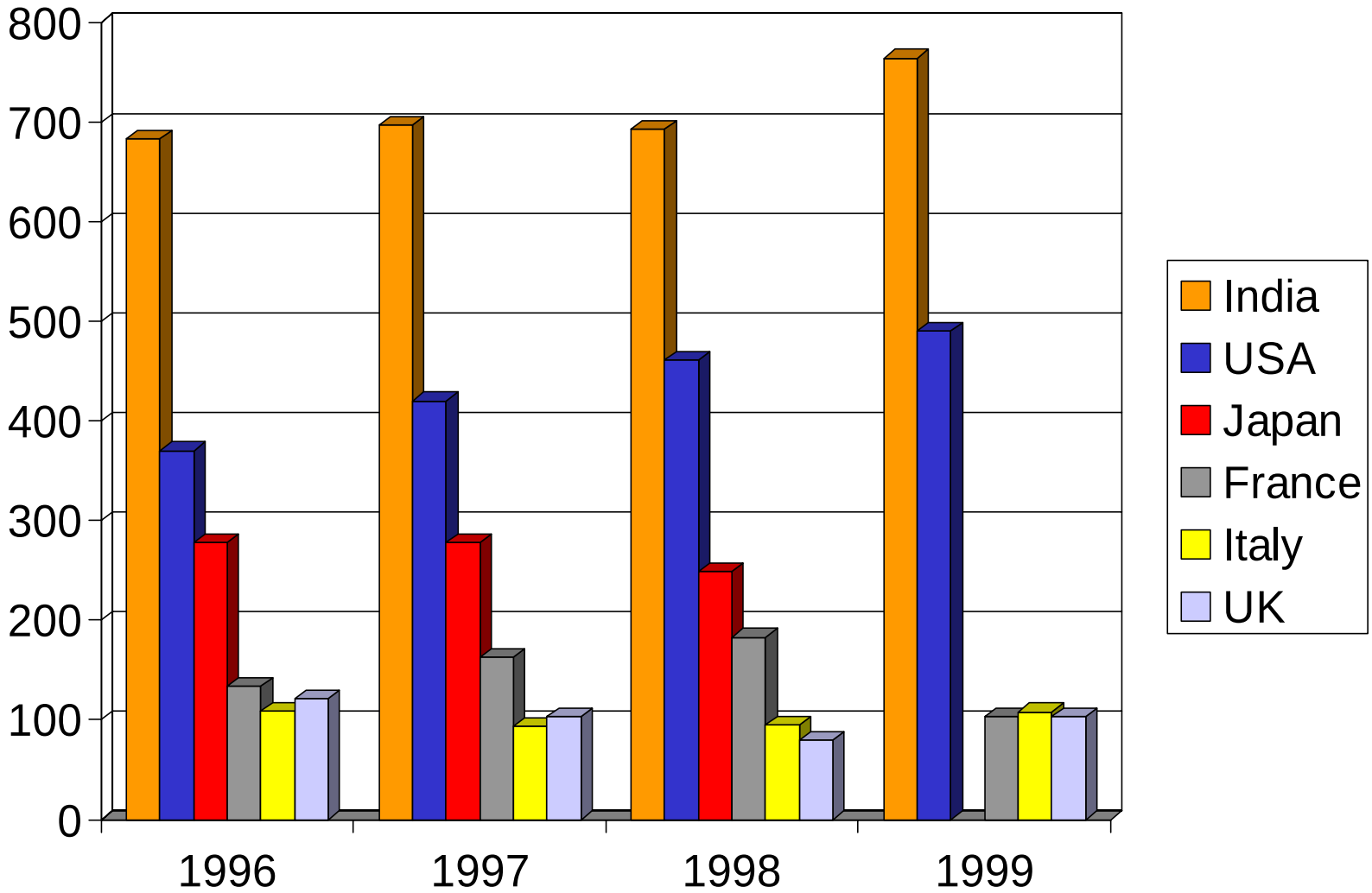
INTUG india

- rivalry with China
- competition worked with GSM (adding about 1.7M per month)
- likely to be repeated in broadband
- aiming at an initial 10 million lines
- ISPs authorised to build own last mile
- could be second largest English language broadband market by late 2005
- now being chased by Pakistan

INTUG indian prospects

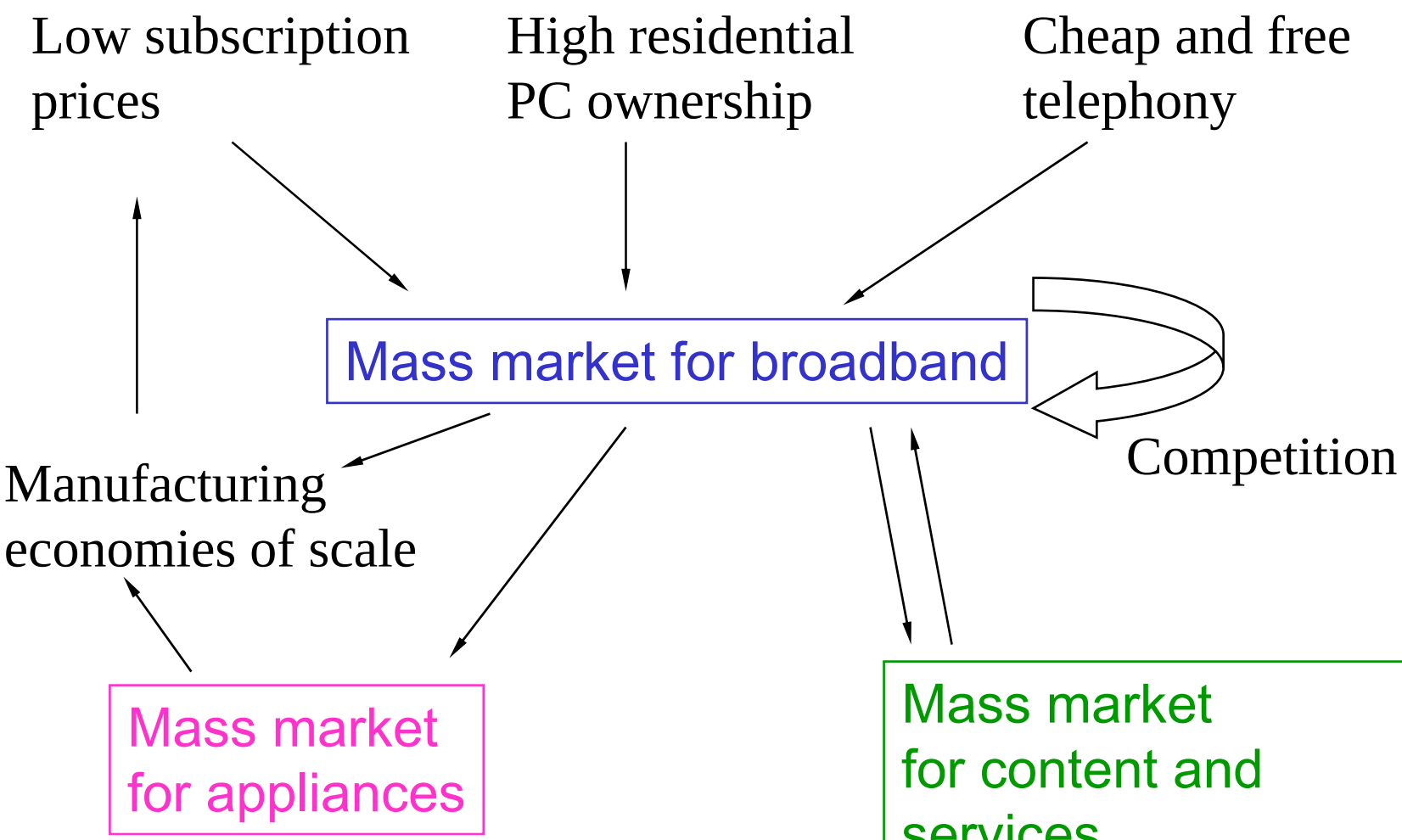
- TRAI policy proposal
- supported by new government
- multiple retail players:
  - fixed incumbent and mobile operators
  - cable operators
  - ISPs
- national backhaul:
  - incumbent operators
  - Tata Power (carriers' carrier)
- international cable capacity
  - FLAG, i2i, SEA-ME-WE 4, FALCON, etc
- truly massive content industry

INTUG movie titles produced



Source: UNESCO.

INTUG drivers



Wireless LANs

- pre-requisite for Internet access in a home:
  - multiple users
  - multiple devices
- essential to utilise speeds in excess of a few Mbits/s
- creates a market for consumer electronic devices with 802.11x
- opens up hot-spot market in public places

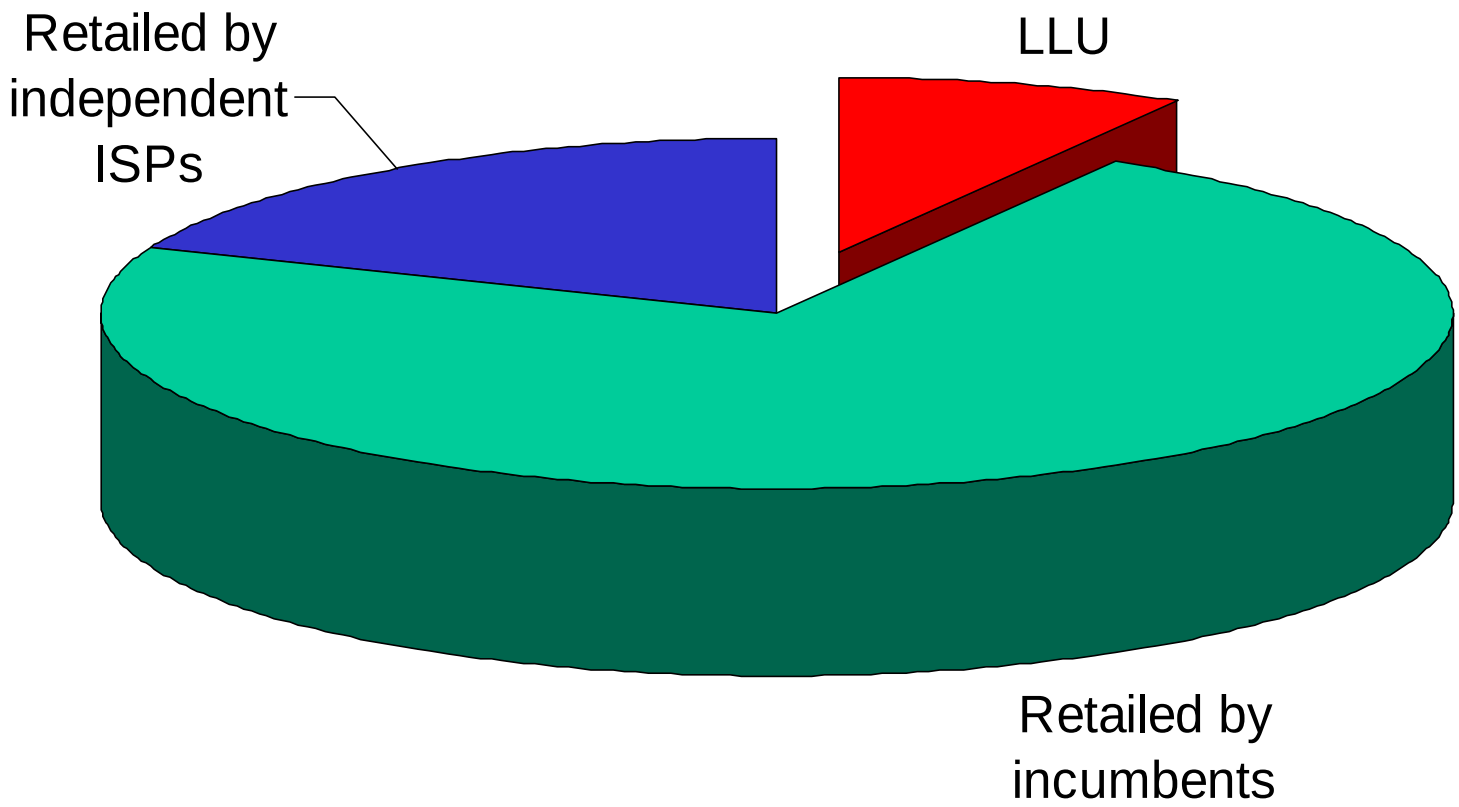
INTUG Europe *versus* NE Asia

- mostly “bonsai" broadband: < 1Mbps
- incumbents protecting leased line revenues
- incumbents 3D deny/delay/degrade LLU for rivals
- incumbents bundle to block/stifle rivals
  - VoIP to protect telephony market share
  - entertainment to control path to VDSL
- very high bandwidth
- access:
  - to all content
  - from all networks
- massive scale for:
  - operators
  - manufacturers
  - service providers
- competitive market structure
- ready for next technology

INTUG european union

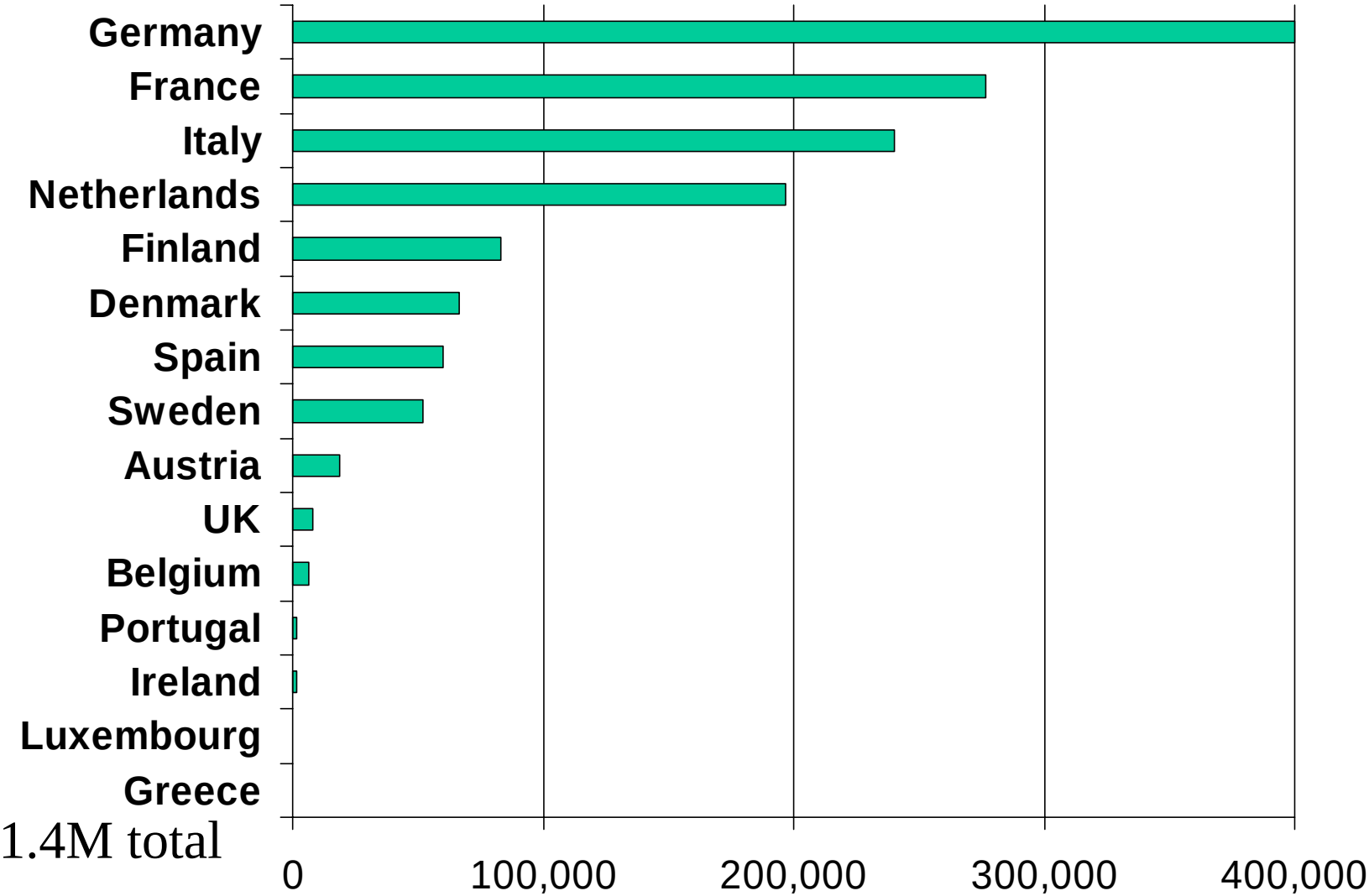
- goal is to be the most dynamic knowledge-based economy
- local loops unbundled in January 2002
- results mediated by performance of:
  - (weak) national regulatory authorities
  - (strong) incumbent operators
- absence of cross-border market entry
- new regulatory framework very slowly being put into place

INTUG EU-15 ADSL



Source: ECTA.

INTUG unbundled lines in EU15 at end of 2003

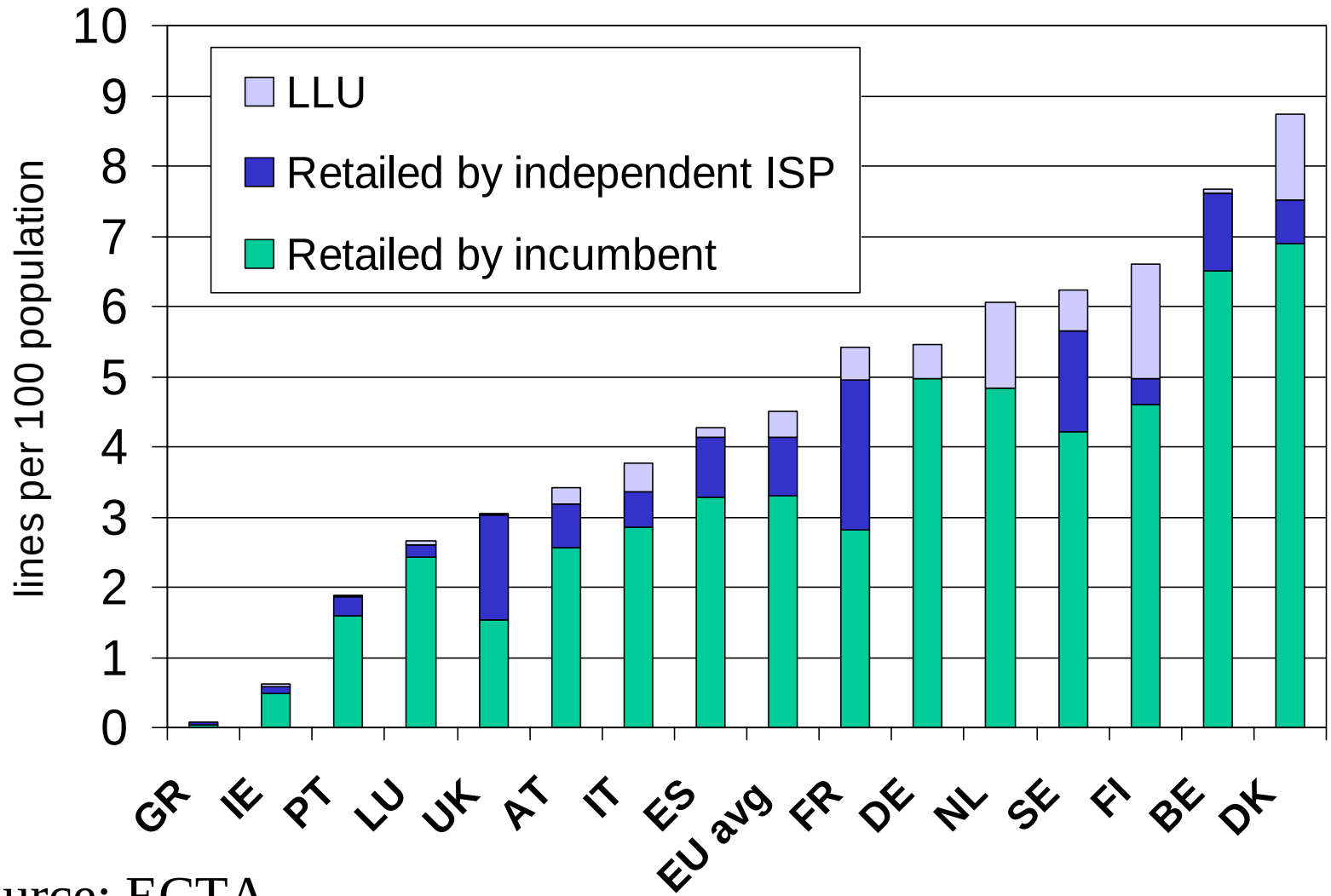


1.4M total

INTUG, Broadband 26 x 2004

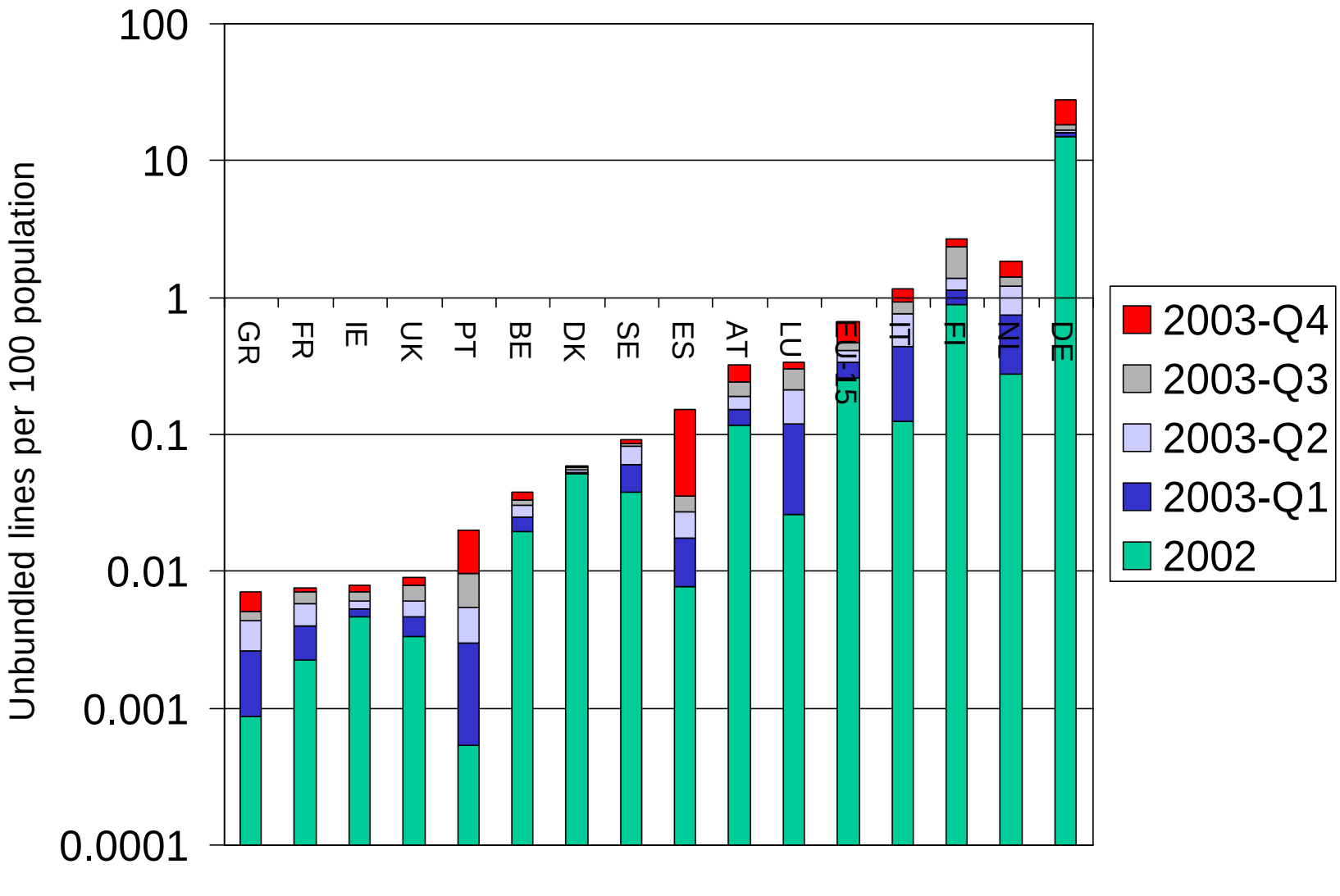
www.INTUG.net

INTUG EU-15 ADSL by country



Source: ECTA

INTUG growth of LLU in EU-15



INTUG european union

- no evidence or hope of a “single market”
- many countries are slow-starters or no-shows
- few countries have robust competition
- minimal cross-border market entry
- deeply divided national markets and regulation
- mostly “bonsai” broadband
  - 256k or 512k offers
  - EUR 15 to EUR 25 per month
- steep price gradient to higher speeds
- price competition rather than line speed competition

INTUG the good boys

- Belgium
  - 3Mbits/s ADSL and 4Mbits/s cable modems
- Denmark
  - lots of “bonsai” broadband 512kbits/s (recently upgraded from 256kbits/s)
  - some interesting municipal initiatives
- Sweden
  - Bostream 26Mbits/s ADSL
  - Bredbandsverlaget 10 and 100Mbits/s
  - TeliaSonera now speeding up
- Italy
  - Fastweb FTTB in some major cities

INTUG France

- very much improved performer
- LLU is finally working
- Neuf Telecom
  - 1Mbits/s for €14.90/month (all calls to geographic numbers in France for €9.00)
  - 2 Mbits/s and national calls €29.90/month
- NC Numericable €59.90
  - 8Mbits/s and 6 television channels
- Free - 6Mbps/s for €29.90
- France Telecom “wanadoo”
  - 512k €25.90, 1024k €29.90, 2048k €34.90

rural and remote broadband

- very little patience
- yet no clear target!
  (technology, speed, market structure, etc)
- no business model
- wild enthusiasm for government money
- increasing evidence of success of
  Wireless ISPs:
  - the technology works
  - but business models are still in early stages

INTUG OECD Report

- economic and social case is very strong
- governments should act cautiously in:
  - providing financial assistance
  - including it as part of universal service obligations
- where monopolies are absent, dynamism is emerging in the provision of broadband access
- traditional paradigms are being stood on their head:
  - that rural areas are unlikely to attract new entrants because they are high cost areas to serve and characterised by insufficient demand
  - that the prices charged will need to be higher than urban areas and the levels of service lower.
  - that such networks will need to be subsidised
  - that the lower availability of rural broadband is a sign of “market failure”

INTUG examples from Canada

- Yellowknife SSI Micro Skyline
  - CA$59.95 + GST per month
  - licensed 2.5 GHz non-line-of-sight
  - equipment from Nextnet Expedience
  - 30 kilometre range
- Gulf Islands Wireless Networks , BC
  - CA$59.99 +GST per month (5GB cap)
  - up to 11 Mbps

"Why should we be deprived of what is rapidly becoming an essential service because we live in one of the most beautiful places on Earth."

VoIP plus broadband

- an obvious incumbent response is to bundle in order to conceal rates:
  - "all you can eat" national calls
  - DSL plus "telephony" (plus video)
  - but not fixed-to-mobile
- incumbent operators wait for others to launch the service
- but they benefit from economies of scale
  - free on-net calls
  - Metcalf's law

INTUG towards 100Mbits/s

- it will not be one specific technology
- it will not be one network
- Korea is already pushing ahead with Video-DSL 20-50Mbits/s (2M lines)
- Japan has > 1M FTTH lines 100Mbits/s and growing at ~80,000 per month
- some high capacity radio technologies are already being deployed

Fibre To The Home

- cannot consider this alone
  - interacts with ADSL and radio
  - tricky questions of fibre in the PSTN
- will it be competitive?:
  - not in rural areas
  - not if incumbent operators can help it
- market opening for utility companies
- how do you regulate access regime;
  - “must carry”
  - “must have”

INTUG conclusions

leadership around East China Sea:

- Korea (11M)
- China (11M + 11M)
- Japan (14M + 5M)

economic clusters:

- hardware
- applications
- services
- research

drivers:

- growth
- low prices
- content
- VoIP
- broadband appliances
- WLANs
- network effects
- peer-to-peer

INTUG government roles

- national ICT strategy
- ensuring **real** competition
- raising PC ownership in homes
- supporting local and linguistic content
- keeping a steady course

INTUG looking ahead

- the target is **not** ADSL
- but the stage after!
  (and the one after that)
- certainly **not** 0.25 to 2Mbit/s
- ubiquitous networks
  - wired and wireless
  - 50 to 100 Mbits/s (250Mbits/s and more)
- revenue from content and services
- jobs and economic growth

INTUG thank you

Ewan Sutherland
International Telecommunications Users Group
Reyerslaan 80
B-1030 Brussels
Belgium

+32.2.706.8255

ewan@intug.net
http://www.intug.net/ewan.html