INTUG

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www.INTUG.net

total mobility

a global user perspective

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INTUG contents

- INTUG
- what is the value of mobility to:
  - the economy
  - business
  - individuals
- why do we want mobility, nomadicity or ubiquity?
- (im)mobile market failures
- conclusions and issues

INTUG what is INTUG?

- members:
  - national associations
  - corporations
  - individuals
- activities:
  - ITU and WTO
  - OECD
  - APEC TEL, CITEL and EU

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

mobility?

- **cellular** is a technology:
  - re-use of spectrum to cover an area
  - handover of calls between cells
- **nomadicity** is an ancient way of life:
  - periodic access to fixed resources
  - now we look for a Wi-Fi “oasis”
- **ubiquity** is a new policy model:
  - multiple networks
  - multiple devices
  - aiming for totality of access

economics

- well-established link between
  - voice telecommunications
  - Gross Domestic Product (GDP)
- poor (or no) understanding of the economic value of:
  - cellular voice telecommunications
  - limited mobility voice
  - mobile access to value-added services
  - nomadicity
  - Ubiquitous Network Society (UNS)
- vast scope for future research
- this will lag behind market developments and policy decisions

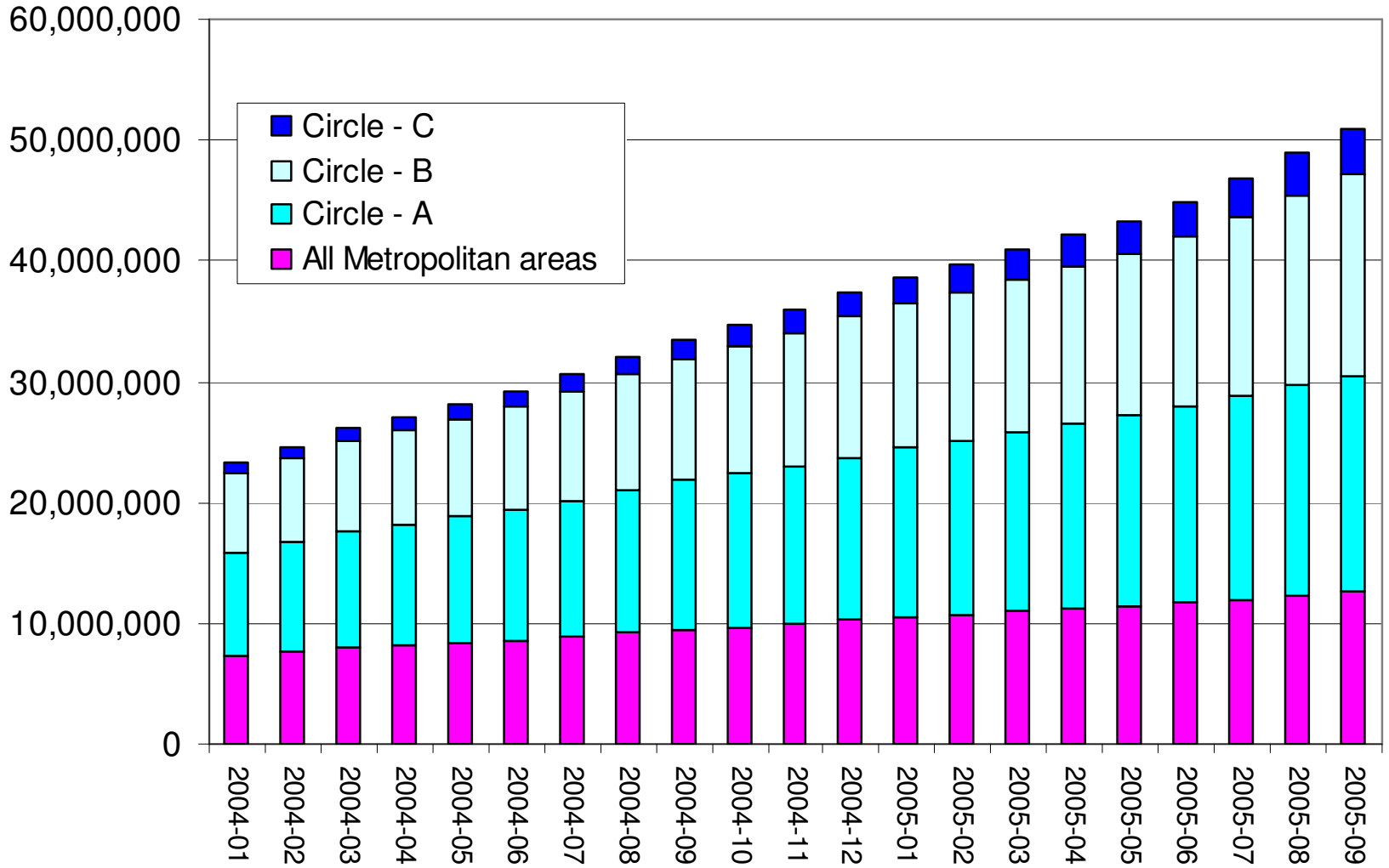
socio-economic impact of mobiles

- Vodafone study to show "value" of mobile phones
- but benefits are not even mainly from cellular voice telephony, they are mixed up with:
  - access to telephony
  - introduction of competition
  - use of widely available, low-cost hardware
  - use of wireless rather than wireline technology
  - adoption of the pre-paid business model
- we need studies of:
  - fixed *versus* cellular
  - limited *versus* full mobility
  - cellular *versus* ubiquity
  - voice *versus* data

changing cellular generations

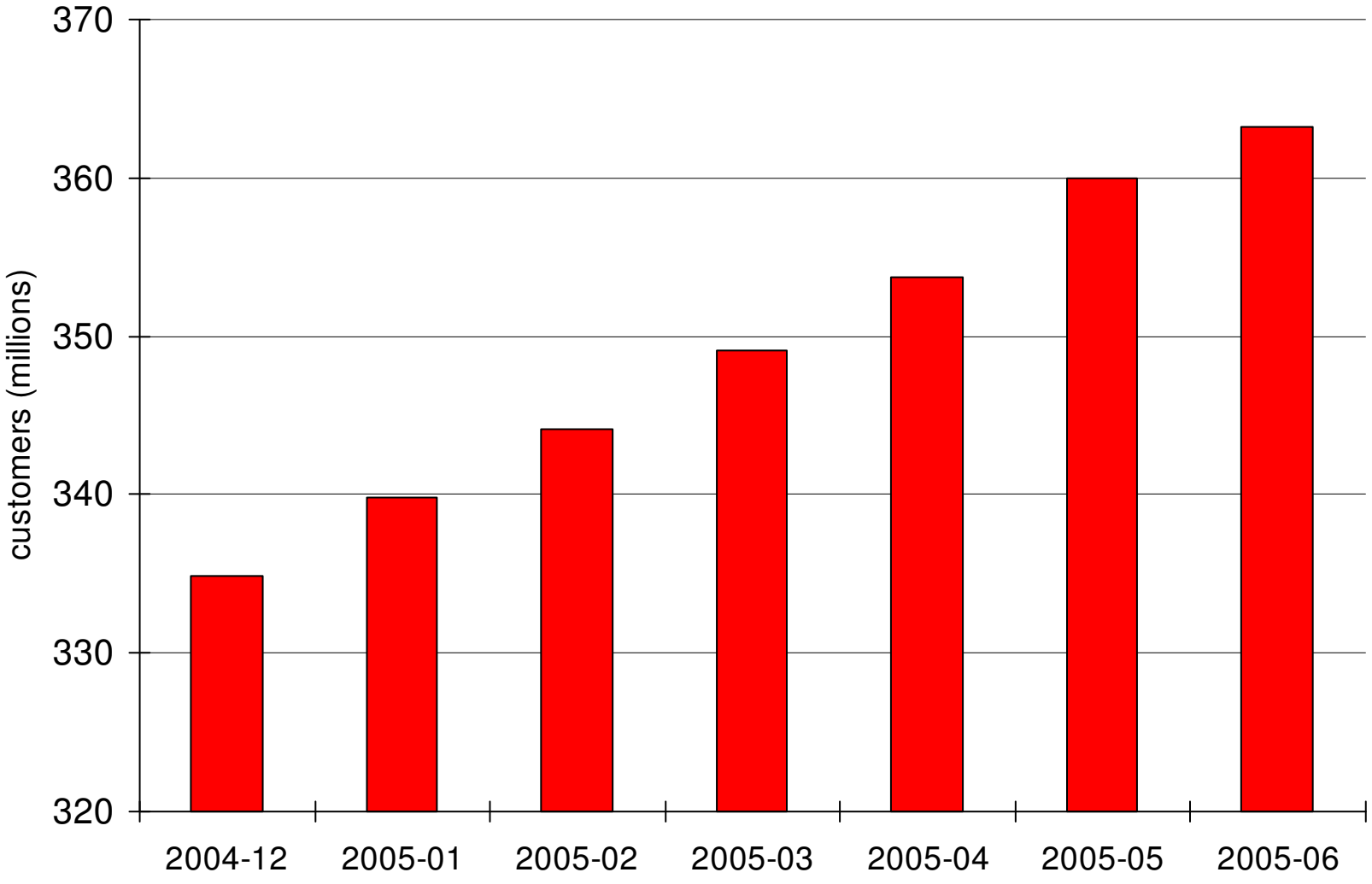
- first generation:
  - analogue technology
  - USA in the lead
- second generation:
  - digital technology
  - European Union leadership with GSM
  - but growth is now in China (and India)
- third generation:
  - digital with somewhat higher IP capacity
  - growth is in Korea and Japan
  - now only one part of the ecosystem
- fourth, fifth and six generations:
  - lots of talk

INTUG India - GSM growth



Source: COAI.

China - mobile growth



asia is in driving seat

- Bottom Of the Pyramid (BOP) is vast
- handset market growth is in Asia
- they are designed, built and sold there, so it sets the standards
- vast economies of scale
- Europe is churn and replacement
- any technology as long as it is cheap and it sells quickly
- another technology will arrive shortly

2.5G Internet access - GPRS failed

- its own private Internet .gprs
- a firewall (NAT) to the Internet
- grossly overpriced, with glacially slow price reductions
- services were/are uncertain to work
- most GPRS handsets never use the service
- very little revenue
- independent providers not offering services
- where is EDGE? (only in USA?)
- waiting for 3G/UMTS
- then waiting for 3.5G HSDPA/HSUPA

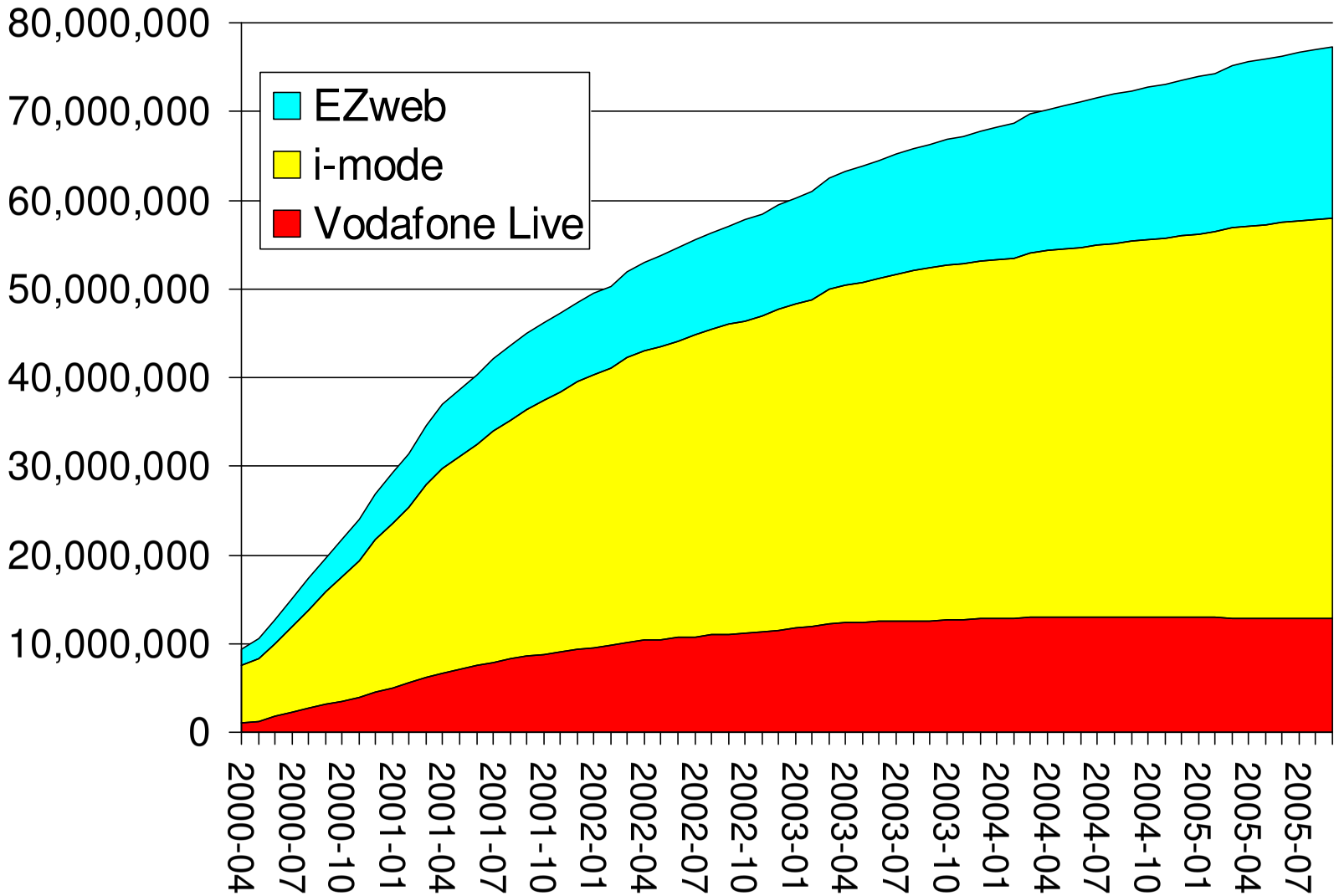
2.5G cdma succeeded

- easy upgrade path:
  - cdma2000 1x
  - cdma2000 1x EV-DO
  - cdma2000 1x EV-DV
- flat rate prices
- some Service Level Agreements (SLAs)
- widely deployed
- successfully competing with GSM:
  - USA
  - Australia and New Zealand

i-mode

- a wild success in Japan:
  - first of several telecommunications successes
  - looks a bit like Minitel kiosque
  - generated a lot of revenues and lessons for NTT DoCoMo and service providers
- a very modest success overseas:
  - could be peculiarly Japanese
  - could be a failure:
    - to understand
    - to implement correctly
  - operators could be too greedy, discouraging service providers
  - could be cheaper and more effective channels to market

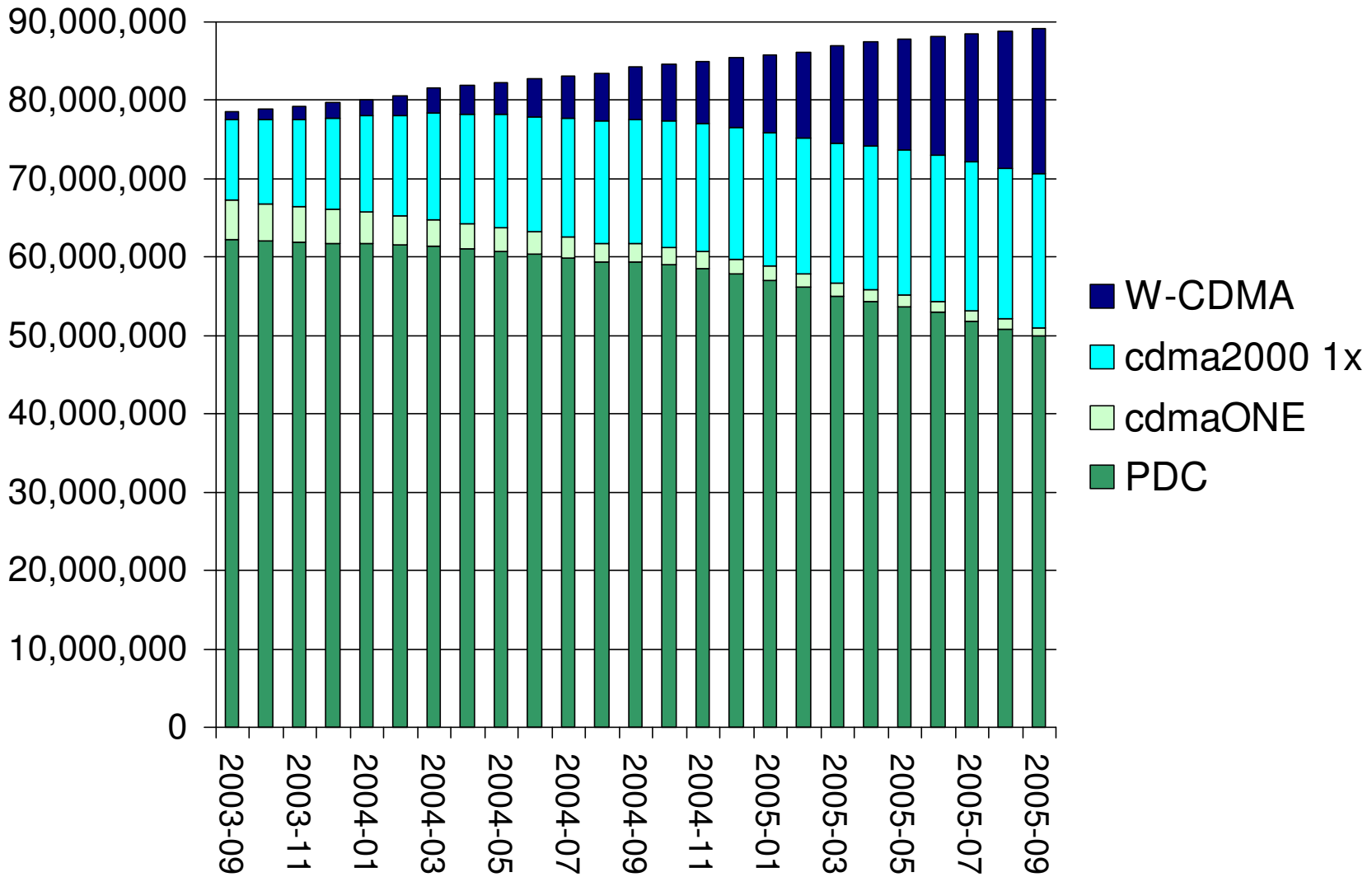
INTUG mobile Internet in Japan



beyond i-mode

- ring tones, songs and *karaoke*
- video clips
- FeLiCa
  - contactless payment system with Sony
- ToruCa
  - information-capture function, retrieves additional information on a product

3G in Japan (users)



"horses for courses"

- fixed broadband
  (with wireless at the edges)
- wireless hotspots
  (802.11 b, g, etc.)
- fixed wireless access
  (WLL, WiBro, WiMAX, etc.)
- digital broadcast
  (DAB, DMB, DVB)
- cellular
  (GSM, W-CDMA, cdma2000, etc.)
- stored data
  (MP3, DVD, etc.)

multiple networks

- car networks to connect:
  - telephones
  - entertainment systems
  - plus satellite for radio, TV and GPS
- residential networks:
  - redistribute fixed broadband capacity
  - connect domestic appliances
- Personal Area Networks (PANs)

personal area networks

- Bluetooth
- Ultra Wide Band (UWB)
- headsets and headphones:
  - e.g,. Oakley and Motorola Razrwire
- sharing entertainment and games
- but can these networks be made secure against the tide of malware?

a matter of choice

- can pre-load music:
  - xDSL, FTTx, etc.
- can download music from:
  - WiMAX, 3.5G, etc.
- can listen to streamed music:
  - DAB, DMB-S, DVB-H, etc.
- can share music with others:
  - Bluetooth, UWB, etc.

One complex device or many simple devices?

cellular operator core competences

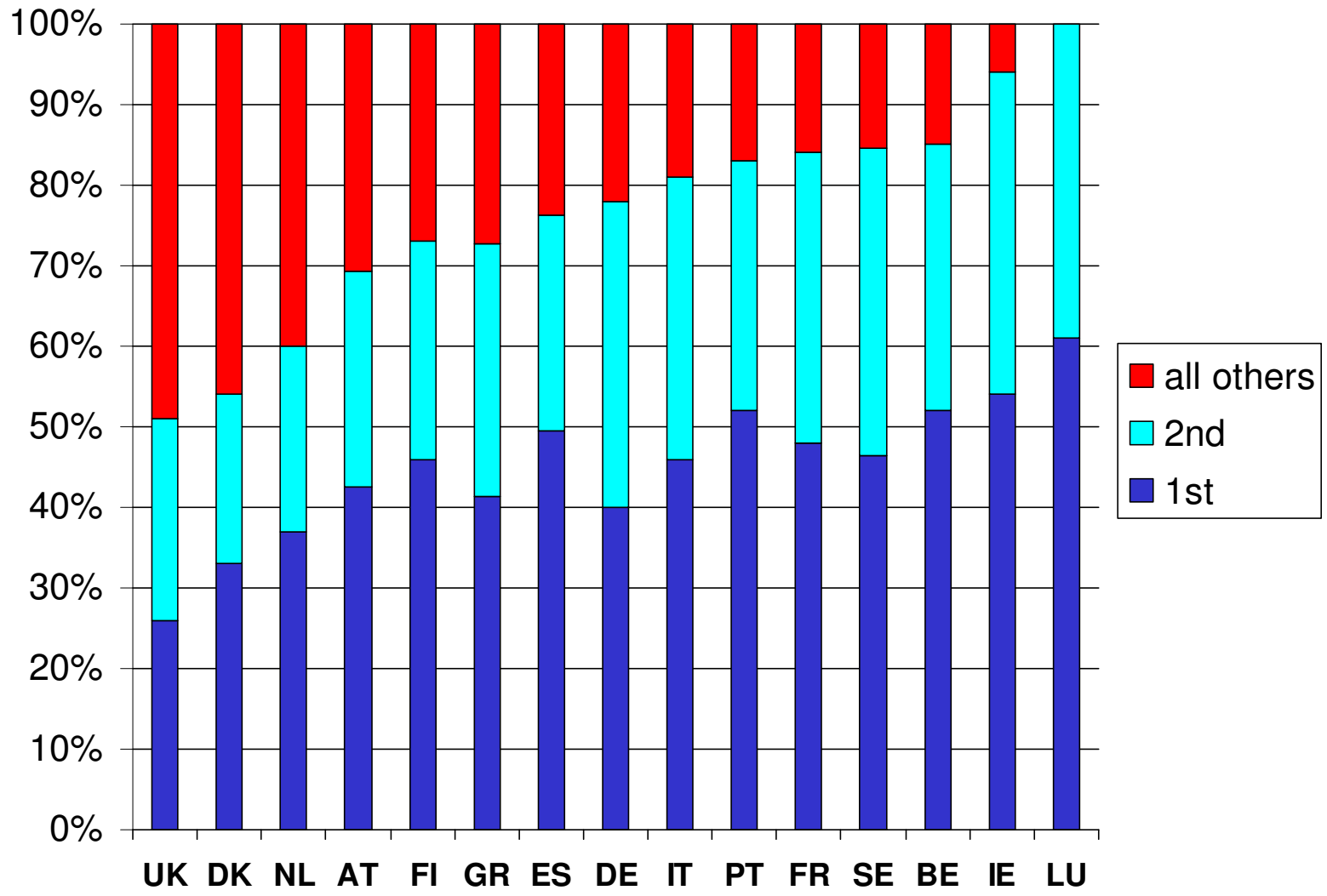
- finance
- voice and SMS (not data)
- consumers (not business)
- telephony (not value-added services)
- lobbying and regulation

politico-regulatory gamesmanship

- very high level lobbying
- very aggressive approaches to regulation:
  - trying to create precedents
  - overkill in filing documents
  - appealing to every court
- a clear intention to block potential competitors

3D stands for Deny, Delay, Degrade

mobile operator market shares (2004)

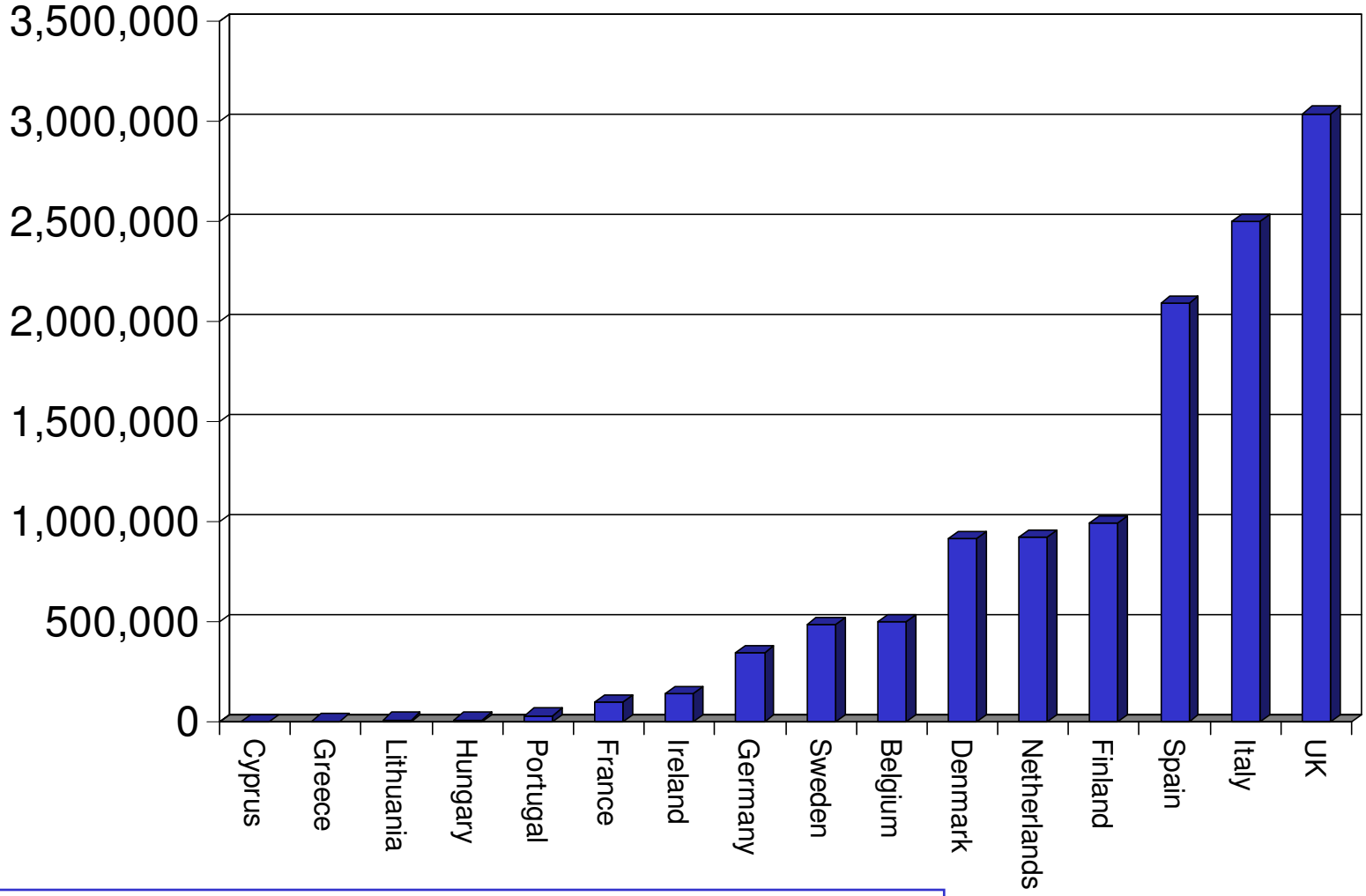


remedies for abuses

- call origination:
  - national roaming
  - Mobile Virtual Network Operators (MVNOs)
- call termination:
  - wholesale price regulation
- SMS:
  - obligation to interconnect
  - wholesale price regulation
- international mobile roaming:
  - abuses are still unresolved

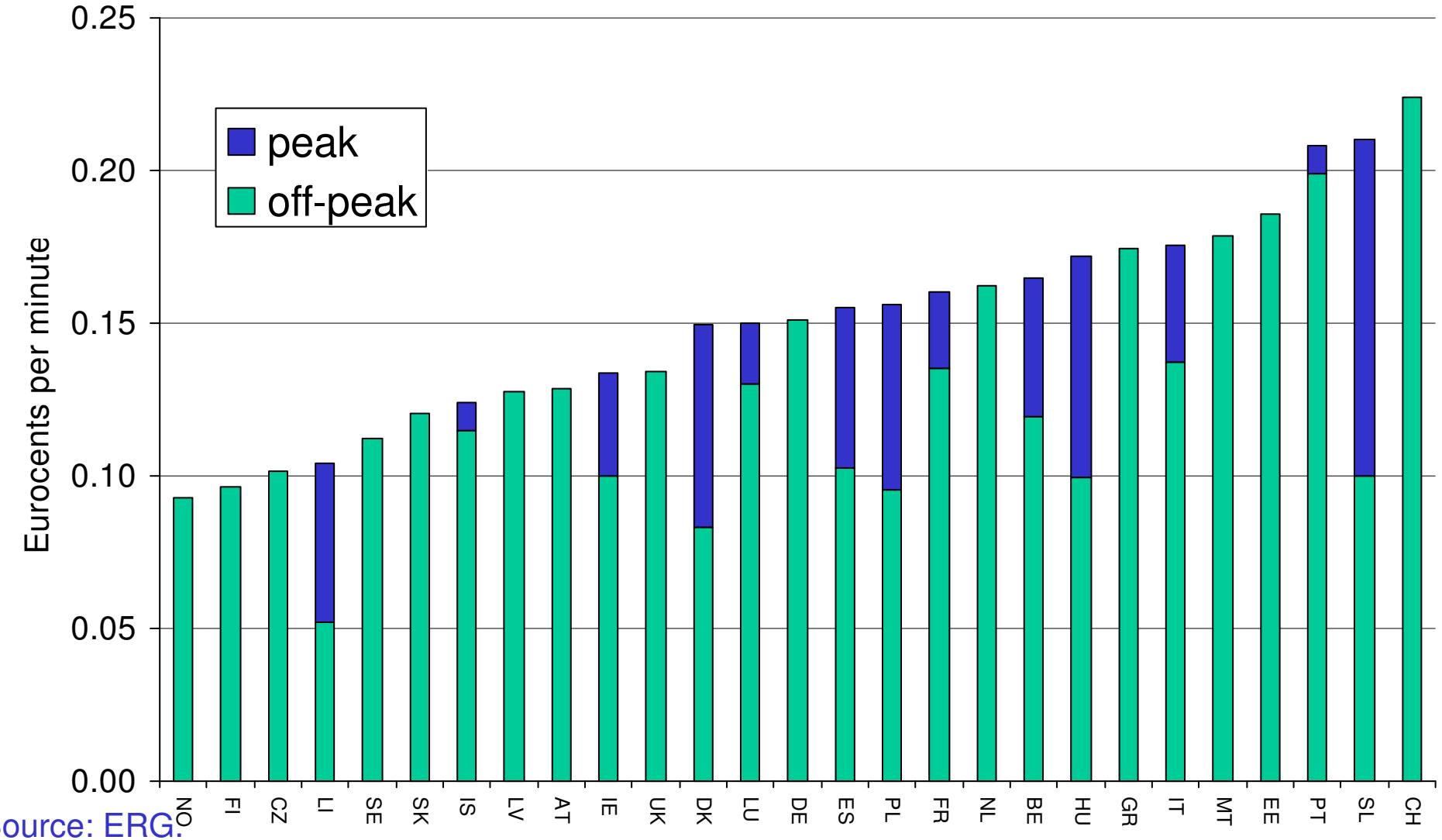
mobile is ***not*** a single market

cumulative total of mobile numbers ported to August 2004



Source: EC *10th Implementation Report*, Vol. 2, Fig. 59.

INTUG mobile termination rates



Source: ERG.

international roaming prices

- A very old story and a great source of operator revenues
- for example, T-Mobile USA charges for all calls sent or received in Switzerland US$ 1.49 per minute
- abuses extended to:
  - prepaid customers (using CAMEL)
  - mobile data (for GPRS, EDGE and UMTS)
- may now be extended to content with DAB, DMB and DVB

data roaming

- extremely expensive on 2.5G:
  - typically EUR 0.06 per kilobyte
  - but that include 40% to 80% packing
- wholesaling is limited to other GSM operators
- emergence of alternative data networks:
  - Wi-Fi
  - WiMAX
  - WiBRO
- operators of these networks seem willing to sell at the wholesale level

pornographic content

- targeted at a very personal device
- the revenue that dare not speak its name, described in euphemisms
- handled by third parties
- billed by intermediaries
- controls over cellular access networks, but ***not*** when using Wi-Fi

malware and security

- spam, spim, pop-up ads, etc
- viruses, trojan horses, worms, etc
- hacking, phishing and pharming
- identity theft
- portable devices:
  - physical loss/theft
  - address book, photos, videos, other files
  - limited resources to resist attacks

systemic weaknesses, especially people.

ubiquitous network societies

- a driver of economic growth for:
  - U-Japan
  - U-Korea
- extends networks to include:
  - person-to-person
  - person-to-machine
  - person-to-object
- combines:
  - fixed broadband
  - cellular
  - wireless Internet

"any network"

- this seems idealistic in Europe
- no operator will be omnipresent
- operators will play to their strengths:
  - fixed or mobile
  - wired or wireless
- service providers will seek regulated access to essential facilities of dominant operators

diffuse responsibility

- multiplicity of networks, devices and sensors
- who will guarantee:
  - that devices interwork and interoperate?
  - that there is integrity and quality of communications?
  - that misuse is absent?
- absence of clarity on:
  - control
  - management
  - security
  - misuse
- who pays?
- who goes to gaol?
- complex mix of:
  - contracts
  - codes of conduct
  - generic/horizontal and sectoral legislation

business adoption of ICTs

- justification of new spending to the Chief Information Officer (CIO):
  - cost savings
  - increased functionality
  - Return on Investment (ROI)
  - competitive advantage
- a continuing search for productivity improvements
- management tools for control of devices and the data stored on them

no cameras, no memory, no subsidy

corporate networks

- IP-VPNs:
  - purchased regionally, sometimes nationally
- cellular voice:
  - purchased nationally or sometimes regionally
  - very little use of cellular data
- homeworking:
  - broadband purchased nationally
  - some regional third parties in Europe
- nomadic working:
  - global contracts

Limits on software loaded on corporate lap-top.

third party suppliers

- buy wholesale from local operators:
  - dial-up and ISDN
  - fixed broadband
  - Wi-Fi hot spots
  - Fixed Wireless Access (e.g., WiMAX)
- re-sell to multi-national corporations:
  - multi-platform
  - wide geographic coverage
  - strong authentication
  - anti-virus, firewalls, etc.
  - single software application

Voice over IP

- secondary numbers at distant locations
- nomadic access over
  - fixed broadband
  - wireless (Wi-Fi, WiMAX, etc.)
- cheap and flat rate pricing models
- younger customers prefer:
  - chat
  - instant messaging
  - presence management
  - avatars

INTUG conclusions

- confusion about the value of cellular *versus* nomadic service to society, business and individuals
- competition problems are deep-rooted
- one network will not be sufficient
- ubiquitous network society is a valuable concept but access and interconnection is very tough

INTUG issues

- can we achieve Gigabit speeds?
- is “mobile” still a helpful term?
- can we achieve access to different networks, at different locations and is different contexts?
- can we improve our understanding of the economics of “mobile” access in time to make decisions?

INTUG thank you

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

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