

INTUG

Comdays, Biel 27-28 October 2005

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total mobility

a global user perspective

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INTUG contents

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- 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, CITELE and EU

INTUG our aims

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

INTUG mobility?

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- **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

INTUG economics

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- 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

INTUG socio-economic impact of mobiles

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- 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

INTUG changing cellular generations

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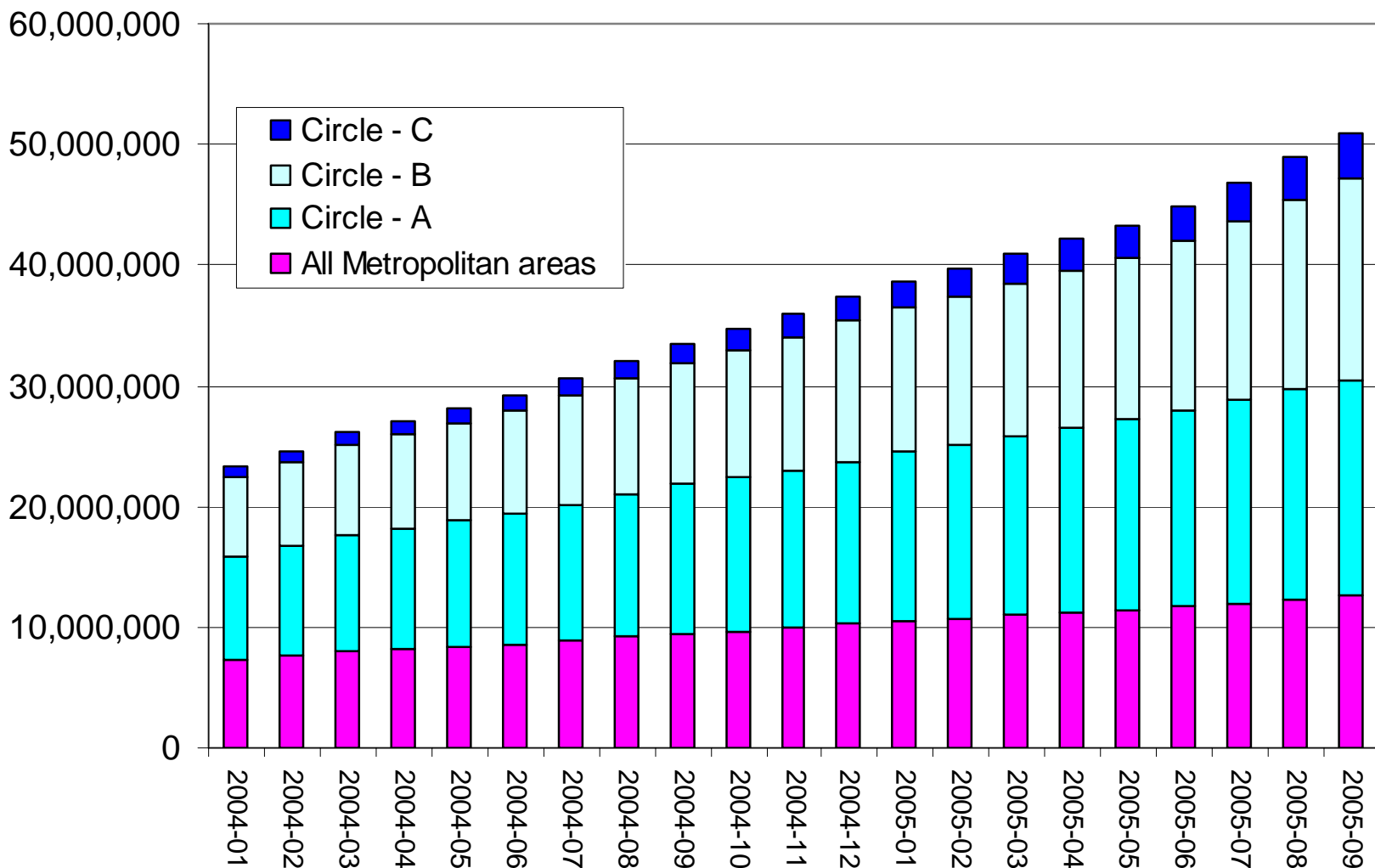
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- first generation:
 - analogue technology
 - USA in the lead
- second generation:
 - digital technology
 - European Union leadership with GSM
 - but growth is now in China (and India)
- third generation:
 - digital with somewhat higher IP capacity
 - 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

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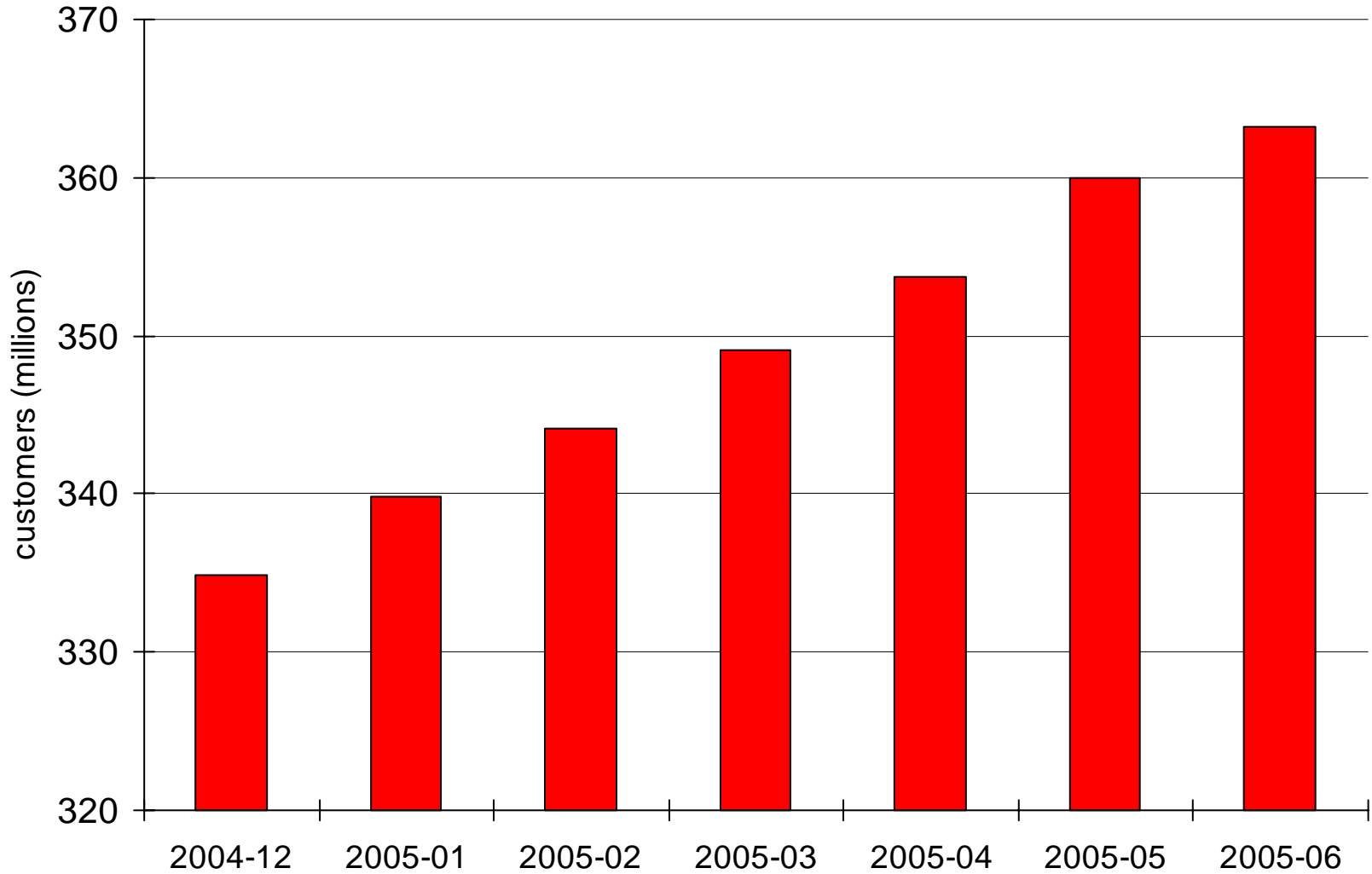


Source: COAI.

INTUG China - mobile growth

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INTUG asia is in driving seat

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- 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

INTUG 2.5G Internet access - GPRS failed

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- 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

INTUG 2.5G cdma succeeded

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- 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

INTUG i-mode

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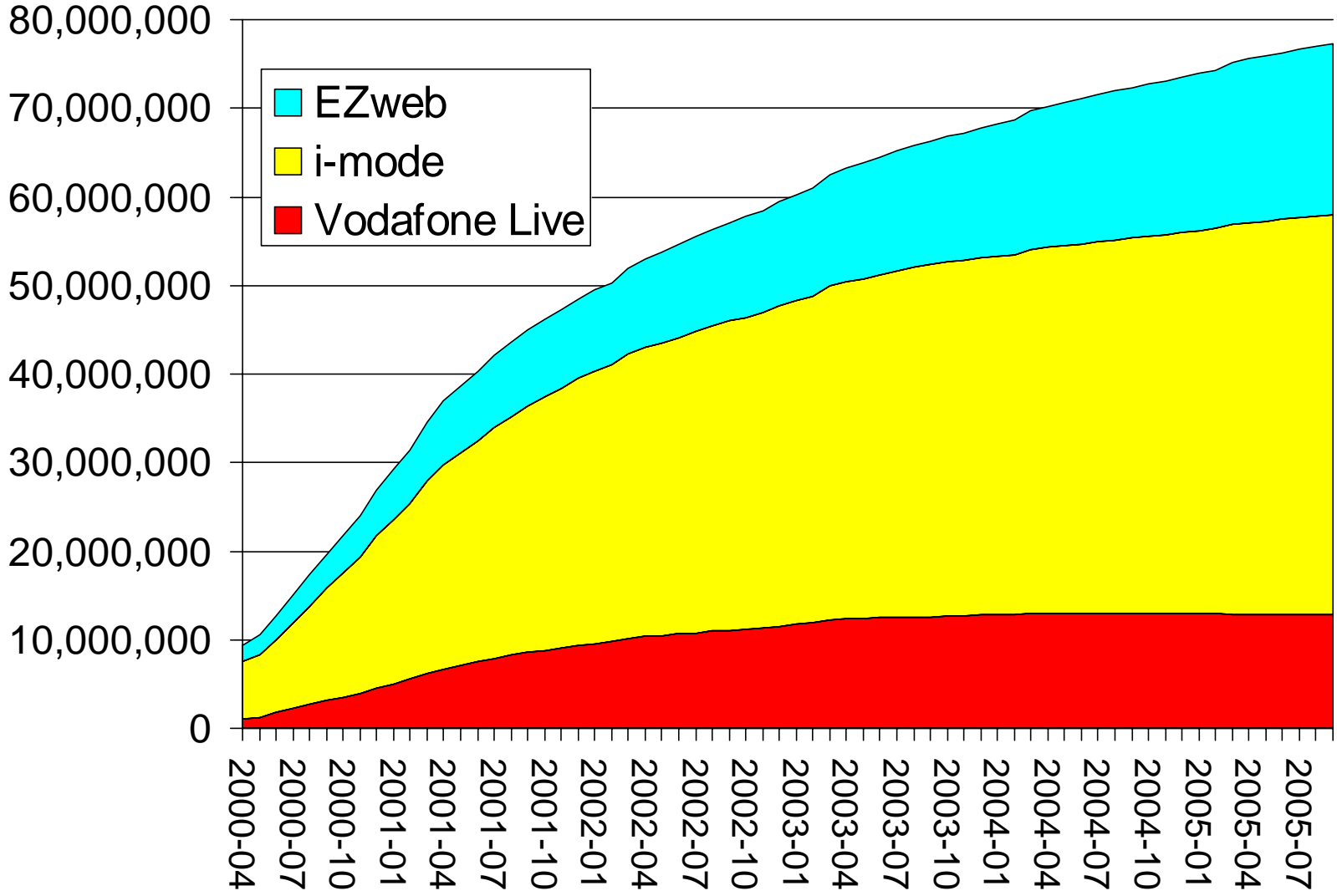
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- a wild success in Japan:
 - first of several telecommunications successes
 - looks a bit like Minitel kiosk
 - generated a lot of revenues and lessons for NTT DoCoMo and service providers
- a very modest success overseas:
 - could be peculiarly Japanese
 - 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

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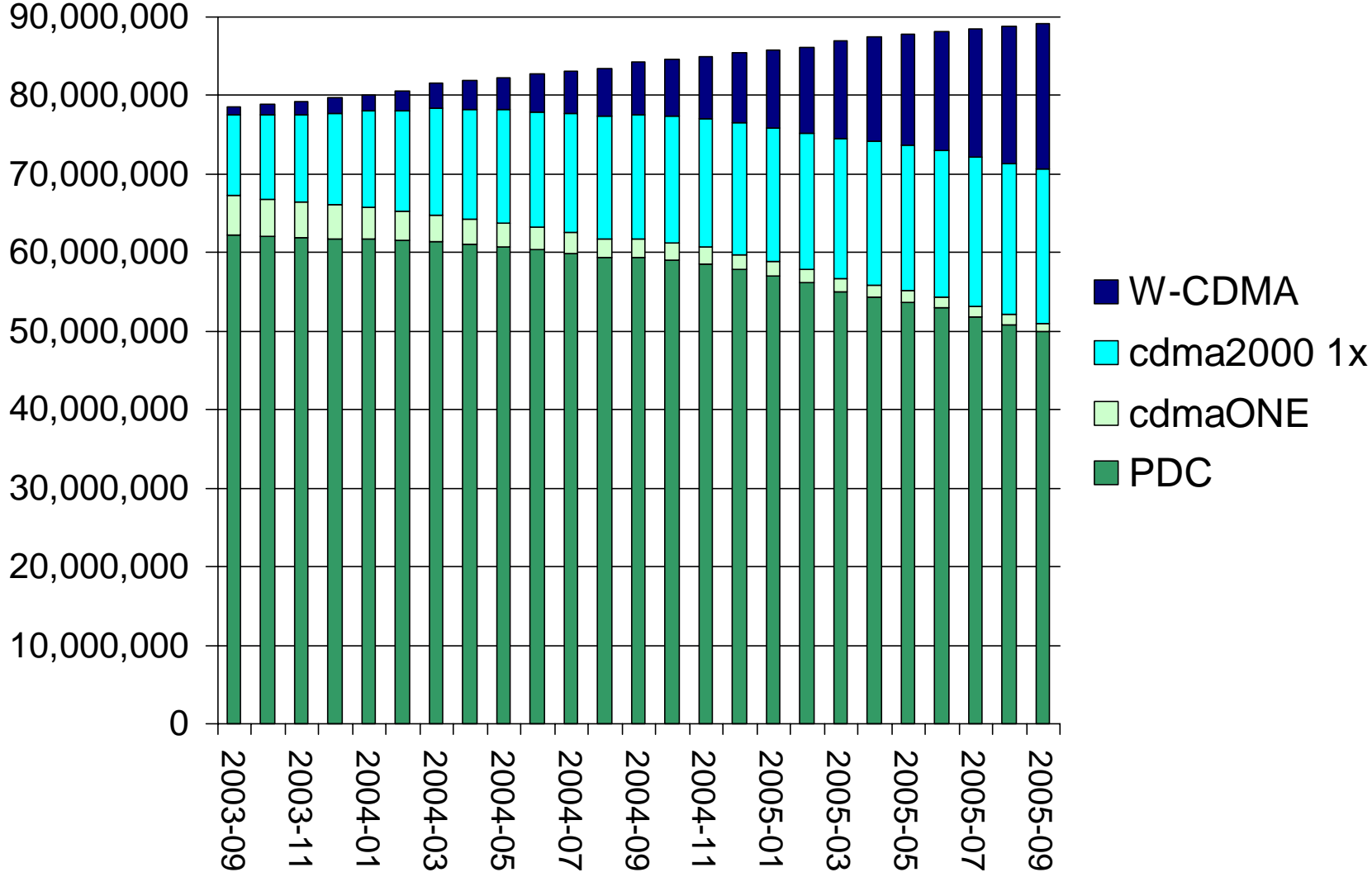
INTUG beyond i-mode

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

INTUG 3G in Japan (users)



INTUG “horses for courses”

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- 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.)

INTUG multiple networks

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- 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)

INTUG personal area networks

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- 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?

INTUG a matter of choice

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- 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?

INTUG cellular operator core competences

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

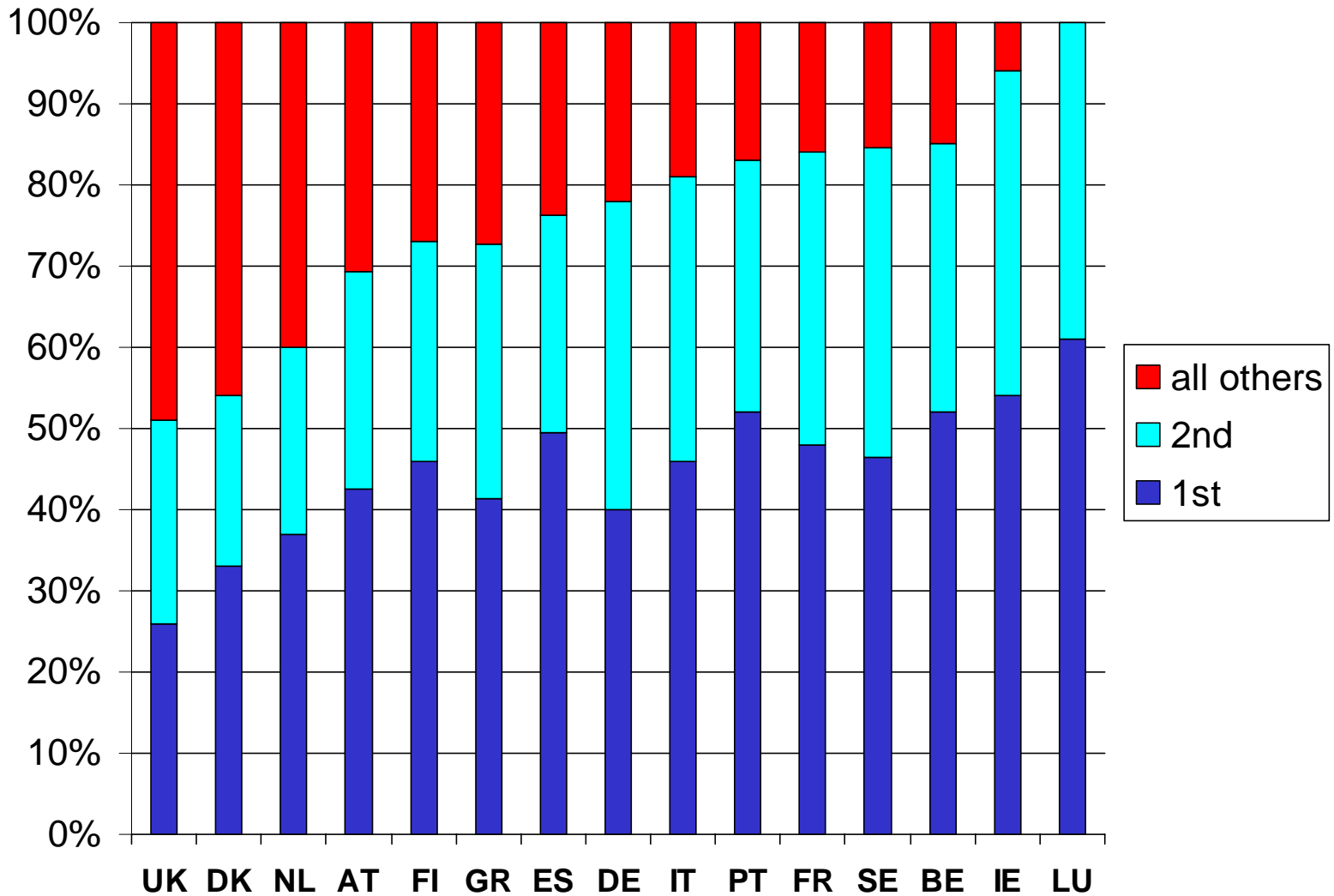
INTUG politico-regulatory gamesmanship

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- 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



INTUG remedies for abuses

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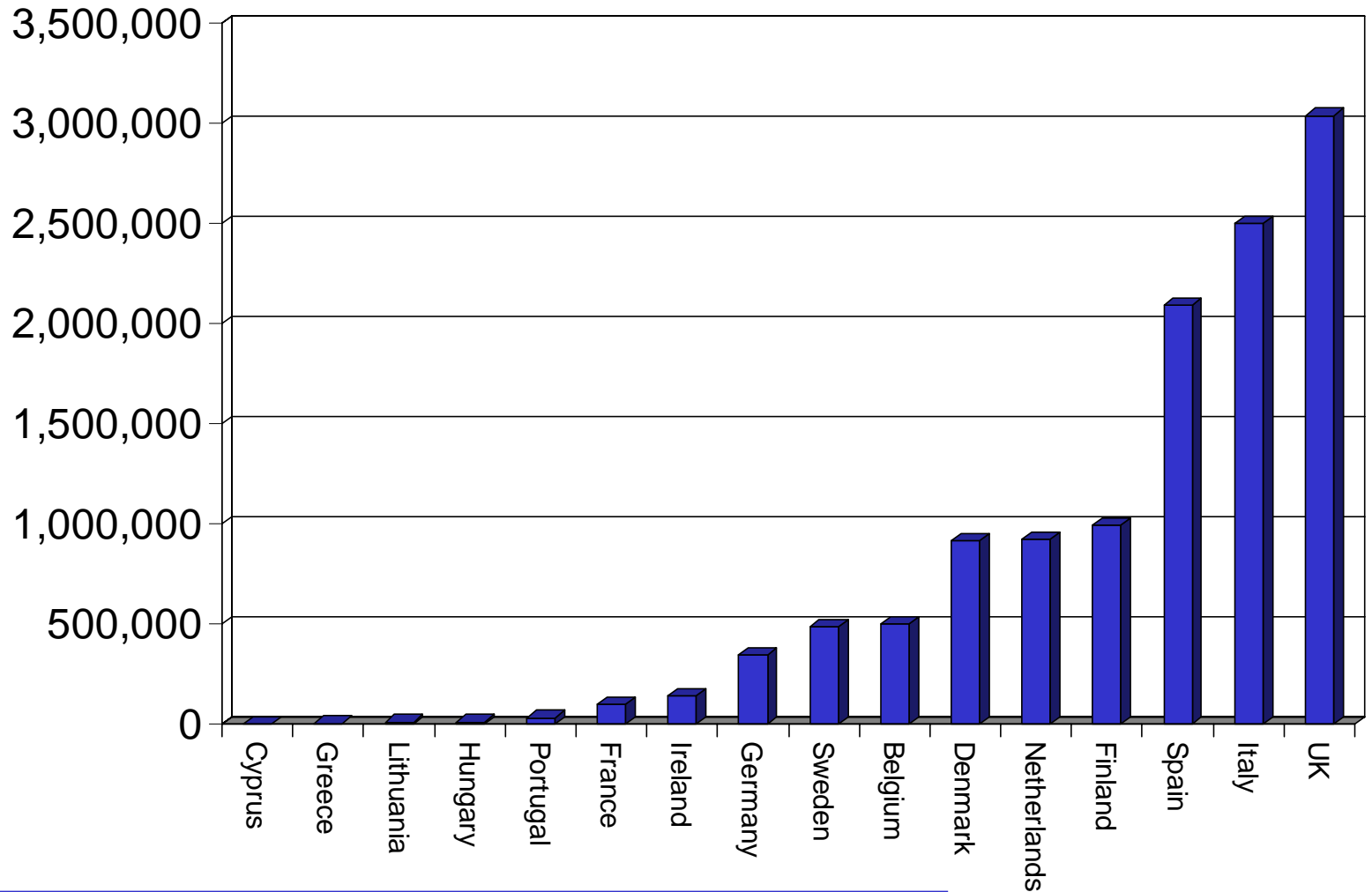
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- call origination:
 - national roaming
 - Mobile Virtual Network Operators (MVNOs)
- call termination:
 - wholesale price regulation
- SMS:
 - obligation to interconnect
 - wholesale price regulation
- international mobile roaming:
 - abuses are still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

mobile is *not* a single market

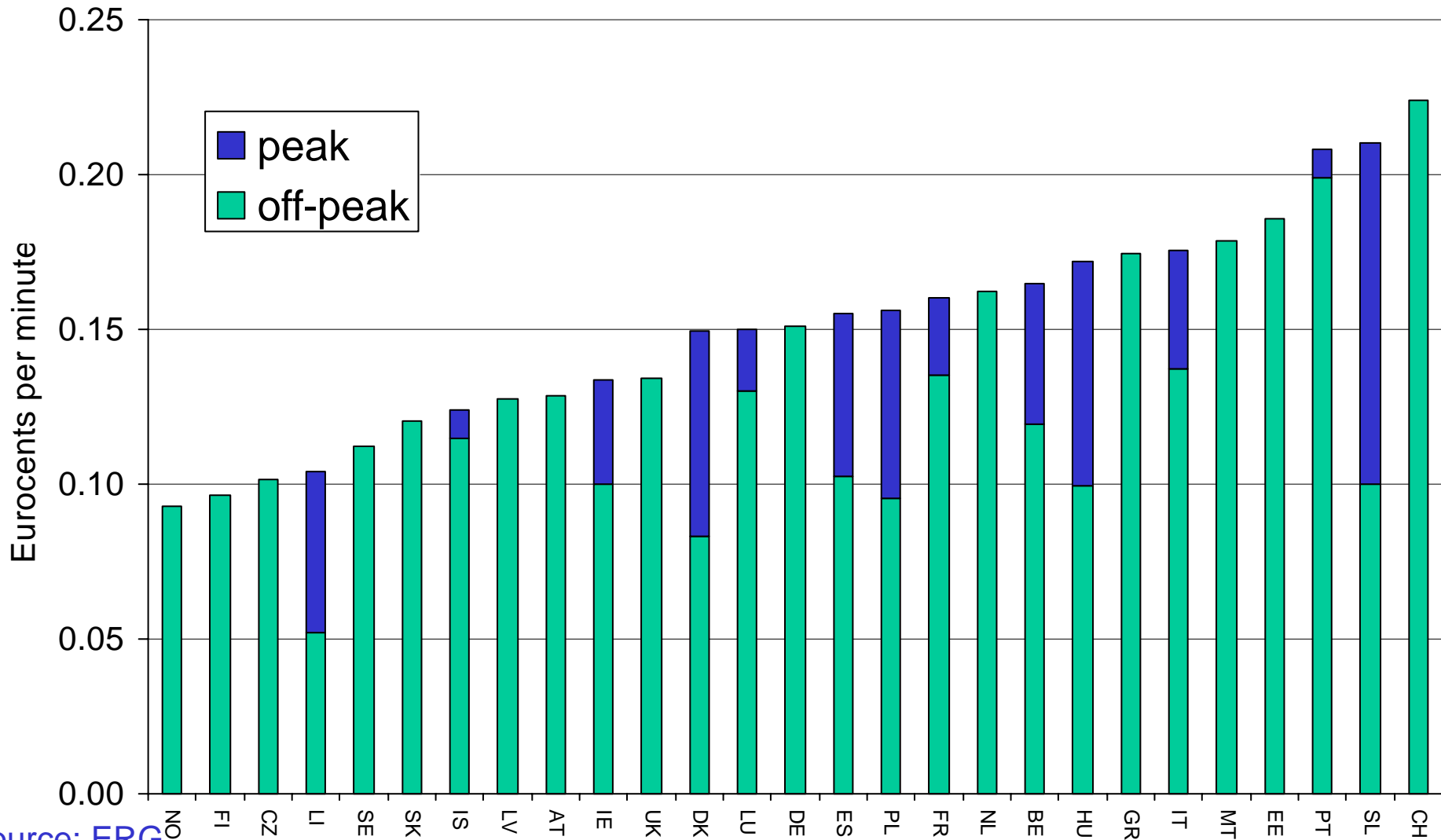
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cumulative total of mobile numbers ported to August 2004



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

INTUG mobile termination rates



INTUG international roaming prices

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- 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

INTUG data roaming

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- 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

INTUG pornographic content

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- 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

INTUG malware and security

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- 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.

INTUG ubiquitous network societies

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- 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

INTUG “any network”

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- 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

INTUG diffuse responsibility

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- 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

INTUG business adoption of ICTs

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- 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

INTUG corporate networks

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- 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.

INTUG third party suppliers

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- 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

INTUG Voice over IP

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- 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

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- 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

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- can we achieve Gigabit speeds?
- is “mobile” still a helpful term?
- can we achieve access to different networks, at different locations and in 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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