INTUG

3G cellular

mobile telecommunications

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NTC, Bangkok 4 October 2005

www.INTUG.net

INTUG contents

- INTUG
- market failures
- market and technology trends
- alternatives and competitors
- auctions
- 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

INTUG priorities

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

INTUG market failures and abuses

- call origination:
  - freephone
  - joint dominance in some markets
- call termination
  - excessive pricing
- SMS
  - excessive pricing
  - refusal to interconnect
- international mobile roaming
  - excessive pricing

INTUG fragmented mobile market(s)

- by geography :
  - different offerings in different continents
  - different patterns of cross-border travel
- by technology:
  - 3GSM *versus* cdma
  - cellular *versus* hot spot (Wi-Fi and WiMAX)
  - cellular *versus* broadcast (DAB, DMB, DVB)
  - transmitted *versus* stored (e.g., iPod and MP3)
- by economics:
  - origination
  - termination
  - roaming

INTUG challenges for the same money

- new revenue was to come from:
  - location based services
  - entertainment
- but there are alternative networks:
  - broadcast: DAB, DMB, DVB
  - hot-spots: Wi-Fi and WiMAX
- alternative devices:
  - games consoles
  - music and video players
  - other consumer electronics

INTUG business adoption

- needs to deliver:
  - lower costs
  - better service
  - return on investment
  - strategic advantage
- rejection of camera-phones and MP3
- slow adoption of GPRS because of unattractive pricing

Business also has a role as content provider, but with a choice of many channels to customers

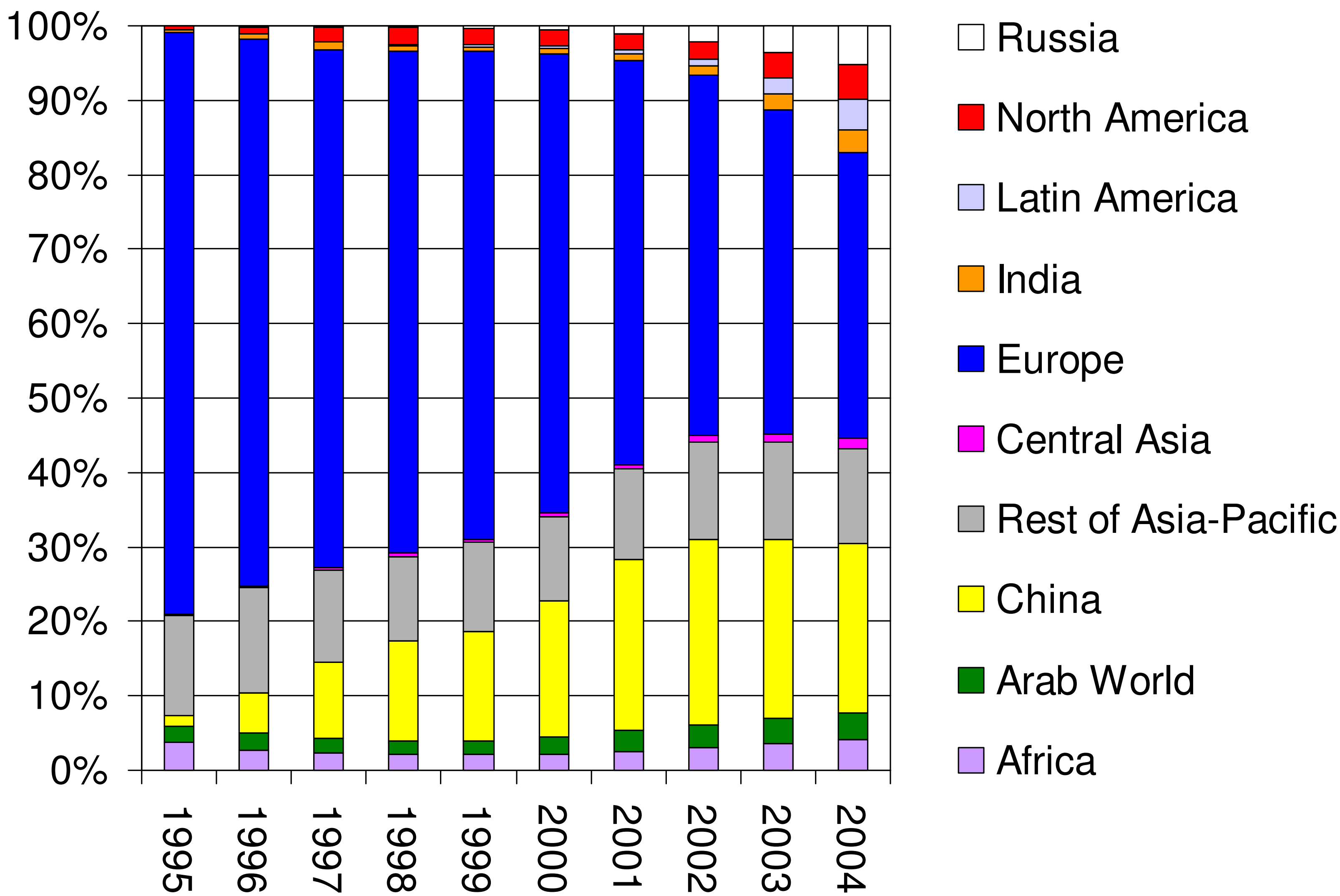
INTUG economics

- continuing search for productivity gains:
  - to drive economic growth
  - especially in the service sector
- well-established link between telecommunications and GDP
- but poor understanding of the economic value of:
  - mobility
  - nomadicity

INTUG mobile Internet access

- GPRS has been a failure:
  - a "walled garden" separated by a firewall from the Internet (.gprs)
  - overpriced, with slow price reductions
  - services are not certain to work
  - most GPRS handsets never use it
- cdma2000 1x EV-DO
  - flat rate prices & service level agreements
- already hype for HSDPA (3.5G)
- alternative interfaces to Wi-Fi and WiMAX

INTUG the geography of GSM



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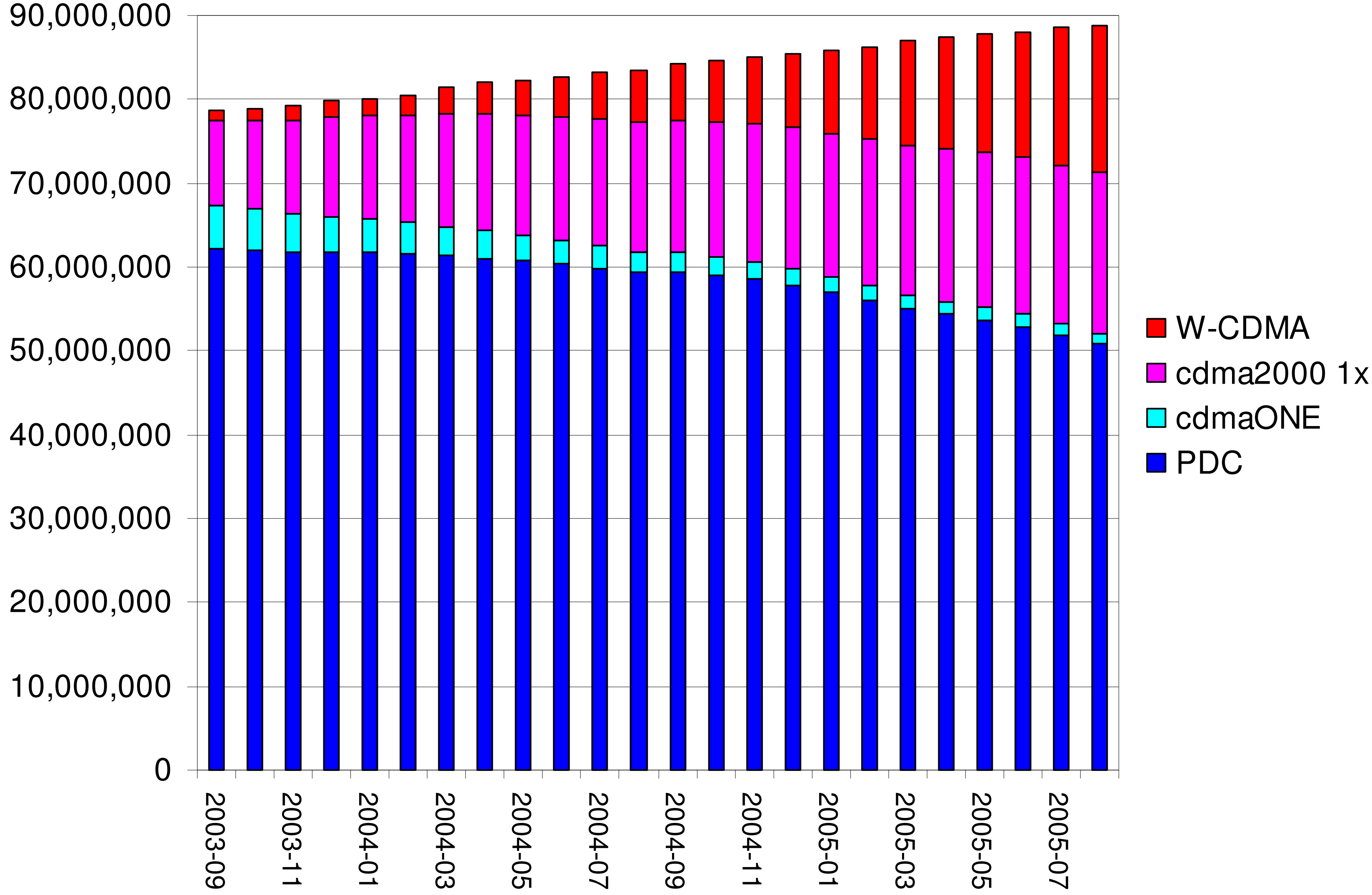
INTUG changing geography

- North America led the first generation
- European Union led second generation
  - but failure to adopt 2.5G
  - and failure to learn from 2G
  - growth is now in China (and India)
- 3G growth is in Korea and Japan
  - not just subscribers, but revenues
- China waits and watches

INTUG japan - digital customers



INTUG changing revenues

- the price of voice telephony is declining to a small monthly flat fee
- new revenues have come from:
  - ring tones
  - screen logos
  - transactions (payments)
  - entertainment (audio and video)

3G stands for Games, Gambling and Girls.

INTUG market entry conditions

- leased lines
- interconnection to:
  - fixed and mobile operators
  - domestic and overseas
- number portability
- sharing of masts

Non-discrimination.
Regulation of market power and bottlenecks.

INTUG bundling and leveraging

- markets are shifting to bundles:
  - triple-play (telephony, Internet & video)
  - quadruple-play (3 plus mobile)
- risk of anti-competitive behaviour by leveraging power into other markets:
  - mobile services into mobile
  - mobile into fixed
  - unique content into mobile
  - etc

INTUG market value of spectrum

- concern to ensure the efficient use of a scarce resource
- auctioning initial assignments
- a few countries are testing trading of spectrum

INTUG 3G auctions

- (in)famous auctions in Germany and the United Kingdom in 2000
- financial markets signaled to operators to keep bidding, but very quickly realised their error
- operators soon sought:
  - to reclaim "implicit" VAT on fees
  - to delay network construction
  - to share network infrastructure
  - to lobby for lighter regulation
- hard to see any economic rationale for the prices paid in terms of value for users
- high prices have not been repeated

INTUG auctions

- a long history of problems:
  - collusion
  - signaling between operators
- usually the result of:
  - inappropriate design
  - insufficient bidders
- but these issues are well understood

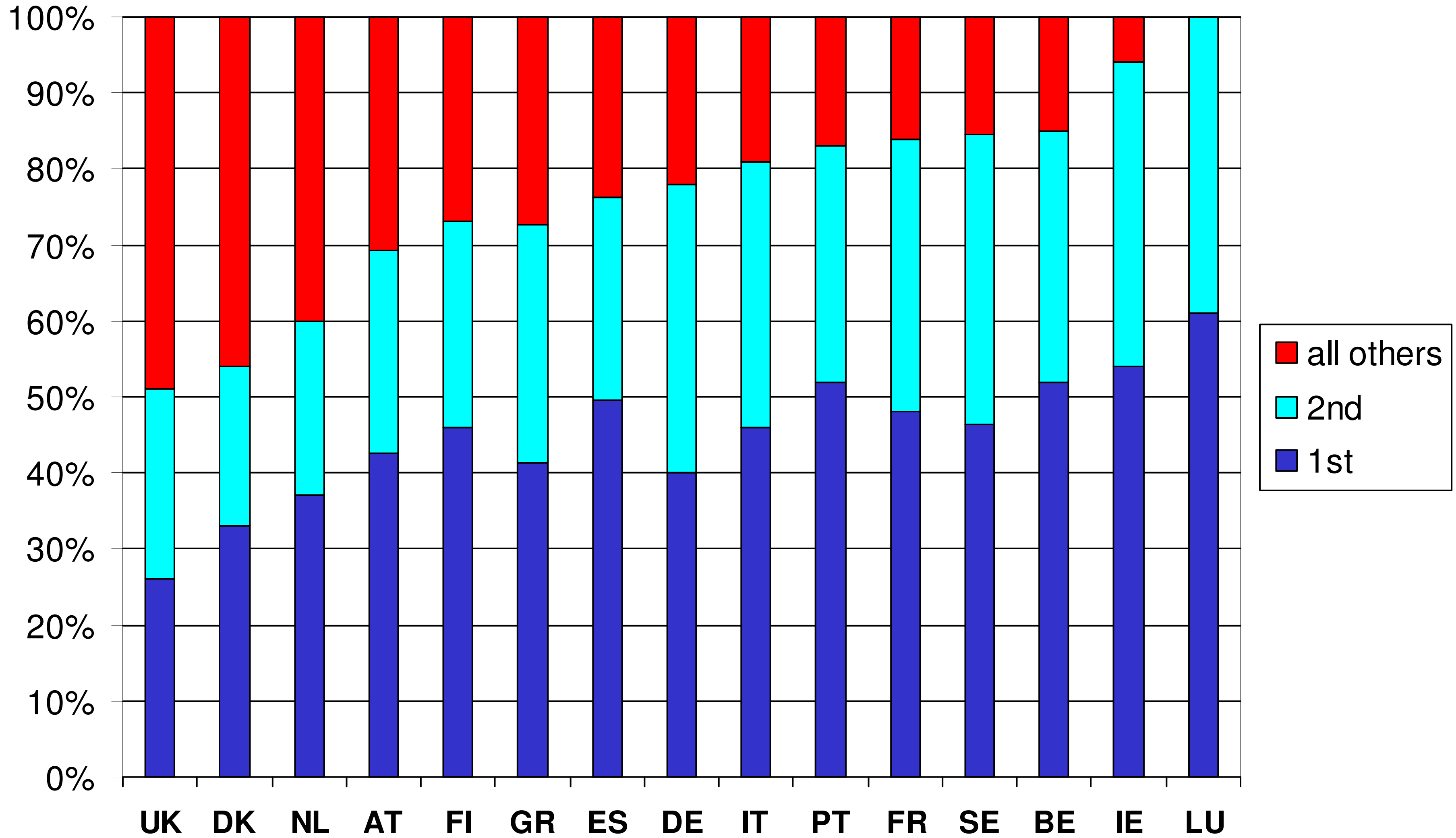
> In auction design, the devil is in the details.
> *Paul Klemperer*

INTUG European Union

- concern at very diverse outcomes:
  - auctions and beauty contests
  - high fees and nominal fees
  - general sense of chaos
- N+1 policy largely failed:
  - two 900 MHz GSM operators
  - then two 1800 MHz GSM operators
  - then (at least) one more 3G operator

study by McKinsey & Co for European Commission
http://europa.eu.int/information_society/topics/telecoms/radiospec/doc/pdf/mobiles/mckinsey_study/final_report.pdf

INTUG mobile operator market shares (2004)



INTUG beauty contests

- primary alternative to auctions
- criticised for lack of transparency
- can be challenged in court

Ireland – 2G 1800 MHz beauty contest result was challenged by Orange, delaying the launch of Meteor by 18-24 months. The result was joint dominance by the two older operators, requiring regulation of call origination market.

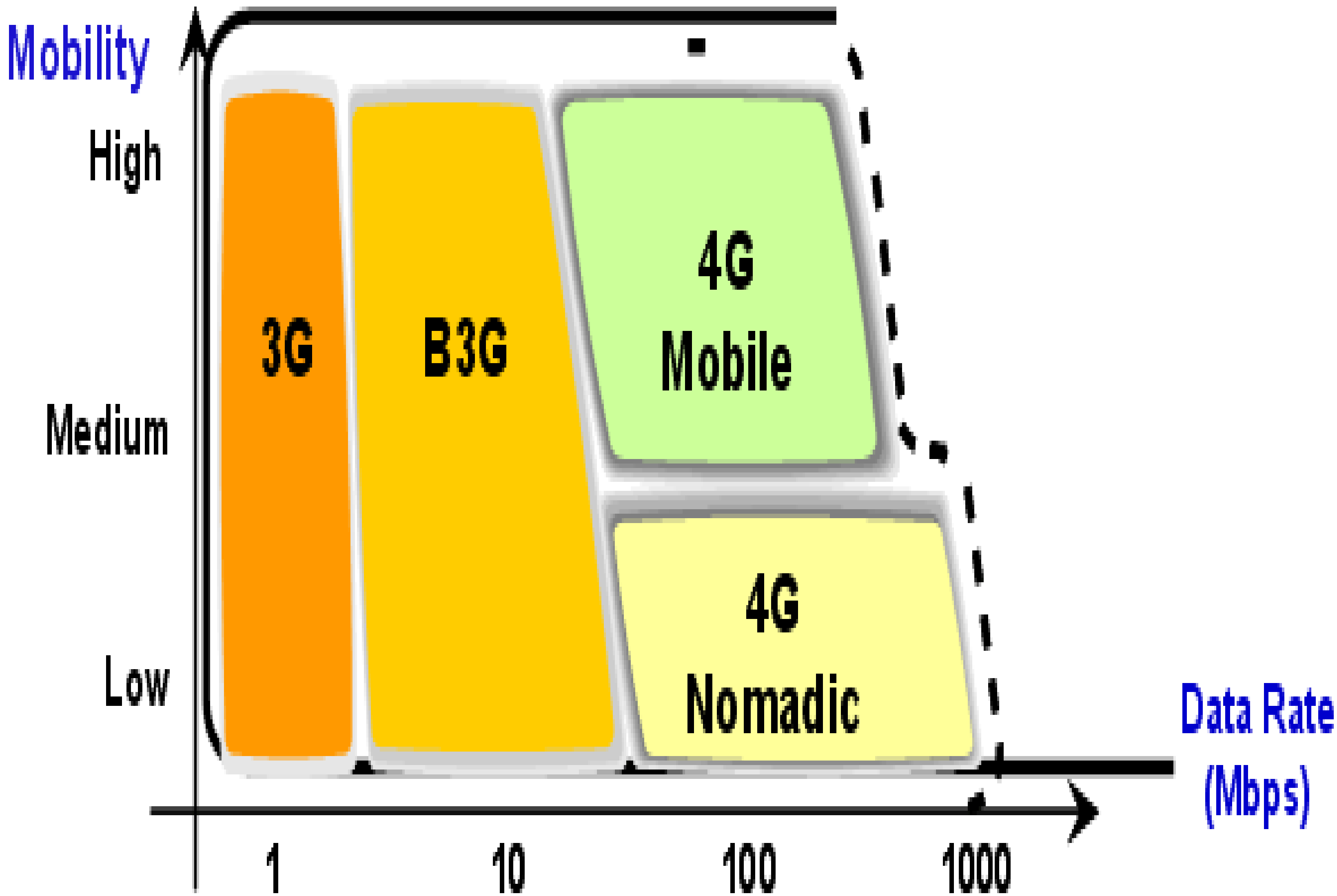
INTUG unlicensed spectrum

- not a direct competitor
- spectrum is shared with other uses, so no guarantee against interference
- limited power output
- nonetheless, nomadic services have been built up
  - wholesaling has been important in this
- widely used in homes, offices, retails outlets, etc.

INTUG other near competitors

- digital broadcasters:
  - Digital Audio Broadcast (DAB)
  - Digital Multimedia Broadcast (DMB)
  - Digital Video Broadcast (DVB)
- wireless broadband:
  - Wi-Fi
  - WiMAX
  - WiBro
- Beyond 3G (B3G), 4G, 5G

INTUG Samsung view of the future



INTUG ubiquitous network societies

- U-Japan and U-Korea
- multiple high-speed networks:
  - residential broadband (DSL or fibre plus Wi-Fi)
  - 3G and 4G cellular
  - wireless Internet
- small number of integrated competitors
- revenues from:
  - hardware
  - services

INTUG what consumers want

- fashion
- innovation
- value for money
- lifestyle choices

USA - electronic mail is for parents, children use instant messaging

INTUG what business users want

- high quality of service
- low prices
- simple and secure handsets
- raw IP connection
- accurate billing
- integration with fixed networks

INTUG conclusions

- we know one network will not be sufficient, it will be a mixture
- we cannot treat 3G as isolated from FWA, DxB and DSL
- for policy, we need to look to 4G and beyond
- we can use the ubiquitous network society as a possible policy framework

INTUG issues

- what is the perceived function of a 3G licence?
- what is really being sold?
- how do we signal high levels of uncertainty about services and future competition?

3G stands for Greed, Gullibility and Grief

INTUG thank you

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