Demand for NGNs: policy & regulation

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Introduction

- Generations
- Suppliers:
  - manufacturers
  - operators
- Customers:
  - individuals
  - corporations
- Conclusions

Next generation

- Stardate 41153.7
- 28 September 1987
- Jean-Luc Picard
- Star Trek: The Next Generation
- The NG term was picked up in different areas, including DBMS and library catalogues

Computer generations

- From the days of mainframe computers
    1. Thermionic valves
    2. Transistors
    3. Integrated circuits
- A world dominated by IBM
- Helped to persuade people to buy the "next generation" of devices
- Never applied to minicomputers or to personal computers

1982-92   **Japan Fifth Generation Computer Systems (FGCS)**

Generations

- The term is useful in retrospect
- Looking ahead generations are easily debased and abused by marketing
- Fixed: NGN
- Mobile: 3G, 3.5G, 3G/LTE, HSPA, 4G, 5G
- Web: 1.0, 2.0 and now 3.0
- We do not start from the same generation!

Supply-push

- Research and development by manufacturers
- Silicon Valley venture capitalists
- They need new cycles of sales
- Fixed incumbent operators:
  - under pressure to buy NGN
  - trying to reduce operational expenditure
  - exploiting opportunities for regulatory gaming
- But soon there will be:
  - N+1GN, N+2GN, N+3GN …N+nGN

Service-based competition

- Many developed countries picked service-based over infrastructure-based competition
- They forced opened access to incumbent operators' networks
- They are heavily reliant on inputs such as:
  - Line sharing
  - Wholesale Line Rental (WLR)
  - Bitstream Access (BSA)
  - Local Loop Unbundling (LLU)
  - Naked DSL

Service-based competition 2.0

- The switch to NGN *core* networks undermines or invalidates old policies:
  - the number of switches changes
  - interconnection may be in a street cabinet
  - there are considerable disagreements between countries
- The switch to NGN *access* networks undermines or invalidates old policies:
  - access over FTTH
  - no agreed model for success
- We need policies that are:
  - pro-competition
  - generation-neutral
  - not subject to technological disruption

# Net neutrality debate in USA

- Some operators claim retail customers will not pay enough

- They also want to make content providers pay

- The result would be differential quality of service

- It is claimed this would undermine the basis of the Internet

http://ssrn.com/abstract=953989

Mobile operators

- In developed countries there is now limited growth
- Operators look to:
  - develop entertainment services
  - migrate slowly to 3G
  - offer multiple play, combined with unbundled local loops
  - expand into larger emerging markets
- No tradition of access regulation:
  - few third parties
  - some Mobile Virtual Network Operator (MVNOs)

Japan switches to 3G
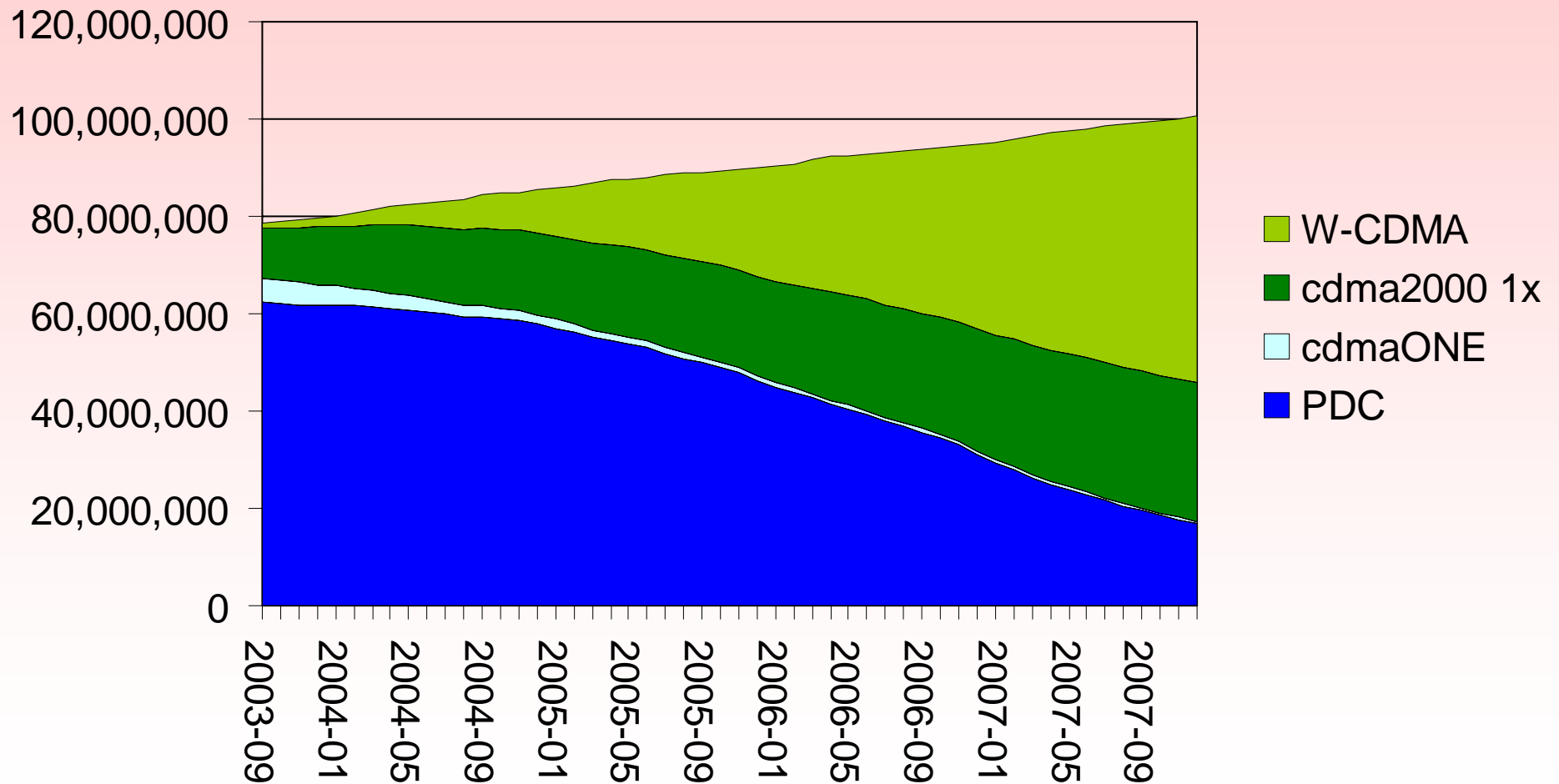
Demand for mobile

- In LDCs seemingly unlimited demand for:
  - voice
  - SMS
- Average Revenue Per User (ARPU) is declining:
  - newer customers are poorer
- Growth enerates strong economic benefits:
  - if it was cheaper there would be even more use
- Also social benefits
- Health (e.g., information on HIV/AIDS)
- Limited interest in mobile Internet and TV

3G in the developing world

- Proving expensive to install:
  - some relief from making 900 MHz band technology neutral
- Not yet delivering significant profits:
  - priced for the elite
- Operators are deploying:
  - HSDPA
  - very limited HUSPA
- Operators are developing wide geographic scope to spread risk, to learn lessons and to create economies of scale

Fixed wireless access

- Combined with GSM to offer multiple play:
  - can be built as an overlay network
- Needs mobile television to complete the bundle
- Competes with GSM with VoIP over Wimax
- Deployment has been slower than anticipated:
  - equipment is still expensive

Revenues

- In developed countries as voice revenues collapse, customers spend more on entertainment services
- In developing countries:
  - Very, very little evidence of willingness to spend on services:
  - No proven business model for this:
    - monthly subscription
    - video on demand
- A series of constraints: literacy, electricity supply, computer ownership, disposable income, willingness to spend

Oriental Hotel – 802.11n

- 22 January 2008 world's first deployment of next-generation wireless 802.11n technology in the hospitality industry
    - Cisco Aironet 1250

- Allows guests and staff to stay connected even as they move from floor to floor

"Today's business travelers demand more than simple connectivity: They value voice, video and data options which are efficient, convenient, highly secure and most importantly can be accessed anytime, anywhere in the hotel."
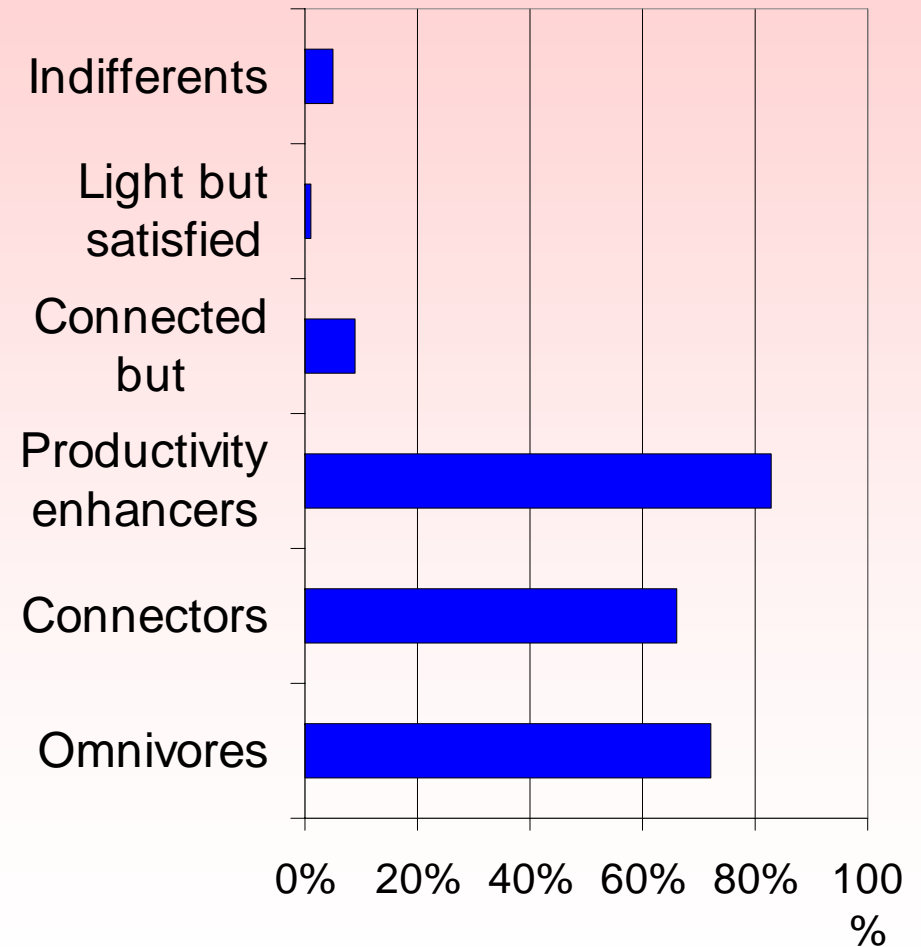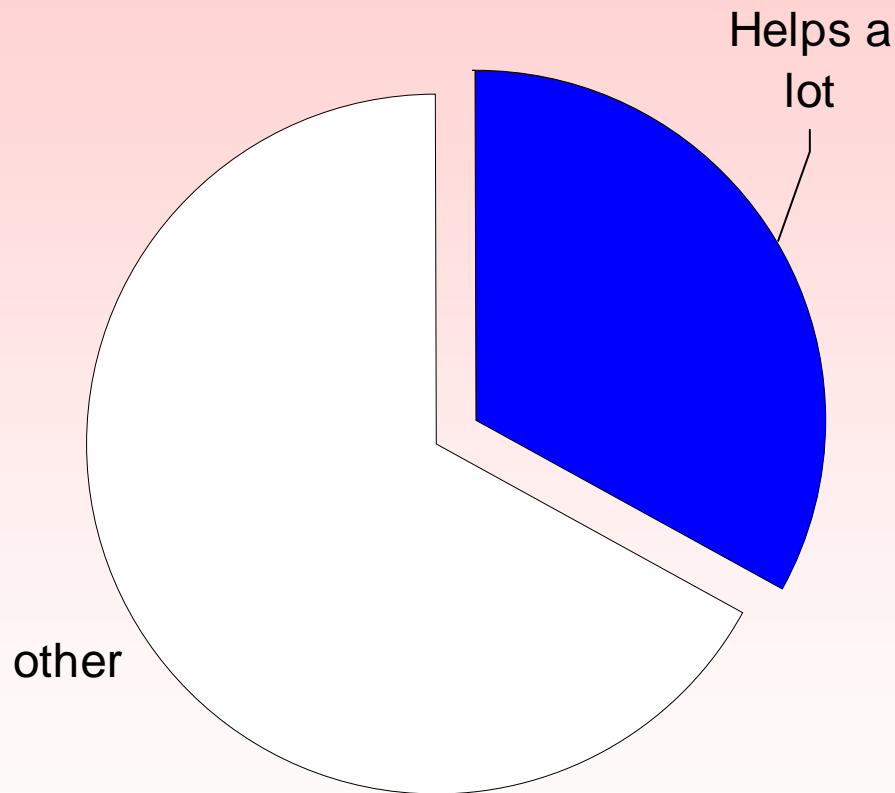
Customers buy bundles

- Traditional revenue sources are given away
- In France the Free.fr service offers:
  - monthly fee €29.99 (THB 1370)
  - ADSL 2+ with 28Mbps down and 1Mbps up
  - free telephone calls to 70 countries
    (mobile networks excluded)
  - access to 200 television channels
  - residential Wi-Fi router
- Vodafone offers residential services:
  - unbundled local loops in the UK
  - fixed wireless access in DR Congo and South Africa
- Shanghai Media Group:
  - mobile television for RMB 10 per month now cut to RMB 2
    (THB 43 to 9)

http://adsl.free.fr/

Socio-technical factors

- Growth of broadband is slowing in developed countries
- The technophiles have adopted
- The technophobes are not very interested
- The sales pitch is no longer easy or self-evident

ICTs make you more productive?

Helps a lot

other

Indifferents

Light but satisfied

Connected but

Productivity enhancers

Connectors

Omnivores

0%   20%   40%   60%   80%   100%
%

Multinational corporations

- Fixed networks are global
- MPLS-based IP-VPNs
  - Ethernet replacing leased lines (Gigabit speeds)
- Fully integrated voice and data
- Redundant routing
- Very high levels of performance
- Used to support outsourcing
- Now deploying telepresence

Enterprise mobility

- Expensive and poorly integrated for fixed networks
- GSM for voice:
  - some dual-mode GSM-Wi-Fi devices to bypass cellular networks
- Wi-Fi and ADSL for data access
- Some support from third parties which aggregate for corporations (e.g., Fiberlink & iPass)
- Mobility merges into home working:
  - ADSL plus residential Wi-Fi
- Drive to reduce costs:
  - of which international roaming charges are the biggest problem
- Drive to improve security

Conclusions

- Enterprises want cheap but reliable seamless global services on private networks

- Consumers want cheap voice and entertainment in bundles

- LTE or NGN are infrastructure issues
  - they are of little or no interest to customers

- NGN looks very much like ISDN 2.0

Thank you

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