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Mobile Data Adoption in Finland 2005-2006

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Outline

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  - Mobile packet data traffic
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- Explaining empirical observations
- Conclusions

Introduction

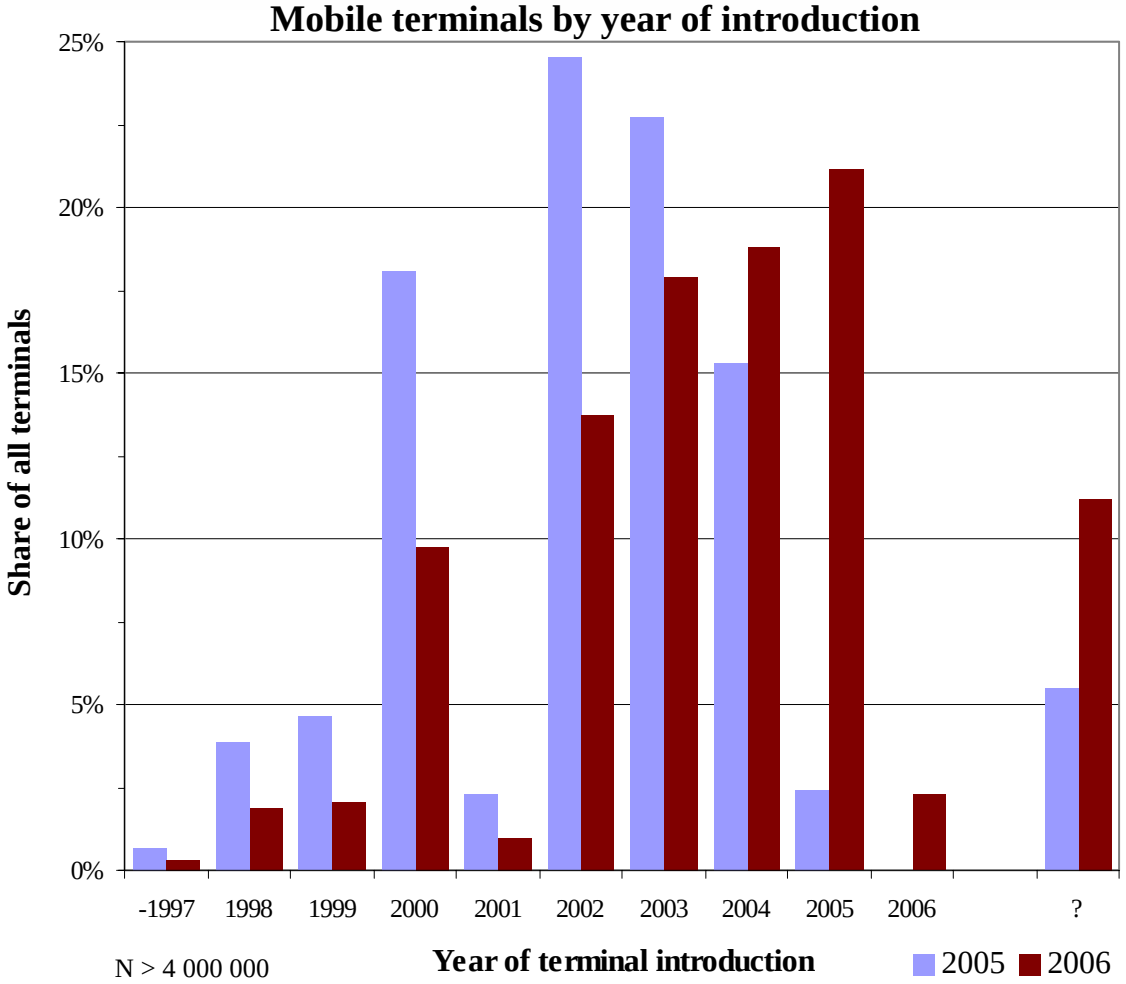
- Why mobile data service usage?
  - Reliable and transparent information on end-user behavior valuable to many stakeholders (e.g. marketing, business & product development, academics)
  - No accurate market level information on adoption, diffusion, and usage of mobile data services
- Purpose of the paper
  - To provide factual information on the penetration and usage of mobile devices and services in Finland
  - To identify key factors that have affected the adoption of mobile devices and data services

Research method

- Data collected from mobile operators' charging-oriented reporting systems
  - Charging Data Records (CDR) on chargeable events by mobile subscribers
  - Operator customer registers and billing systems
  - → statistics on usage of different chargeable services by subscriber, terminal, and service tariff related background variables
- Data on mobile data usage of three major Finnish GSM/UMTS operators' subscribers from 2 weeks in Sep–Oct 2005 and 2006
  - Including: Sonera, Elisa (+Kolumbus), DNA
    - No data on: Saunalahti, TeleFinland, others
  - About 80-90% of Finnish mobile terminals/subscribers (over 4 000 000)

Empirical results:

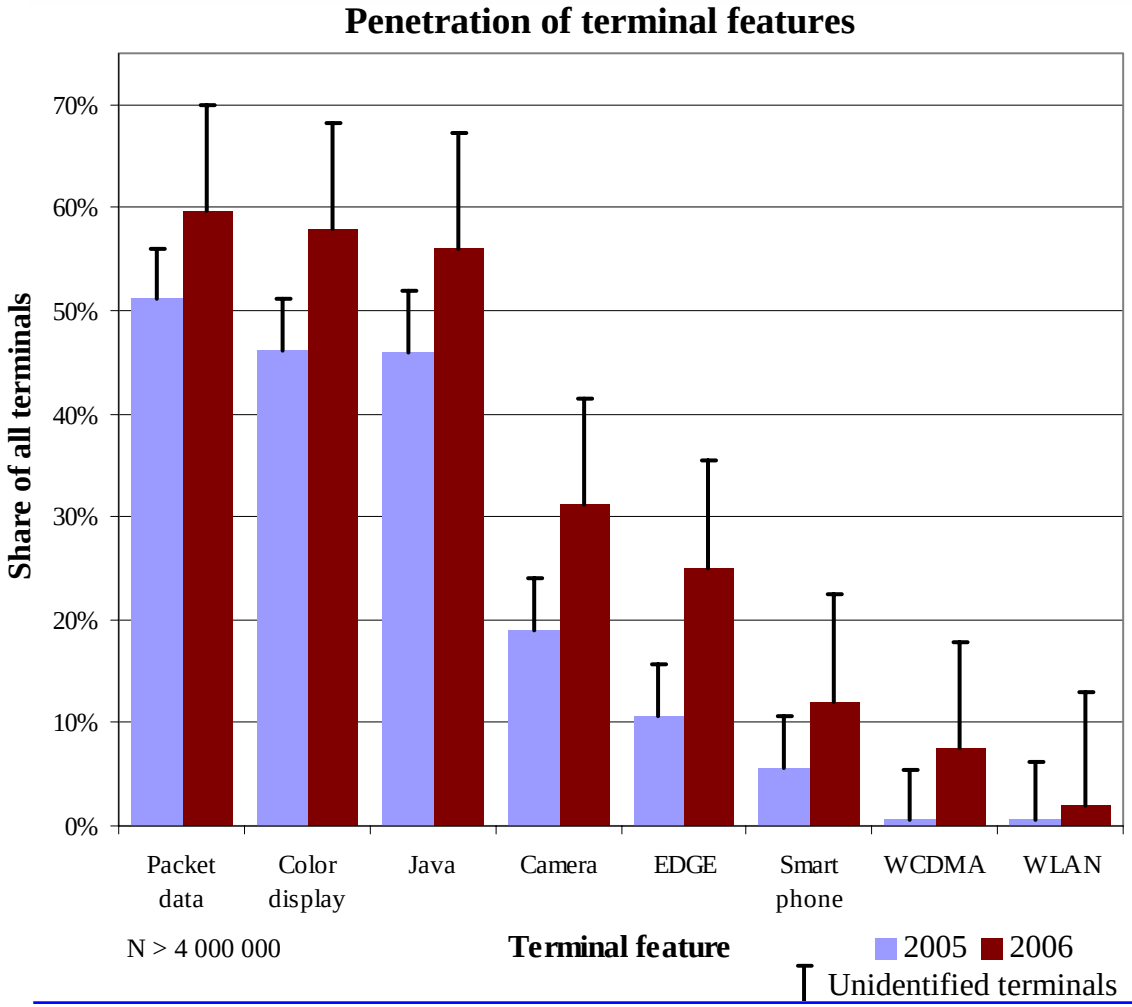
Finnish mobile terminal base is renewing



- Mobile terminal base renewed by more than one year in 2005-2006
  - Average “age” down by 4 months, i.e. from 2,9 (2005) to 2,6 (2006) (measurement year – year of introduction)
- Bell curve broken by 2005 and 2001
  - Many terminals from 2005 (in 2006 data)
  - Very few terminals from 2001
- Reliability issues
  - “Year of introduction” not well defined
    - HERE: Official introduction (press release) of a terminal model by manufacturer
    - Delay from terminal introduction to start of sales not stable, depends on e.g. manufacturer, market & model
  - Considerable 11% of "Unknown", likely with somewhat newer profile than identified terminal base

Empirical results:

Features enabling data usage are spreading

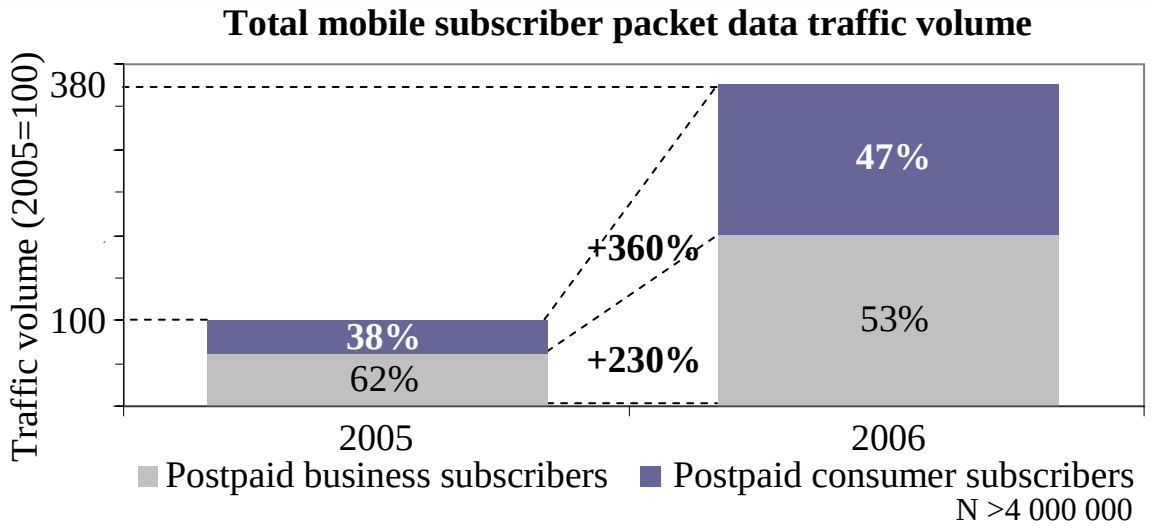


- Key features for packet data usage spreading
  - Packet data 51 % → 60 %
  - Java 46 % → 56 %
  - EDGE 11 % → 25 %
  - Smart phones* 6 % → 12 %
  - WCDMA 0,5 % → 8 %
  - WLAN 0,7 % → 2 %
  - HSDPA 0 % → 0,1 %
- Unidentified terminals (T) somewhat increase the figures of all features
  - 10-11% in 2006, 5-6% in 2005
  - Unknown profile likely somewhat more advanced than identified terminal base

* Symbian, Windows Mobile, Palm, Linux...

Empirical results:

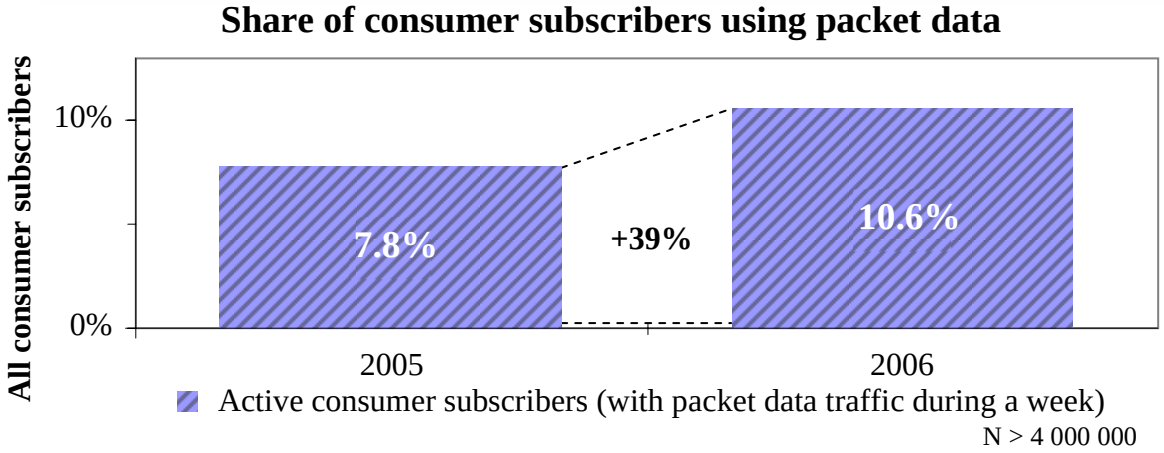
Mobile data traffic volume is growing rapidly

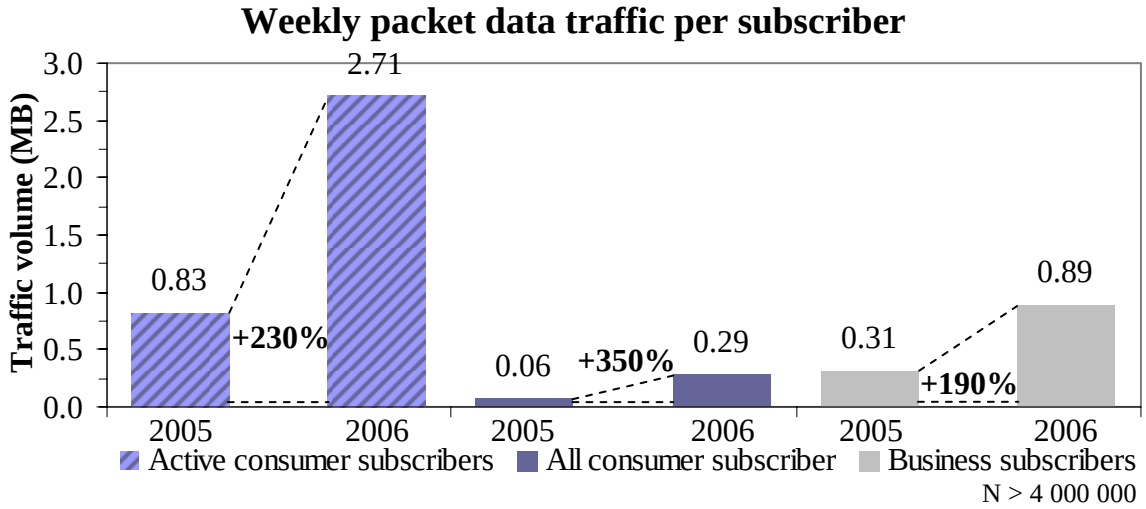


- Mobile subscriber packet data usage grown almost 4x
  - According to Statistics Finland: total mobile network data traffic 34 000 GB in 2005 (650 GB/week), which corresponds to traffic volumes measured in 2005
  - Mobile subscribers mostly (>90%) postpaid in Finland
- Consumer subscriber packet data usage up almost 5x
  - More users?
  - More usage per user?

Empirical results:

But… growth mainly comes from old users



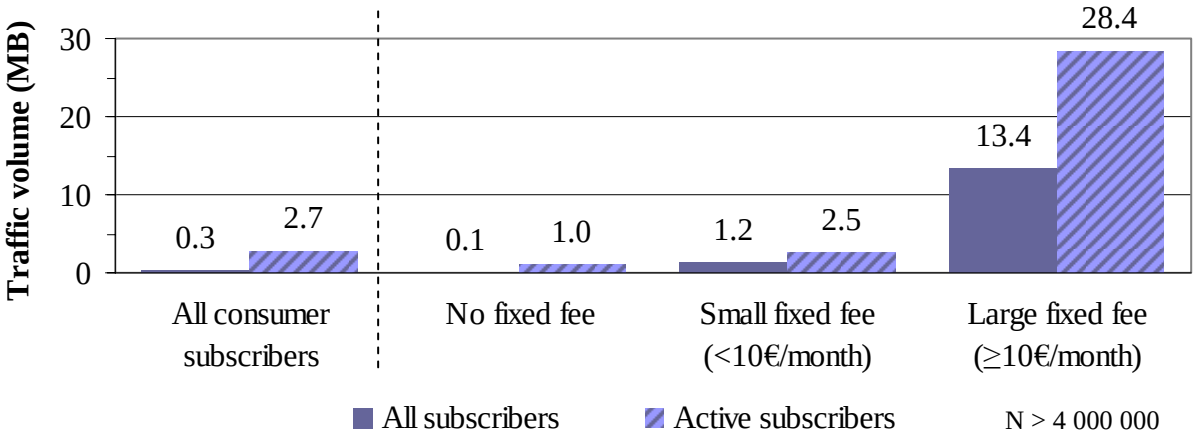


- Only 3 percentage point increase in share of weekly users
  - 39% more (100 000) packet data using consumer subscribers
- High growth results from increased average traffic per subscriber
  - Business subs. still generate 3x as much traffic per subscriber
- Why is average usage growing?
  - Lower price/MB?
  - More capable terminals and networks (3G, HSDPA)?
  - More laptop usage?
  - New data services?
  - …?

Empirical results:

Low price per MB correlates with high usage

Weekly packet data traffic volume per subscriber (2006)



Share of consumer subscribers using packet data (2006)

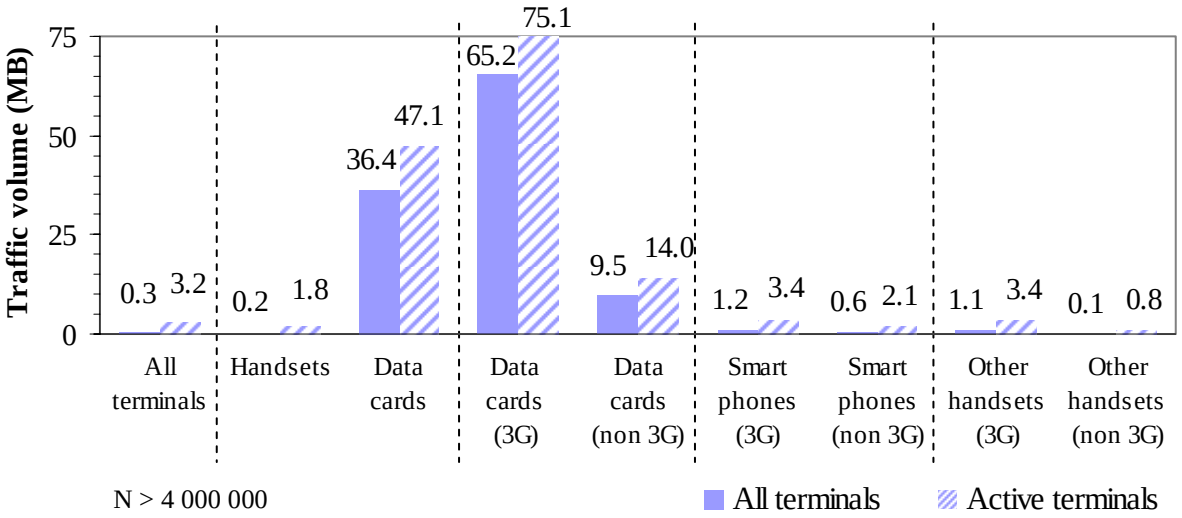
All consumer subscribers	No fixed fee	Small fixed fee (<10€/month)	Large fixed fee (≥10€/month)
11%	9%	48%	47%

- Fixed fee data subscriptions very actively used
  - ≈50% use weekly
  - >70% of all traffic
- Lower price/MB ←→ higher usage
  - More frequent and voluminous usage
  - Holds also for almost all individual tariffs, except the highest (premium)

Empirical results:

3G capability correlates with high usage

Weekly packet data traffic per terminal (2006)



Share of terminals using packet data (2006)

All terminals	Handsets	Data cards	Data cards (3G)	Data cards (non 3G)	Smart phones (3G)	Smart phones (non 3G)	Other handsets (3G)	Other handsets (non 3G)
11%	11%	77%	87%	68%	36%	30%	34%	7%

- 3G capability ←→ higher usage for all types of terminals
  - >5x traffic per data card
  - ≈2x traffic per smart phone
  - >4x traffic per "other" handset
- No difference between "3G smart phones" and "other 3G handsets"
  - Other 3G handsets also quite "smart" (e.g. Nokia Series 40, SE Java platform…)
- "Non-3G smart phone" more used than "other non-3G handsets"
  - Smart phones have many potentially data-intensive features (e.g. large display, advanced browser, Bluetooth)

Explaining empirical observations

- Finnish mobile market... before 2006
  - Heavy price competition on voice/SMS tariffs
  - Slow launch and build-up of 3G networks, 3G coverage only in big cities
  - Old-fashioned mobile terminal installed base

- … since 2006
  - Bundling of 3G handsets and subscriptions since April 2006
  - Operator marketing focus towards advanced handsets

  } Terminal base renewal

  - New data pricing schemes (flat rate) and new data services (mobile TV streaming, music downloading…)
  - Improved 3G network coverage, HSDPA upgrades

  } Increased per-user traffic

Conclusions

- Mobile terminal base has renewed due to changed market focus towards advanced handsets
- Consumer masses have not started using mobile data services, despite improved 3G penetration
  - Hundreds of thousands of new 3G handsets not used for data
- Existing users have acquired more capable terminals and decreased price/MB has favored higher usage
- Critical mass for mobile data service adoption has not yet been achieved in Finland
  - Improvements in terminal base nevertheless lay the enabling conditions for mass market adoption in the (near?) future

Further information

- Other publications on the topic
  - A. Kivi, *Measuring Mobile User Behavior and Service Usage: Methods, Measurement Points, and Future Outlook*, at 6th Global Mobility Roundtable, 1-2 June 2007, Los Angeles, California, U.S., 2007.
  - A. Kivi, *Mobile Internet Usage Measurements - Case Finland*, Master's thesis, Helsinki University of Technology, 2006.
- COIN project web site
  - http://www.netlab.tkk.fi/tutkimus/coin/
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