



HELSINKI UNIVERSITY OF TECHNOLOGY
Networking Laboratory

Mobile Internet Usage in Finland: Measurements in 2005-2007

Antero Kivi

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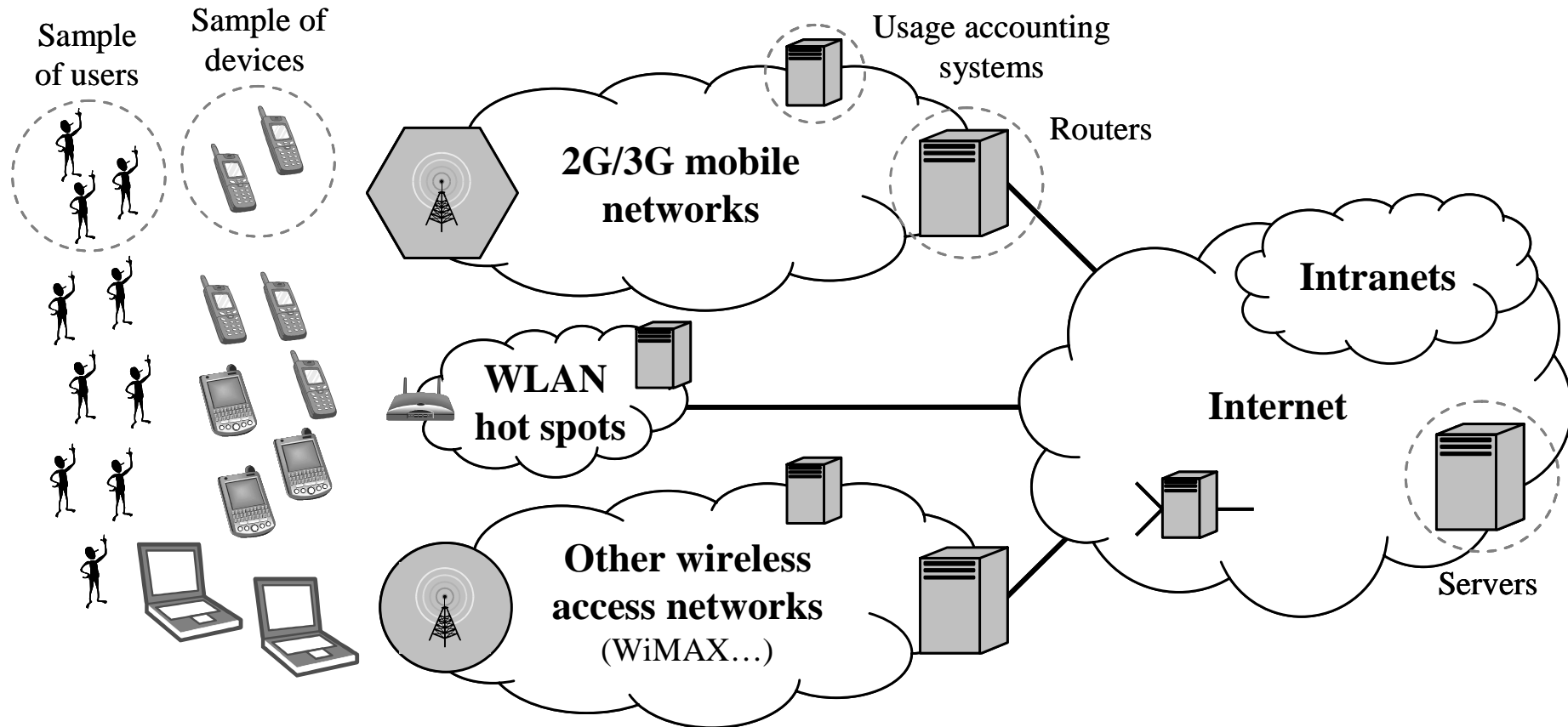


Outline

- Measurement introduction
- Exemplary results
- Summary



Sources of data on mobile service usage

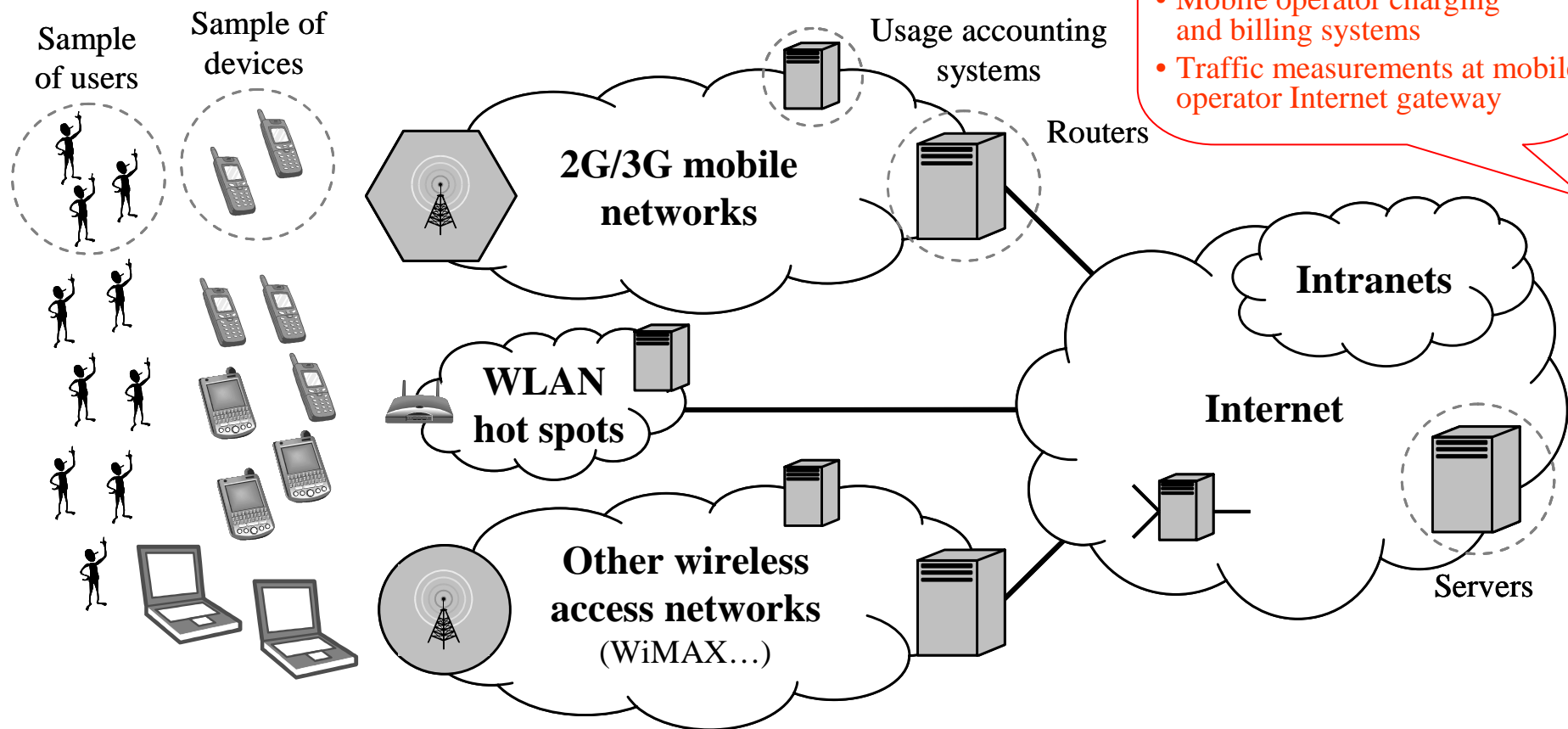




Sources of data on mobile service usage

OUR RESEARCH

- Surveys on handset panel participants
- Handset monitoring panels
- Mobile operator charging and billing systems
- Traffic measurements at mobile operator Internet gateway



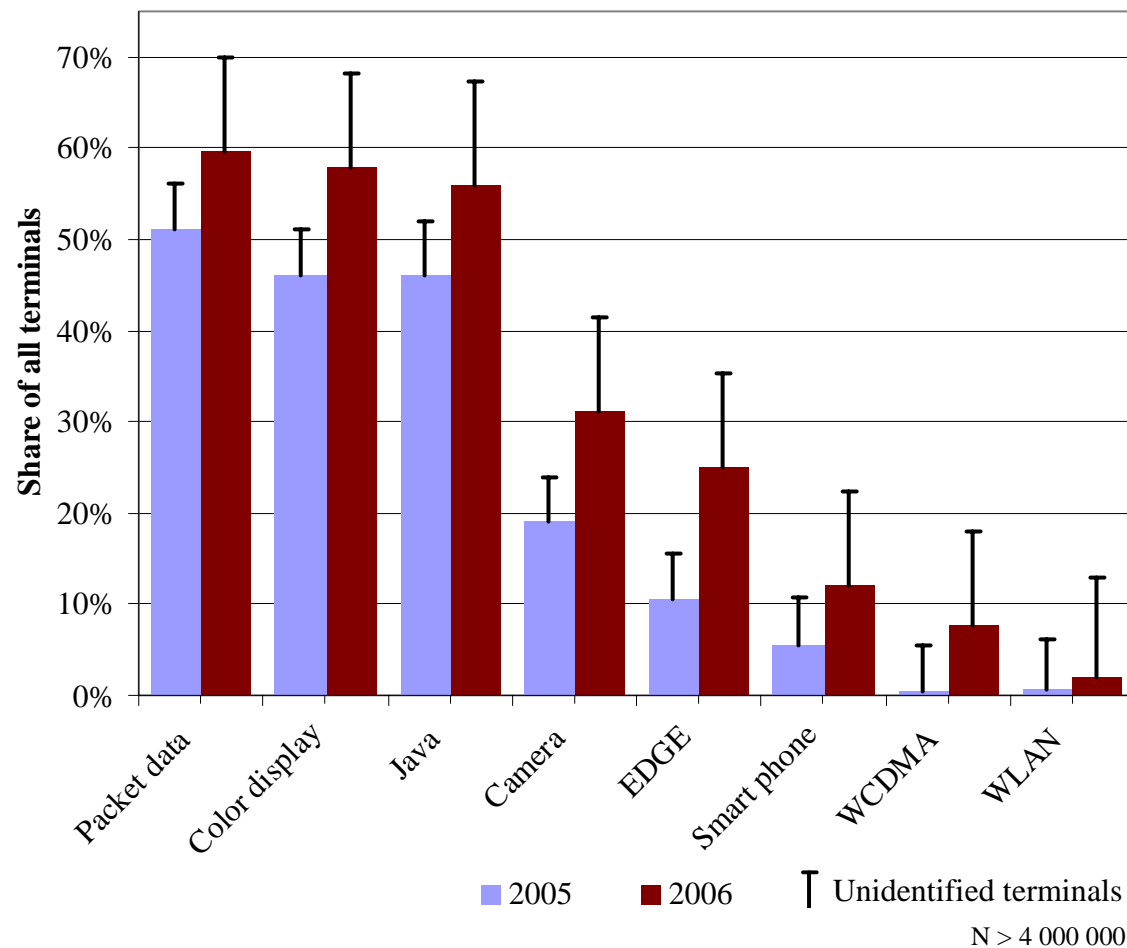


Measurements in COIN project

- Comprehensive cross-sectional data, different methods used
 - Mobile operator charging and billing systems
 - IP traffic measurements at mobile operator networks
 - Handset monitoring panels
- Time series data, all measurements repeated annually
 - Data on 2005-2006 collected, results partly published
 - Data on 2007 collected at the moment
 - Data on 2008-2010 planned in a forthcoming research project
- 80-90% of Finnish GSM/UMTS mobile terminals/subscribers
 - Including: Sonera, Elisa (+Kolumbus), DNA
 - No data on: Saunalahti, TeleFinland, others



Mobile terminal base renewing rapidly

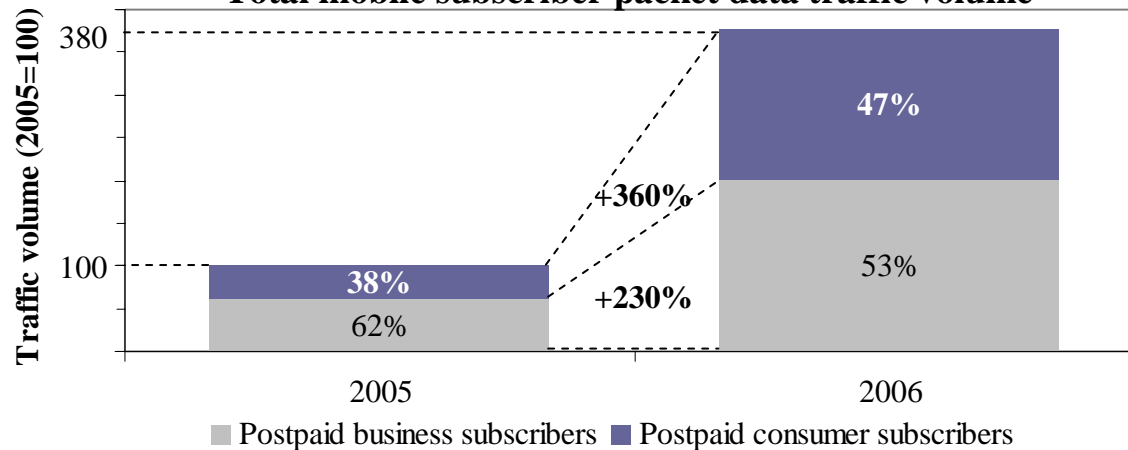


- Key features for mobile data usage spreading
- Above-average renewal of terminal base
 - Average age of terminals down by 4 months
- Nokia's market presence remarkable
 - >80% of mobile phones
 - 99% of smart phones
- Continued renewal in 2007?
 - Market focus towards advanced handsets
 - Handset bundling

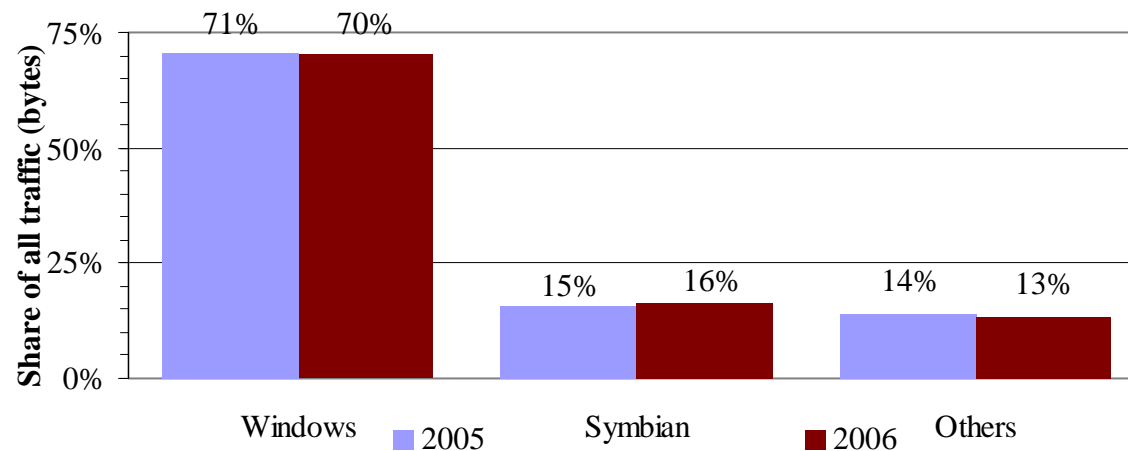


Mobile data traffic volume growing rapidly

Total mobile subscriber packet data traffic volume



Mobile packet data traffic by end user device operating system

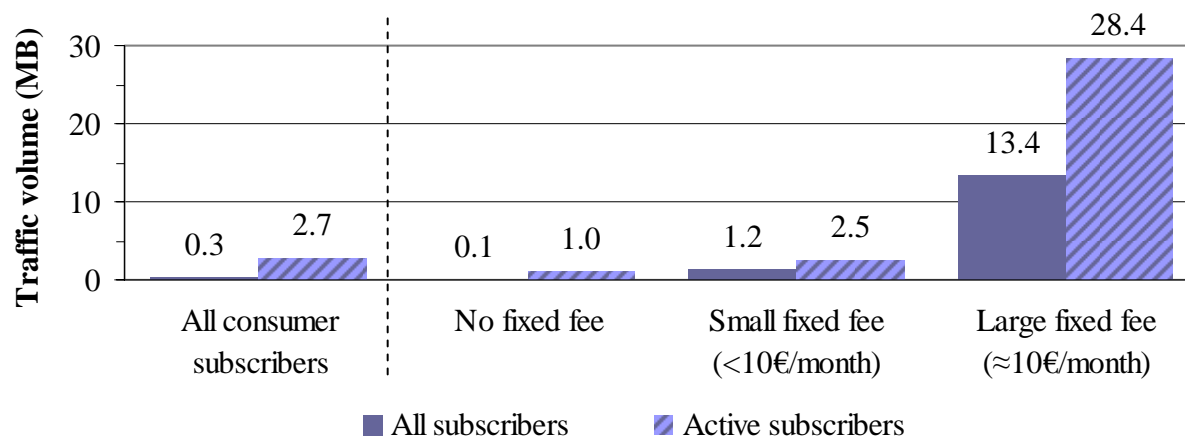


- Data traffic 4x in 2005-2006
 - Statistics Finland: 34000 GB (2005) to 100000 (2006)*
- Consumers usage growing
 - Traffic volumes almost 5x
 - Business users still 3x as much traffic per user
- PCs create the bulk of traffic
 - Data cards, USB modems, handsets as modems
 - HSDPA and flat rate
- High growth also in 2007**
 - Consumer or business subs.?
 - Handsets or laptops?
 - More users or more usage?
 - Is mobile data “flying”?



Fixed fee data subscriptions and 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%

N > 4 000 000

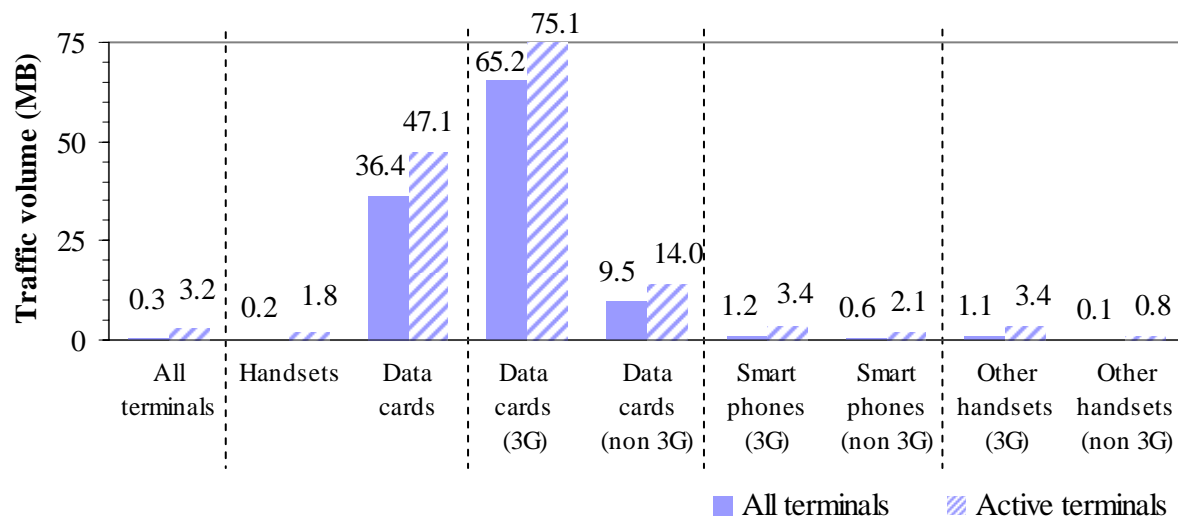
- Fixed fee data subscriptions becoming more popular
 - 2005-2006: 1% → 4% of consumers
 - 6/2007: 7% (all subs.)*
- Consumers increasingly active users
 - Weekly users 8% → 11%
 - Business users more active
- Fixed fee data subscriptions actively used
 - Lower price/MB ↔ higher usage
- New pricing models in 2007

* Viestintäviraston markkinakatsaus 2/2007
http://www.ficora.fi/attachments/suomi_M_Q/5ruZzuAh0/Files/CurrentFile/Markkinakatsaus_2_2007.pdf



Advanced terminal features and 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%

N > 4 000 000

- 3G capability ↔ higher usage for all types of terminals
 - >5x traffic / data card
 - ≈2x traffic / smart phone
 - >4x traffic / other handset
- Smart phone ↔ higher usage
 - Smart phone a bundle of advanced features (e.g. large display, advanced browser)
 - Also used as modems for laptops
- Terminal capability as cause or effect?



Mobile browsing mainly local content

Top 10 mobile browsing destinations by traffic volume

Rank	2005		2006	
	Domain name	Share	Domain name	Share
1.	yle.fi	4.6%	google.com	3.2%
2.	mtv3.fi	4.3%	mtv3.fi	3.0%
3.	eniro.basefarm.net	2.6%	yle.fi	2.8%
4.	iltalehti.fi	2.2%	nokia.com	2.7%
5.	google.com	2.0%	nokia.fi	2.2%
6.	kauppalehti.fi	1.9%	iltalehti.fi	2.0%
7.	nokia.com	1.8%	opera.com	2.0%
8.	helsinginsanomat.fi	1.6%	yahoo.com	1.6%
9.	sm-liiga.fi	1.5%	sanoma.fi	1.3%
10.	yahoo.com	1.4%	helsinginsanomat.fi	1.3%
	Operator domains	13.3%	Operator domains	28.4%
	Others	62.9%	Others	49.6%

- Local content dominant
 - >70% of browsing traffic
 - Search (Google, Yahoo) also on local content?
- Finnish mobile sector important, and growing
 - Mobile operators (not shown), Nokia
- Finnish media companies with strong presence
 - YLE, Alma Media, SanomaWSOY
- Operator vs. Nokia vs. Google vs. media?



Summary

- Globally unprecedented cooperation between industry partners
 - Collaboration and data sharing among competing operators
 - Permission to also publish the data
 - Unique data in terms of scale and scope
 - Longitudinal and cross-sectional data
 - Very comprehensive data, due to use of multiple methods
 - Highly representative data, due to participation of 3 large operators
- Best available description of a national mobile data market
- The work continues... further results in 2008
 - Overview on fall 2007 measurement results published next spring
 - Further academic publications in 2008



Further information

- Results of the Finnish mobile data service usage measurements 2005-2007
 - Report 2005-2006 → <http://www.netlab.tkk.fi/~jakivi/>
 - Report 2007 → to be published next spring
- COIN project web site
 - <http://www.netlab.tkk.fi/tutkimus/coin/>
- Further information and academic publications
 - Contact [antero.kivi\(at\)tkk.fi](mailto:antero.kivi(at)tkk.fi)
 - <http://www.netlab.tkk.fi/~jakivi/>