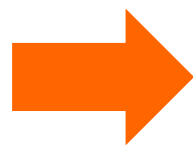


Mobile **Data** Challengers

May 2011 by Rewheel

The smartphone boom resets the mobile industry. We are witnessing data centric phone manufacturers and OS makers dethroning the kings of the voice centric era. Likewise, challenger network gear makers that took the first moves to launching all-IP, high capacity platforms and “gigabyte friendly” pricing deals, have multiplied their market share. The mass consumer demand for smartphones has opened a similar window of opportunity for **challenger mobile operators** to move their market share by leaping ahead in the data transformation. The industry winners of tomorrow will be smart operators that seize the opportunity and transform themselves into very efficient data production factories with a sole purpose to serve their customers’ needs rather than restricting them by volume caps and blocking mainstream internet applications. ■

Old smartphones: niche advanced smartphones: mass market



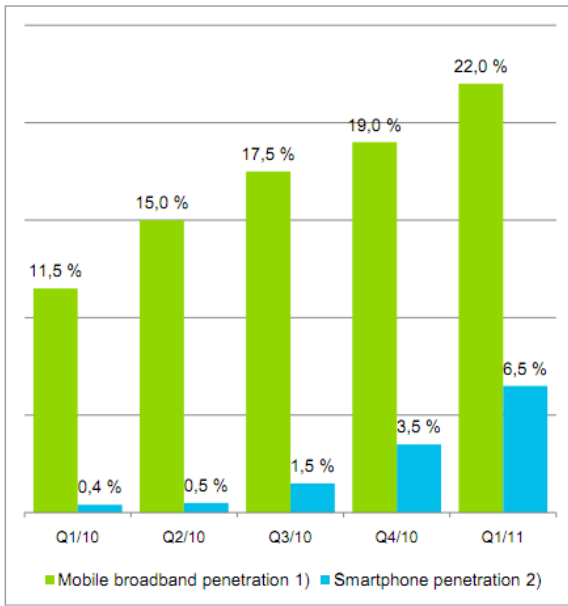
Productivity Tool
 "Nerdy": Niche market
 Complementary to fixed/PC
 Primarily voice centric usage

Fashion, social
 Cool: Mass market
 Signs of substituting some PC
 apps (e.g. Facebook)
 Primarily data centric usage!



The boom of advanced smartphones has just begun

Penetration in Elisa's network in Finland



1) Doodles and mobile DD add-on services of the total subscription base
2) iOS, Android, Symbian 3* and Windows phones of the total phone base

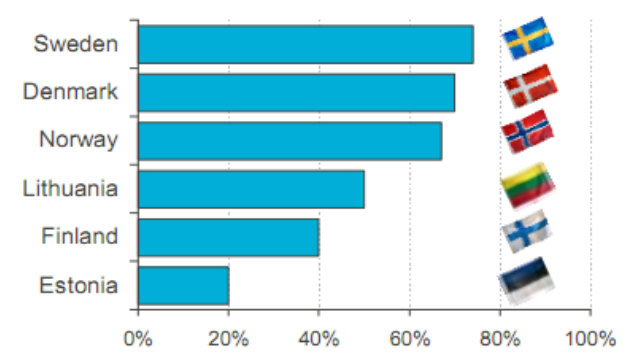


Smartphones top the list of most sold phones in March 2011

1. iPhone 4
 2. Nokia E7
 3. Nokia C7
 4. ZTE Blade
 5. Huawei Ideos X5
 6. HTC Desire HD
- 50% of all models sold were smartphones in Q1

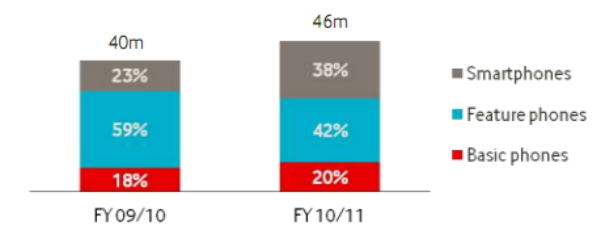
Source: Elisa Finland

% of handsets sold being smart phones

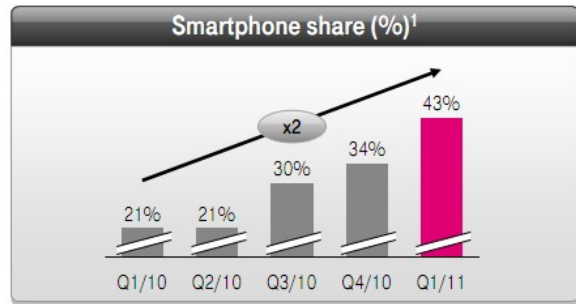


Source: TeliaSonera Q1 2011

Handset mix (% of Vodafone shipments)

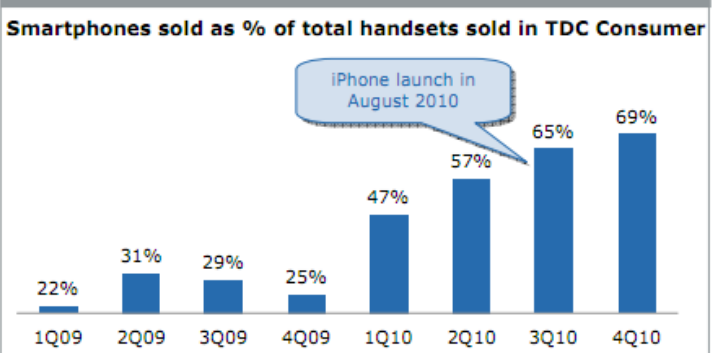


Source: Vodafone, May 2011



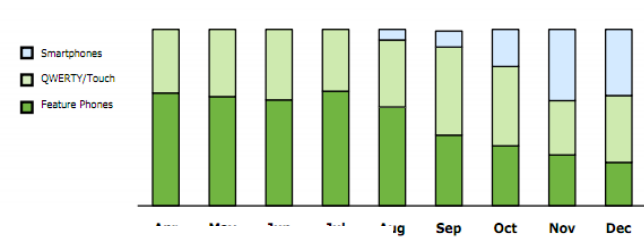
Source: DT Europe

Increasing Smartphone penetration...

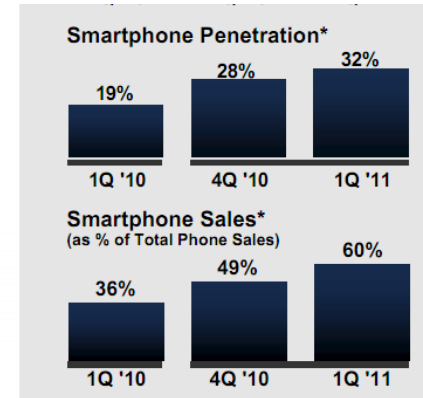


Source: TDC Group

New Handset Sales⁽¹⁾



Source: Leap Wireless USA



* Results reflect percentage of retail postpaid phone base.

Source: Verizon USA

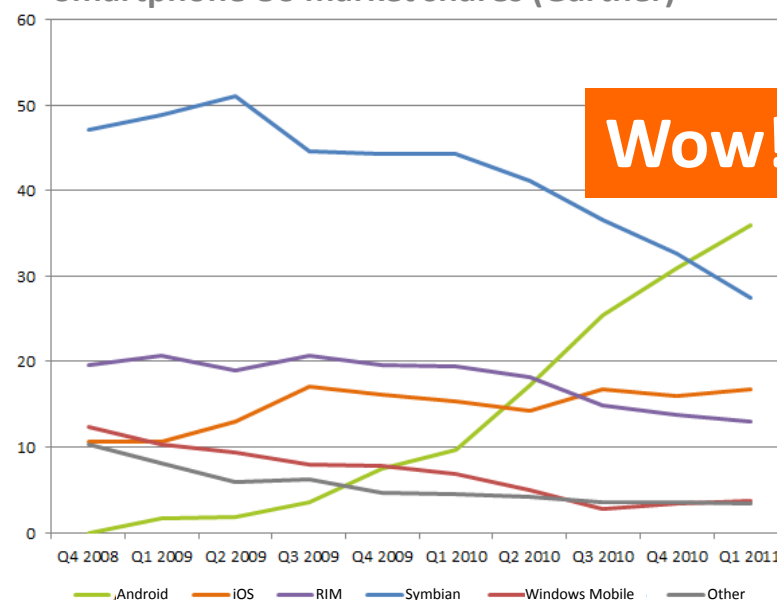
Handset space: data challengers dethroned voice-era incumbents overnight

Worldwide Top-10 Smart Phone Brand Ranking (Ranking by Unit Shipments in Millions)

Q1 '11 Rank	Brand	Q1 '10 Shipments	Q4 '10 Shipments	Q1 '11 Shipments	Q1 '11 Market Share	Q1 '11 Sequential Growth
1	Nokia	21.5	28.3	24.2	24.9%	-14.5%
2	Apple	8.8	16.2	18.6	19.2%	14.9%
3	RIM	10.5	14.2	14.8	15.2%	4.2%
4	Samsung	1.8	12.8	12.6	13.0%	-1.6%
5	HTC	3.0	9.0	9.6	9.9%	6.2%
6	Motorola	2.4	4.9	4.1	4.2%	-16.3%
7	LG	0.6	2.5	4.0	4.1%	60.0%
8	Sony Ericsson	1.3	2.3	2.5	2.6%	8.7%
9	Sharp	0.7	1.3	1.4	1.4%	7.9%
10	NEC	0.7	0.9	1.0	1.0%	9.9%
	Others	4.6	6.2	4.4	4.5%	-30.0%
	Total	55.8	98.7	97.2	100.0%	-1.5%

Source: IHS iSuppli May 2011

Smartphone OS market shares (Gartner)



Nokia's slide worsens as Android and Apple thrive in western Europe

The Guardian (blog) - May 8, 2011

More evidence of Nokia's deepening problems have emerged, with new data showing that in the first three months of 2011 it was pushed into second place by Samsung as the biggest vendor of mobile handsets in western Europe, and overtaken by Apple for ...

Samsung, Apple and Android destroy Nokia in Western Europe

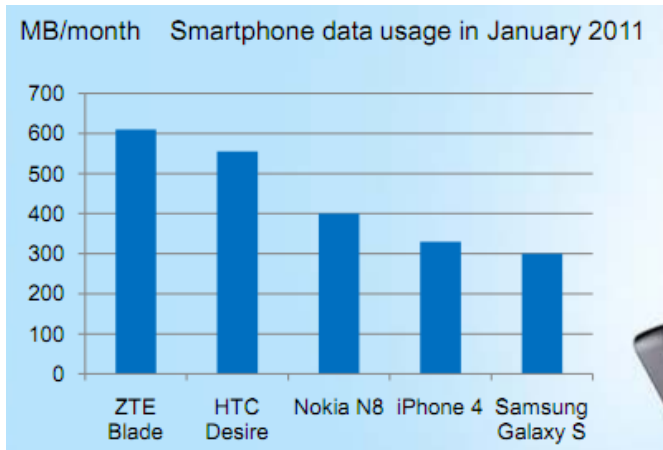
Know Your Mobile (blog) - Richard Goodwin - May 9, 2011

Nokia's woes look set to continue as it is well and truly taken to the cleaners by Samsung, Apple and Android in Western Europe. The news comes via Mobile Europe who cites a recent IDC report that claims Samsung is outselling, out-playing and generally ...

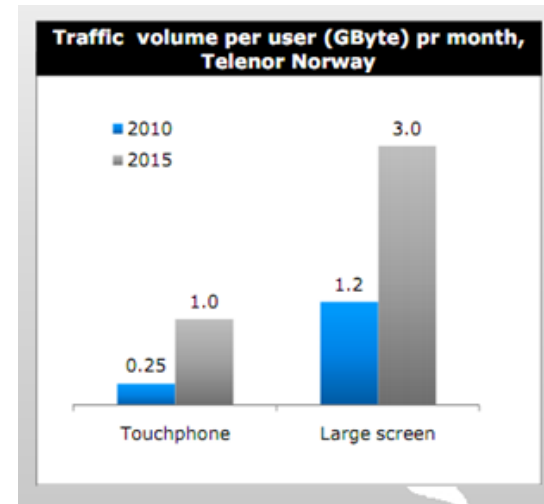
... a wake up call for for voice era telco incumbents too

What consumers want from telcos ...

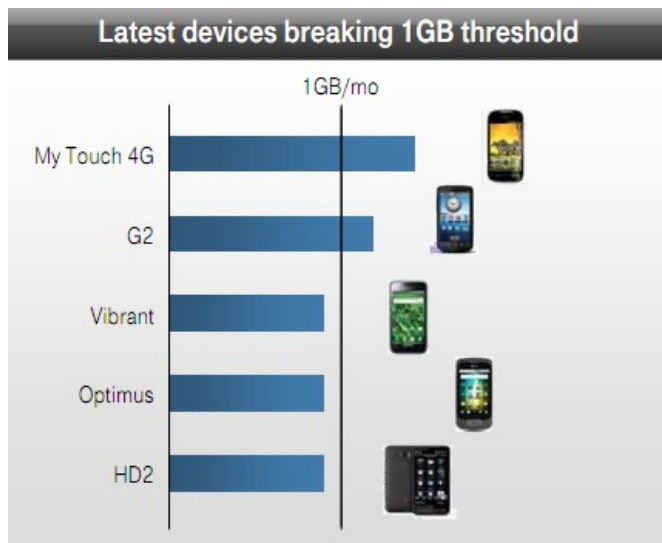
Time to face it: pure, cost efficient, high capacity, ubiquitous **connectivity**



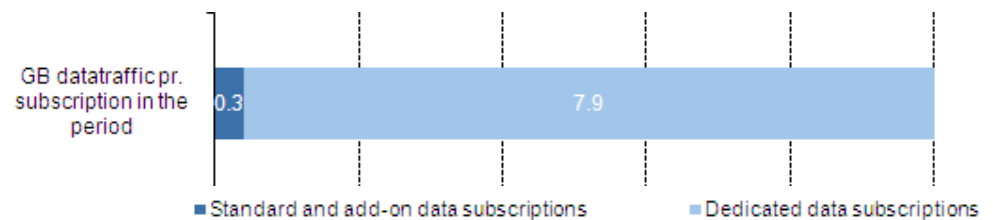
Source: Elisa Finland



Source: Telenor Group, Q1 2011

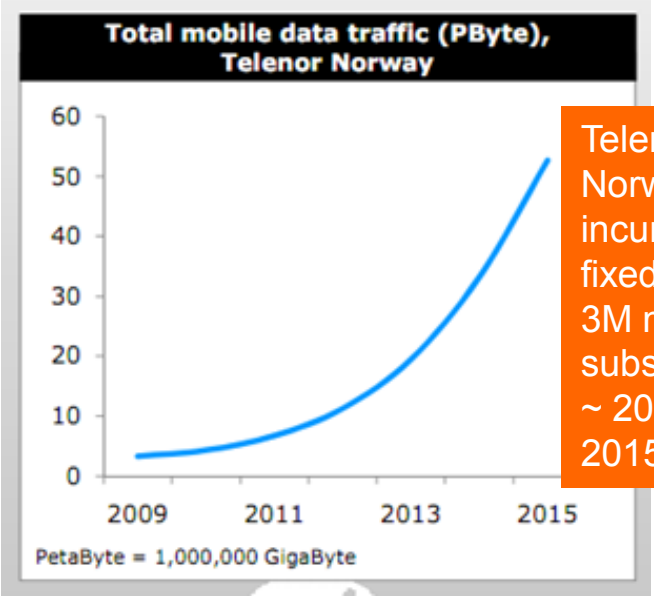


Source: T-mobile USA Q1 2011



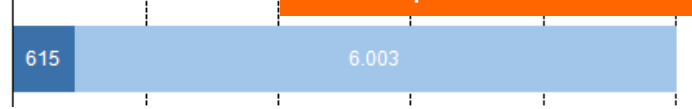
Source: Danish Regulator H1 2010

Mobile data traffic snapshots from some progressive markets



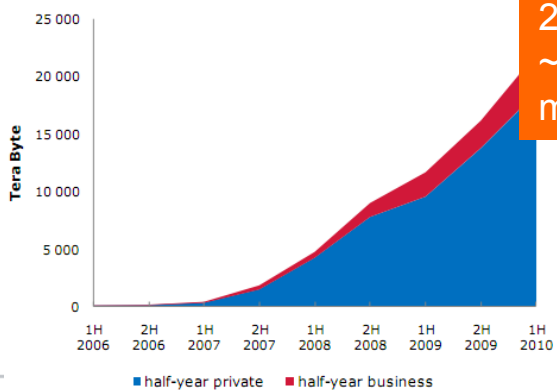
Telenor Norway, incumbent, fixed+mobile, 3M mobile subs
~ 20 Gbps in 2015

MB datatraffic(mio) in the period



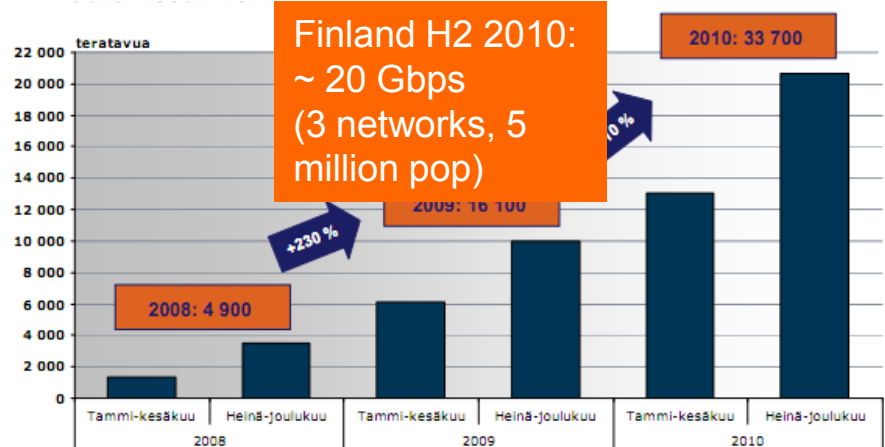
Denmark H1 2010 (5.5. million pop)
~ 6 Gbps

Source: Danish Regulator H1 2010



Sweden H1 2010
~ 20 Gbps (9.3 million pop)

Source: Telenor Group, Q1 2011



Finland H2 2010:
~ 20 Gbps (3 networks, 5 million pop)

Source: FICORA

Source: PTS

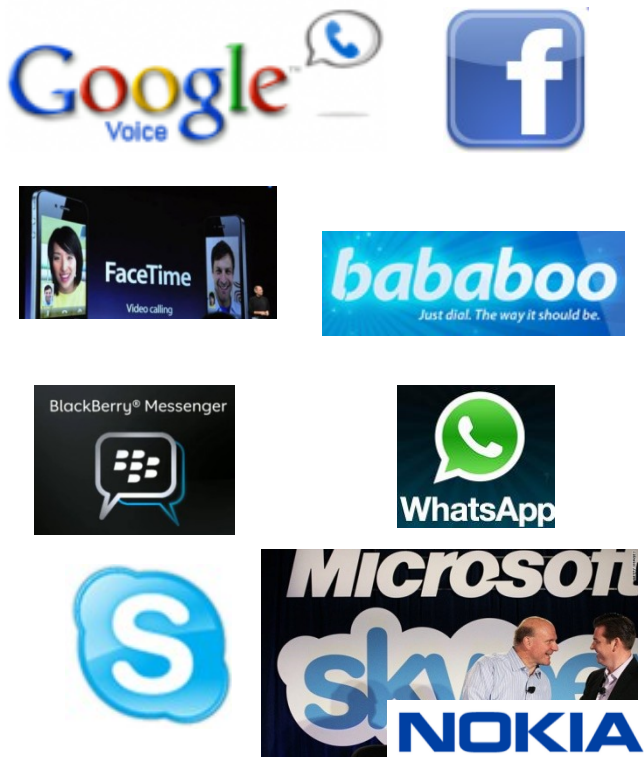
Table 7 - Broadband Internet access traffic (in GB)

	3Q10	4Q10	Quarterly Variation
			4Q10/3Q10
Total traffic, of which:	144 021 221	178 106 887	23.7%
Fixed broadband traffic	136 501 542	169 540 551	24.2%
% of Total	94.8%	95.2%	
Mobile broadband traffic	7 519 678	8 566 335	13.9%
% of Total	5.2%	4.8%	

Portugal Q42010:
~ 15 Gbps (3 networks, 11 million pop)

Source: ANACOM

Yes, incumbents have a lot to lose from accelerating data transformation – OTT cannibalisation started to bite



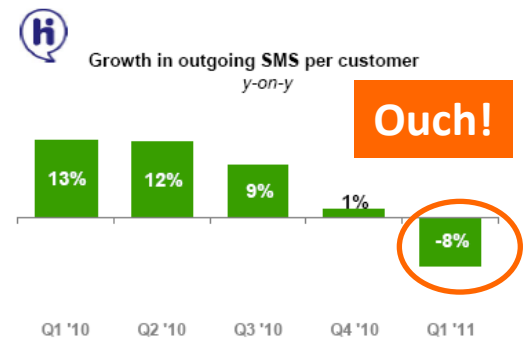
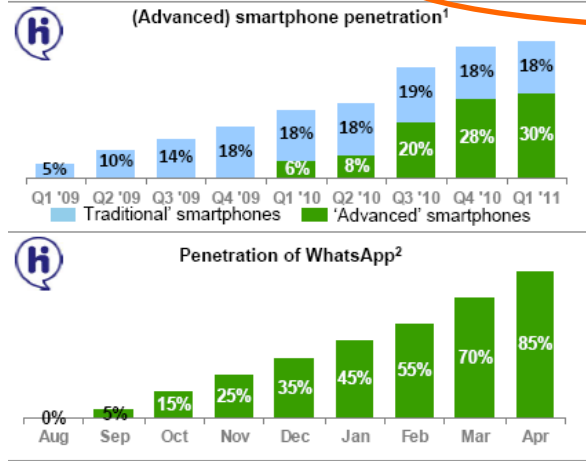
January 2010		January 2011	
Illustrative!	Handset Nokia N95 8Gb	Illustrative!	Handset Samsung galaxy S
Usage 200 minutes 200 SMS 37 Mb data		Usage 175 minutes 160 SMS 204 Mb data	
Subscription	Cost	Subscription	Cost
• Hi 30 (225 credits) ²	€ 30.00	• Hi 30 (225 credits) ²	€ 30.00
• Data bundle	€ 9.95	• Data bundle	€ 9.95
• Out of bundle	€ 22.50	• Out of bundle	€ 9.00
Total bill	€ 62.45	Total bill	€ 48.95

Recent contract renewal

1 Example of high value postpaid Hi customer that renewed contract to advanced smartphone in past months
2 One voice minute is one credit, one SMS is 0.5 credits

Over The Top Voice and SMS substitutes, **integrated** into the phone books, started to get viral
Q1 2011: First **tangible signs** of serious revenue cannibalisation threat

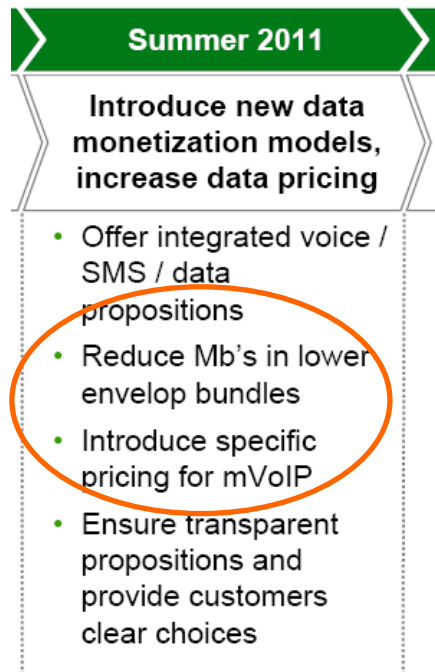
Use of applications lead to accelerating decline in SMS & out of bundle revenues



Ouch!

Source: KPN Netherlands, May 2011

Some dominant players taking desperate restrictive countermeasures – with unintended consequences ...



Source: KPN Netherlands May 2011

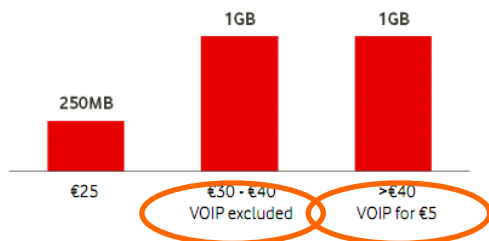
“Unfortunately for KPN, this plan might actually backfire. The majority of the Dutch parliament has spoken out against the plans and have urged the Minister to protect net neutrality. Currently the Dutch Telecommunications Law does not provide a good safe harbor for net neutrality, but it soon might... because of this. One parliament member who is part of a ruling coalition party even suggested that if telcos are going to charge more for usage, perhaps the tariffs for normal phone calls should be lowered.”

Source: Techdirt.com May 2011

“... the other notable discussion on the Vodafone conference call was the disclosure that Vodafone Netherlands as Internet Telephony (VoIP) enabled on only tariffs more than EUR 40, at a monthly fee of EUR 5, which led to questions about net neutrality, and how regulators view this situation.”

Source: Mediamania.com May 2011

Tiered contract pricing plans



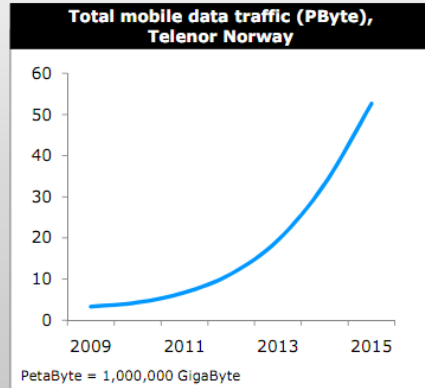
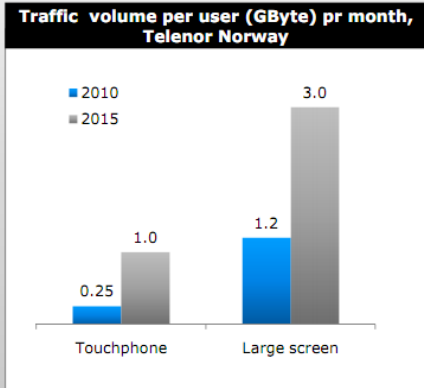
Source: Vodafone Netherlands May 2011

“Criticism is mounting of telecoms company KPN for using software known as Deep Packet Inspection to monitor what extra services mobile internet users are accessing. KPN said on Thursday it used DPI to monitor use of the WhatsApp application for smart phones but denied it analyses actual messaging and content. Vodafone has also admitted using DPI to monitor mobile internet use. T-Mobile has not admitted using DPI but does say it keeps an eye on what bandwidth mobile internet users are taking up, to make sure there is enough capacity.”

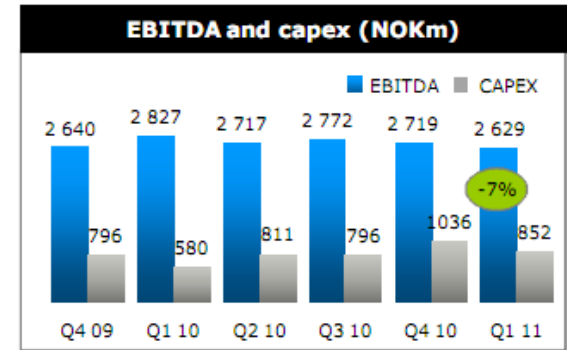
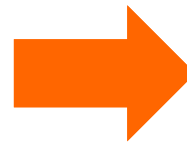
Source: www.dutchnews.nl May 2011

But could demand surge be accommodated without hurting operator margins?

Heavy increase in data traffic requires modernisation of mobile networks



Flat or declining Capex guidance despite 20x traffic surge

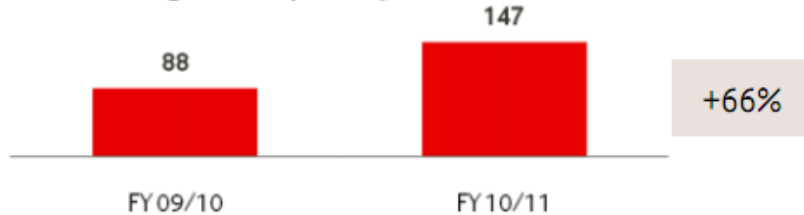


Organic revenue / EBITDA growth YoY

Group	2011	2011 YTD
Organic revenue growth	Above 5%	6.6%
EBITDA margin	Around 31%	30.5%
Capex / sales	12 - 13%	10.0%

Source: Telenor Group Q1 2011

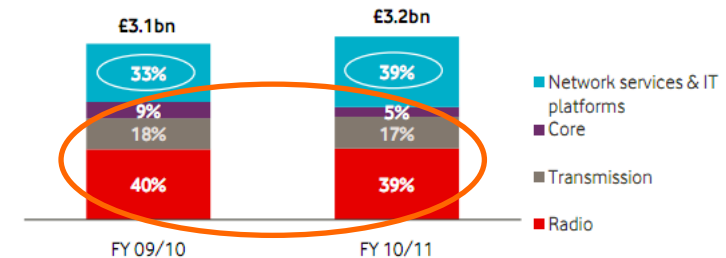
Data traffic growth (peta bytes)



Declining Network Capex



Mobile capex mix by category (%)

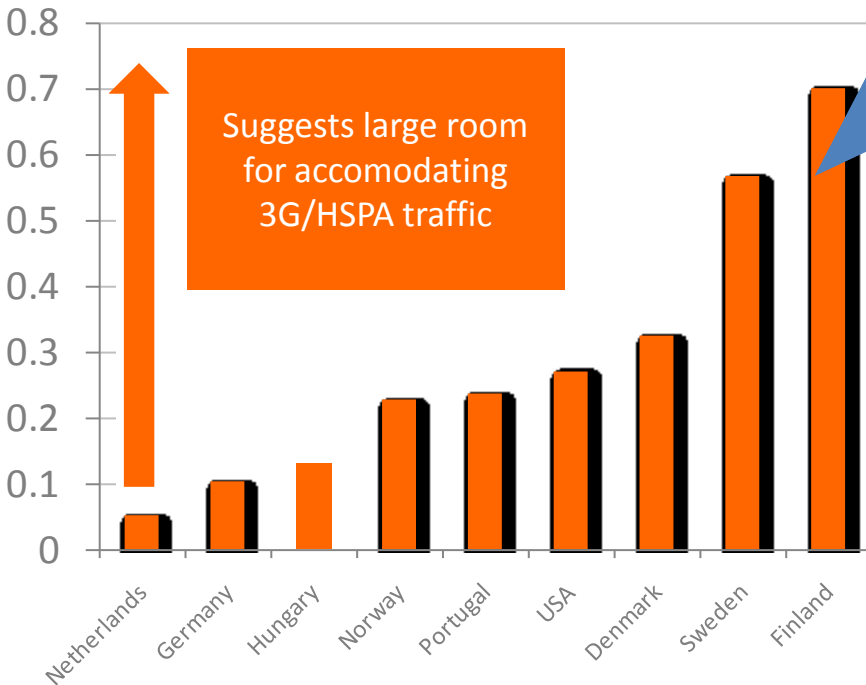


Source: Vodafone European operations

Yes, by modernising the “machinery” and squeezing the supply chain (just like in any competitive industry...)

Clearly, existing (dominant) players in different markets are not equally eager to unleash their data pipes

Moible Data Consumption per Capita
GB/month/pop in H2 2010

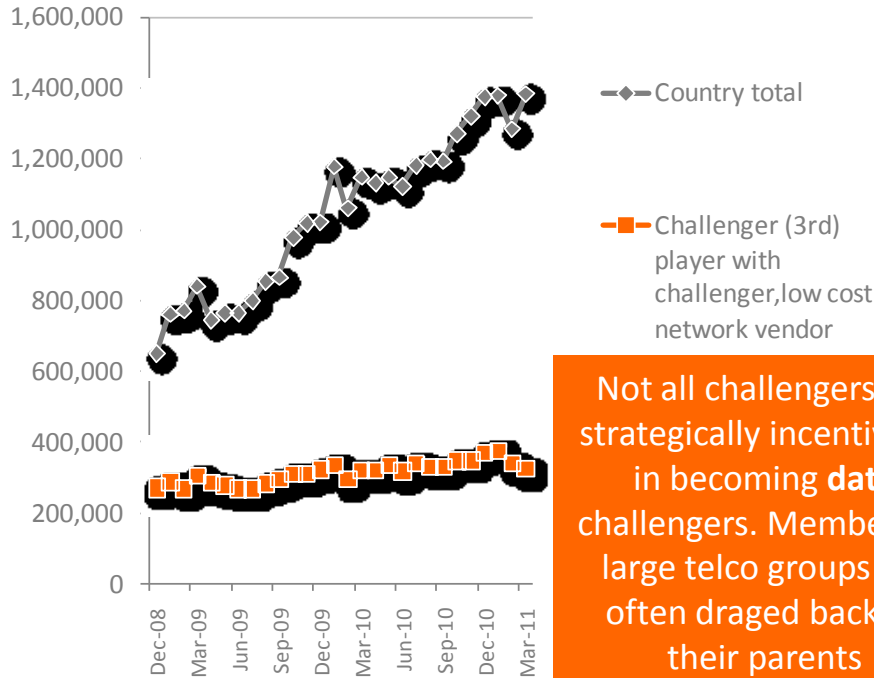


Suggests large room for accomodating 3G/HSPA traffic

Rewheel's home country
3 3G/HSPA networks (LTE deployments just started)
Dongle penetration > 32% pop, overtook fixed BB in H2 2010
Unlimited MBB offers with speed tiers prevail

Source: Rewheel estimations based on various sources

Monthly Mobile Data Volume (GByte)
Unnamed European Country



Not all challengers are strategically incentivised in becoming data challengers. Members of large telco groups are often draged back by their parents

The smartphone transformation resets competitive landscape and opens window of opportunity for mobile data challengers – **what does it take to become one?**

Needed:

▶ “Smartphone capacity friendly” spectrum (Europe: 2.1 GHz, HSPA+)

- LTE (1800 MHz, 2.6 GHz) will not be supported by affordable mainstream smartphones in the next 2-3 years

Nice to have:

▶ Some “Smartphone coverage friendly” spectrum (Europe: 900 MHz, HSPA+)

- Without sub-GHz frequencies the footprint will be limited to urban areas – but a challenger does not necessarily need to shoot on the entire country to crack the market
- 800 MHz (LTE) will not be supported by affordable mainstream smartphones in the next 2-3 years

▶ Slow moving voice centric telco competitors – preferably owned by large incumbent slow moving telco groups

Useful synergies:

- ▶ Existing internet subscriber base, brand, distribution network and IP backbone/backhaul infrastructure (fixed broadband operators)
- ▶ Existing mobile operator business, all-IP infra, base, brand, etc

Thank you

Visit insights.rewheel.fi for more

Or contact us at rewheel@rewheel.fi / +358 44 299 0629

About Rewheel

Rewheel is an independent consultancy specialising in the mobile data transformation. We provide strategic advisory and solutions for mobile operators, their investors and telecoms regulators.

Apart from global tier-1 telco groups and many local independent operators our clientele includes the world's most progressive mobile data challengers, one step ahead in the mobile data transformation.

Our key competence areas and main engagement points are business planning, pricing and commercial strategy, network and financial “data impact analysis”, technology strategy, spectrum strategy and valuation as well as strategic network procurement advisory. Rewheel is network vendor independent.

Rewheel is headquartered in Helsinki, Finland and our main operating footprint is Europe.