European Telecom Services

Can mobile data be profitable?

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PLEASE SEE ANALYST(S) CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 9

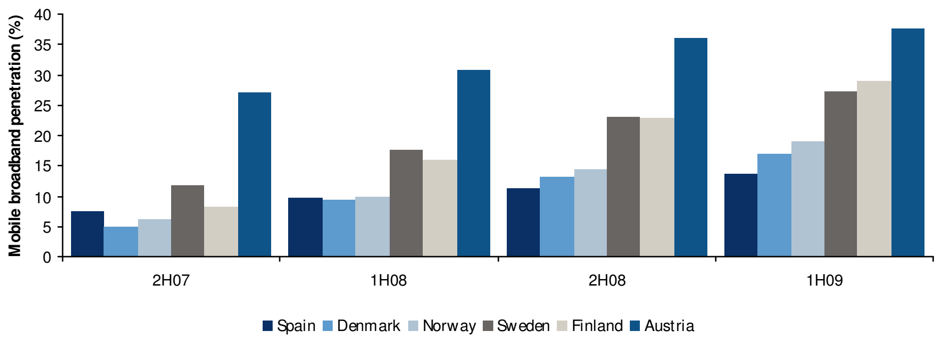
Agenda

- **Context -**
  - Opinion on mobile data is clearly divided – Current debate is levels of current capex and congestion.
  - Following proprietary analysis, we identify the winners and losers from mobile data. Our findings are a result of collaboration between the Telecom Services and Equipment teams in Europe and the US. We analyse data growth and congestion issues and assess the revenue and cost drivers
- **Three key problems**
  1) Mobile data traffic is growing rapidly (out of control?)
  2) Network congestion is becoming an issue – and not limited to the radio network
  3) Data traffic growth >> data revenue growth, and is not profitable everywhere
- **Six Solutions – Time not money**
  1) Focus on network management – prioritise data traffic
  2) Increasing vendor competition is driving equipment prices down
  3) Technology evolution drives efficiency (although perhaps less than some hope).
  4) Increased spectrum will offset capacity pressures
  5) Macro offload – the age of Femtocells (and WiFi).
  6) Increased Network sharing makes strategic sense

Problem 1 – Mobile traffic is growing out of control

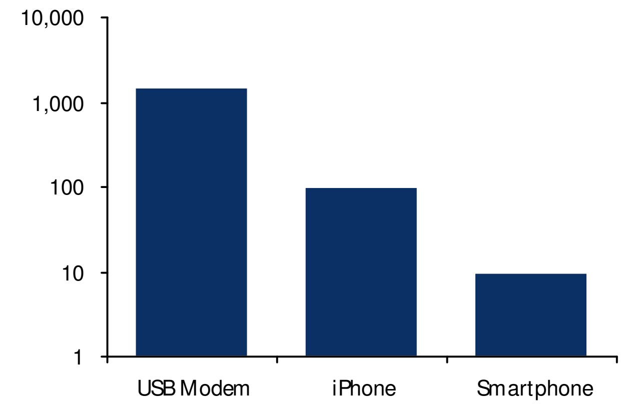
- Legacy networks meant that data capacity was initially 'free'
- Flat rate data pricing got carriers into trouble
- The result and – data traffic growth exceeded all expectations
- Data traffic could increase a lot, lot more

Penetration of mobile broadband percentage of total broadband subscribers)



Source: Regulators, Barclays Capital

Mobile data usage per subscriber



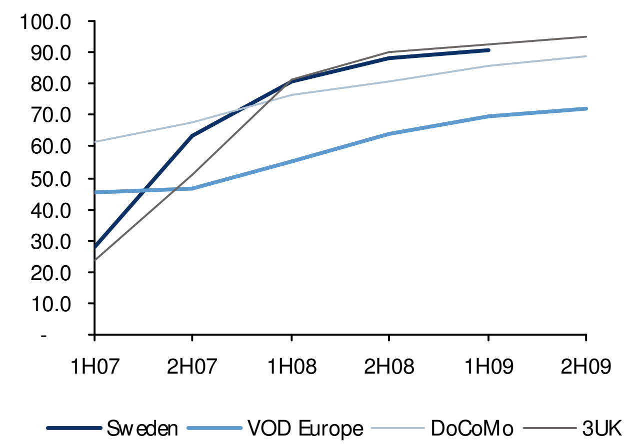
Note: Scale is logarithmic
Source: Barclays Capital

Figure 1: Impact of increase in data penetration on total network traffic (percentage increase from current levels)

	Data penetration										
	0.0	15	20	25	30	35	40	45	50	55	60
	500	-	26.4	52.8	79.2	105.6	132.0	158.4	184.8	211.2	237.7
	1,000	80.0	132.8	185.6	238.4	291.2	344.1	396.9	449.7	502.5	555.3
	1,500	160.0	239.2	318.4	397.7	476.9	556.1	635.3	714.5	793.7	873.0
Mbytes/ Mth	2,000	240.0	345.6	451.2	556.9	662.5	768.1	873.7	979.4	1,085.0	1,190.6
	2,500	320.0	452.0	584.1	716.1	848.1	980.1	1,112.2	1,244.2	1,376.2	1,508.3
	3,000	400.0	558.4	716.9	875.3	1,033.7	1,192.2	1,350.6	1,509.0	1,667.5	1,825.9
	3,500	480.0	664.8	849.7	1,034.5	1,219.4	1,404.2	1,589.0	1,773.9	1,958.7	2,143.6
	4,000	560.0	771.2	982.5	1,193.7	1,405.0	1,616.2	1,827.5	2,038.7	2,250.0	2,461.2
	4,500	640.0	877.7	1,115.3	1,353.0	1,590.6	1,828.3	2,065.9	2,303.6	2,541.2	2,778.9
	5,000	720.0	984.1	1,248.1	1,512.2	1,776.2	2,040.3	2,304.3	2,568.4	2,832.4	3,096.5

Source: Barclays Capital

Data as proportion of total network traffic



Source: PTS, Vodafone, Barclays Capital

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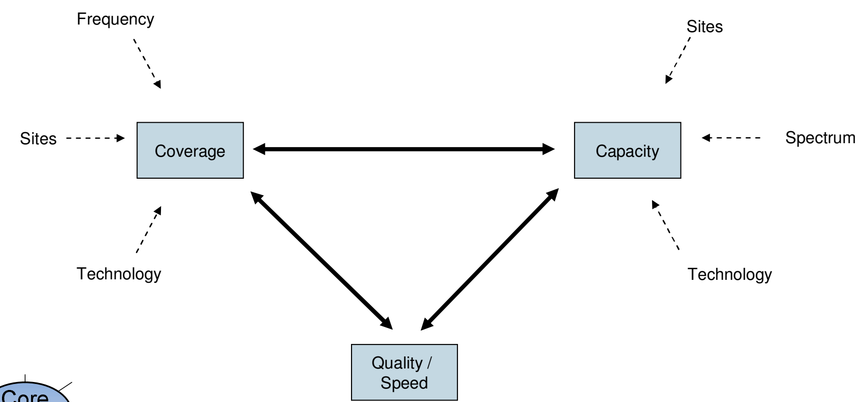
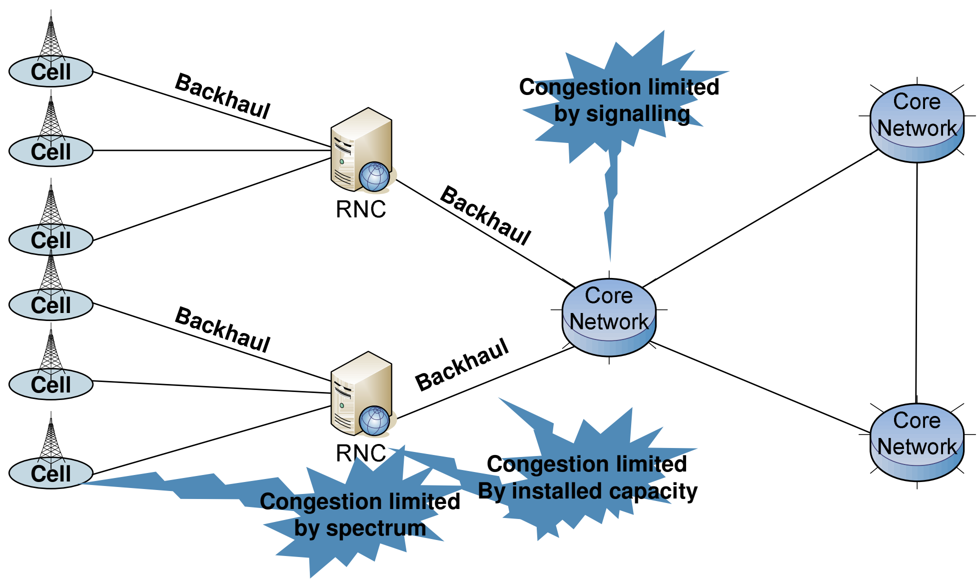
Problem 2 – Network congestion issues not limited to radio network

- O2 UK and AT&T are major examples
- European operators keen to reassure this is operator-specific
- Operators now experiencing increased congestion everywhere
  - Radio – Lack of data capacity (spectrum, sites)
  - Backhaul – Lack of data capacity
  - Core – Lack of signalling capacity

Network drivers – Coverage, Capacity, Quality, Speed



Standard mobile network: RAN / backhaul / core

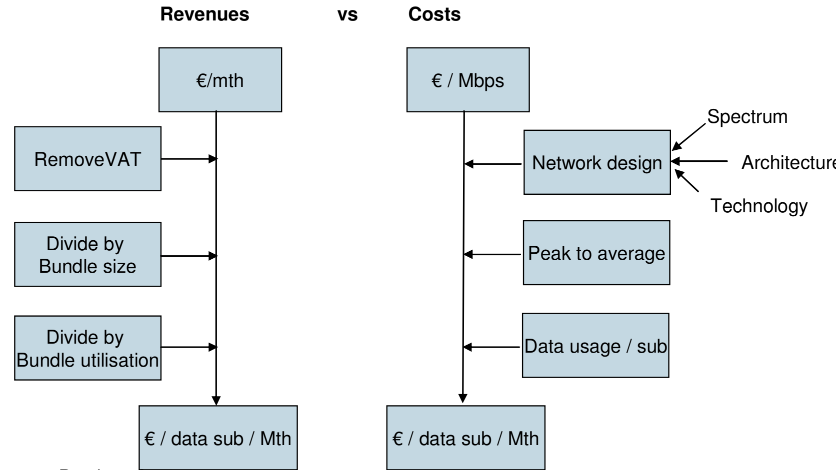


Source: Barclays Capital

Problem 3: Not all mobile data is profitable (1)

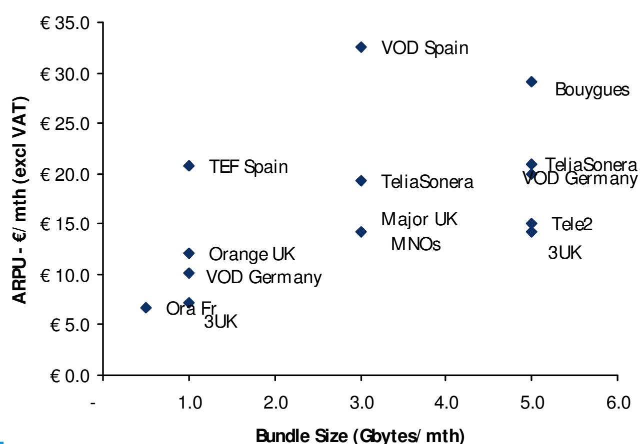
- Mobile data is barely profitable in some cases
- Revenues
  - Most tariffs imply monthly data ARPU of €5-35 per month, for usage bundles of 0.5-5Gbytes per month.
  - The implied revenue per Gbyte varies materially, but typically falls with higher bundle. We estimate €3-20 per Gbyte (most are €5-10/Gbyte) –
  - This assumes 100% bundle utilisation. If 50% utilisation, then the yield rises to €6-40/Gbyte.
- Implied revenue/Gbyte for Smartphones/traditional SMS is much larger, because usage is much lower. Assuming the current average Smartphone usage of c.100Mbyte per month and a €10 uplift to ARPU implies €100/Gbyte. We estimate a traditional SMS generates €30,000/Gbyte.

Comparing revenues and costs



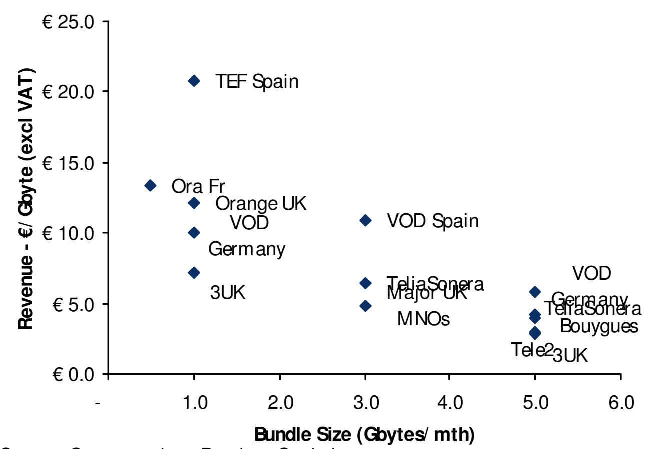
Source: Barclays Capital

Mobile operators: Mobile broadband tariffs, €/month vs bundle size



Source: Company data, Barclays Capital

Mobile operators: Mobile broadband tariffs, €/Gbyte vs bundle size (assumes 100% bundle usage)

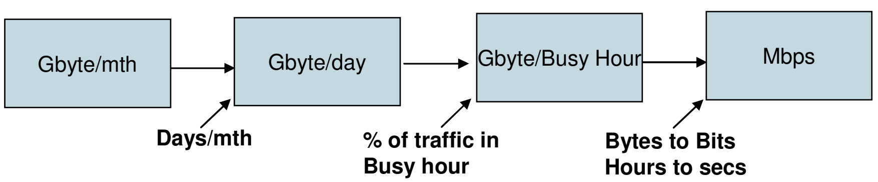


Source: Company data, Barclays Capital

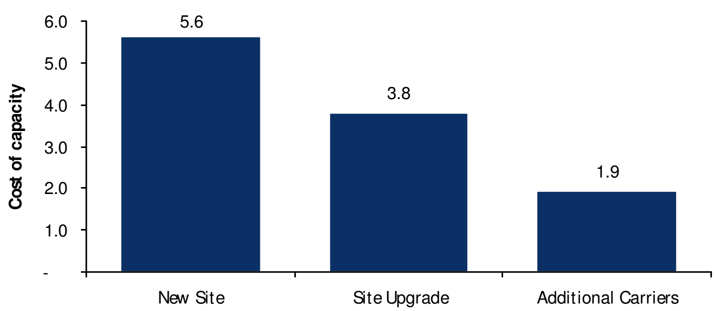
Problem 3: Not all mobile data is profitable (2)

- Assessing costs
  - Peak capacity and average per month.
  - Varying cost of capacity.
- Most of capex is civils, most of opex rental/backhaul
  - 3 key configurations
- We estimate €2-5 per Gbyte/mth
- **… Lower end is inline with revenues**

Converting Gbytes/mth in Mbps

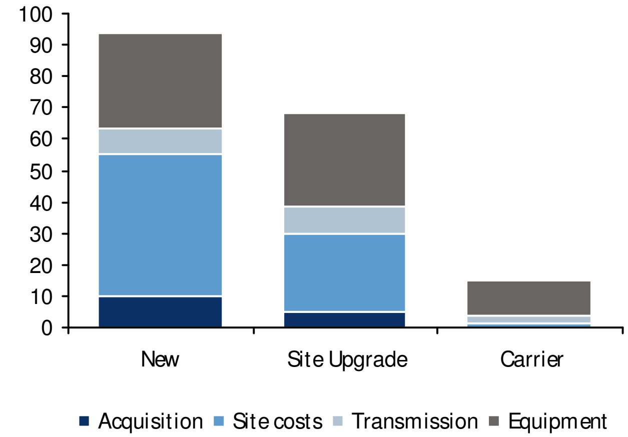


Cost of capacity with network topology (€/Gbyte/month)



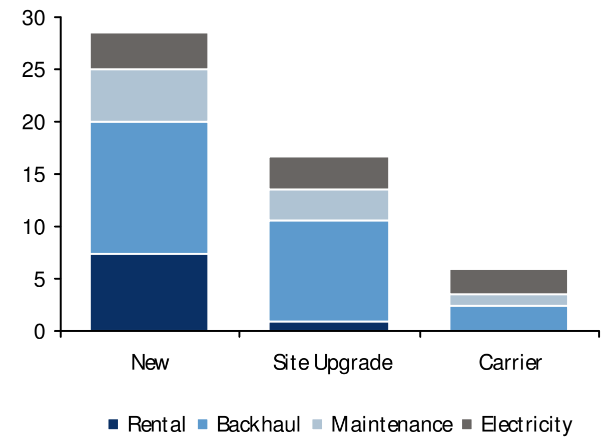
Source: Barclays Capital, Neu Mobile

Cost per Site - Split of Capex (€k)



Source: Barclays Capital, Neu Mobile

Cost per Site - Split of Opex (€k)

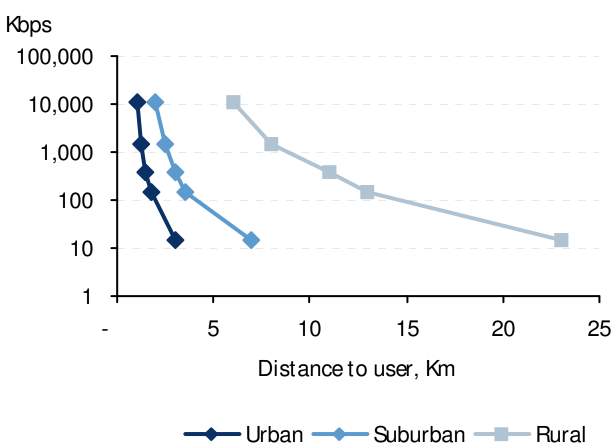


Source: Barclays Capital, Neu Mobile

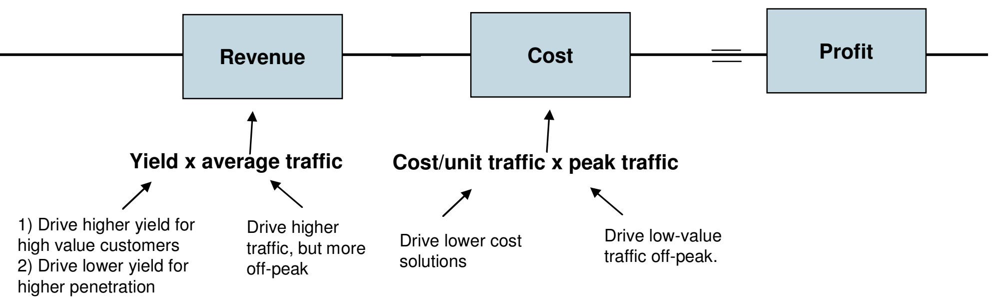
Three Problems - Six Solutions

We see 6 solutions

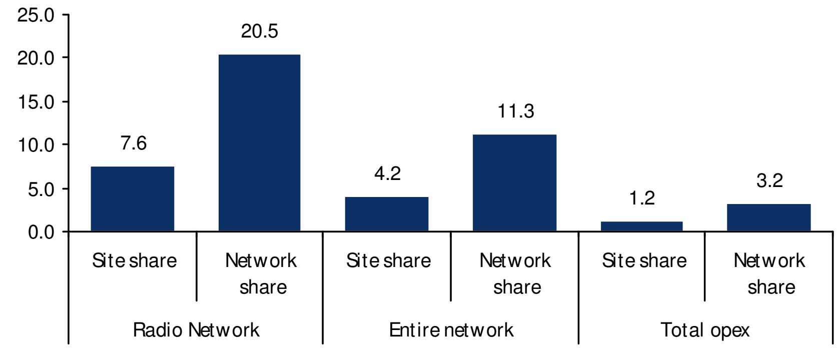
- Prioritise network traffic
- Chinese suppliers
- New technology
- Macro offload
- More spectrum
- Network sharing



Driving higher revenues and lower cost



Savings from network sharing



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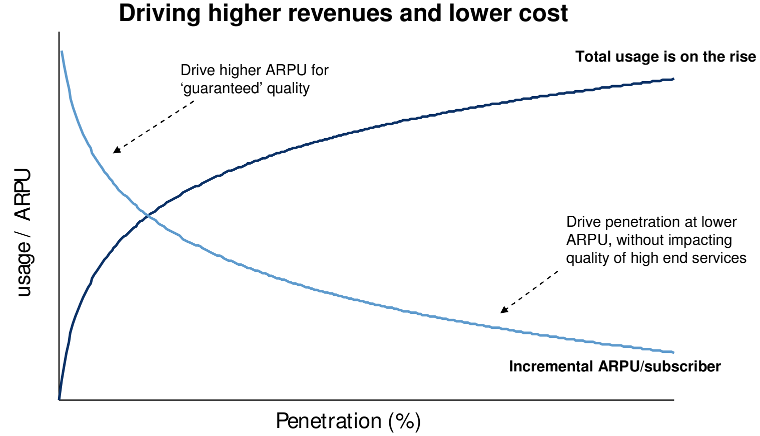

Source: Barclays Capital

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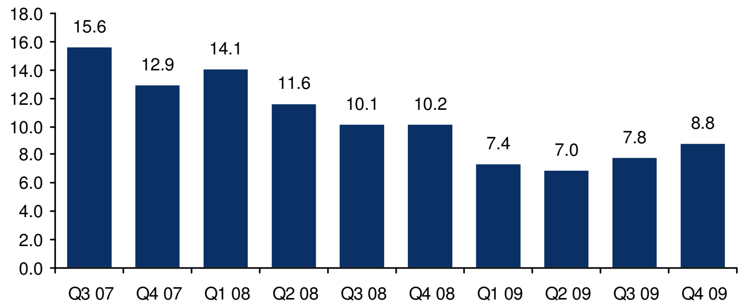
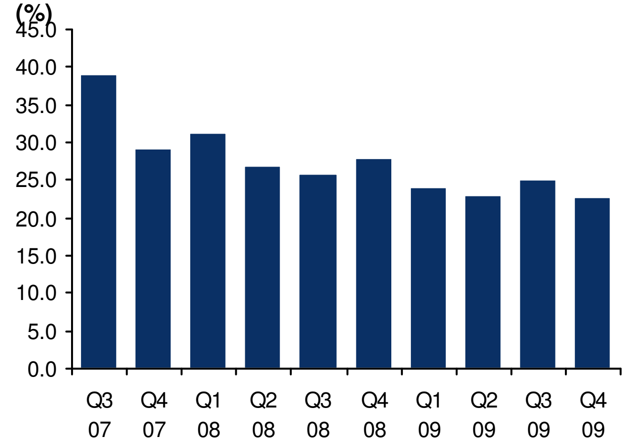
What do we assume?

European Wireless: Data revenue growth



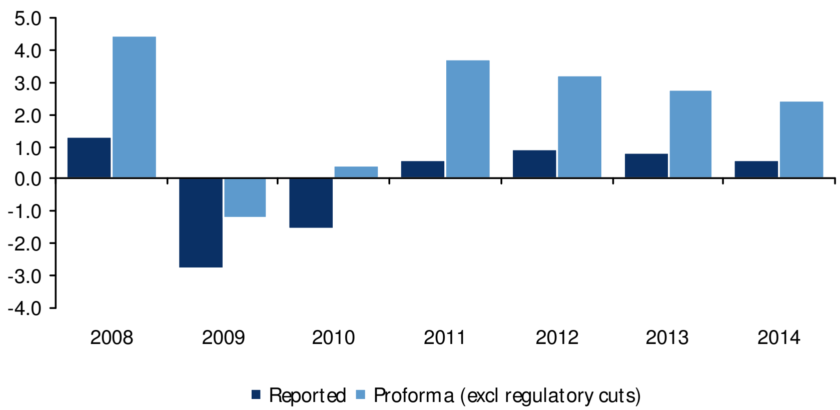
Source: Company data, Barclays Capital

European Wireless: Non-SMS data revenue growth (%)



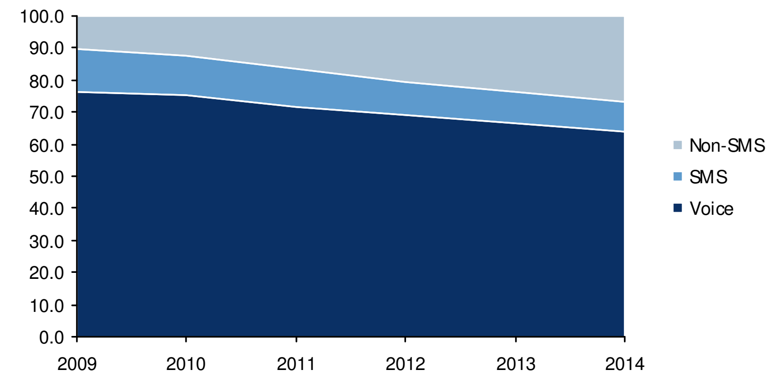
Source: Company data, Barclays Capital

European Wireless: Service revenue growth assumptions



Barclays Capital estimates from 2010 onwards
Source: Company data, Barclays Capital

European Wireless: Voice and data assumptions



Barclays Capital estimates from 2010 onwards
Source: Company data, Barclays Capital

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