

Analysys Mason capability overview

Delivering profitable mobile broadband through
effective commercial and network initiatives

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June 2010

Ref: 6644-206



Contents

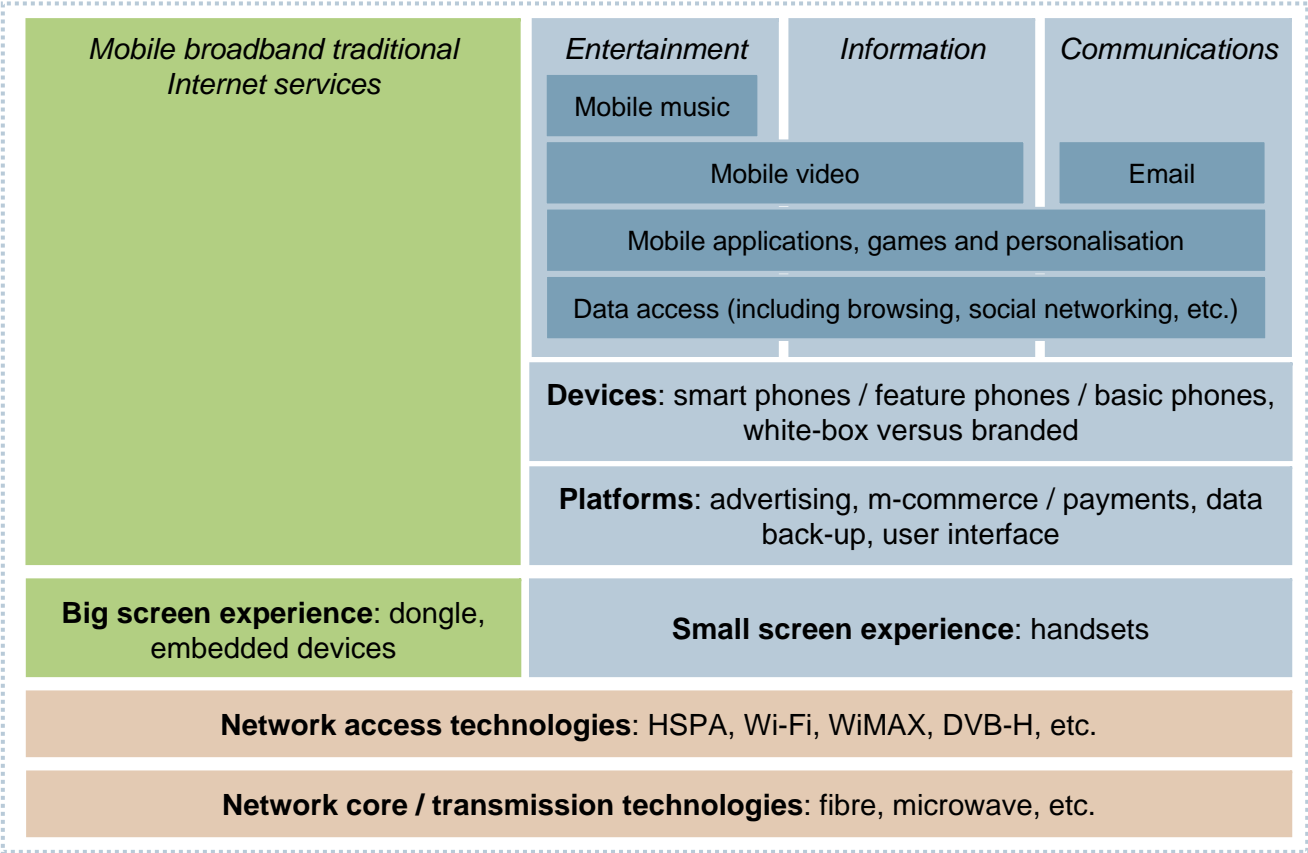
Key issues

Strategic options

Analysys Mason overview and relevant expertise

The mobile data opportunity exists in both dongle broadband and handset data

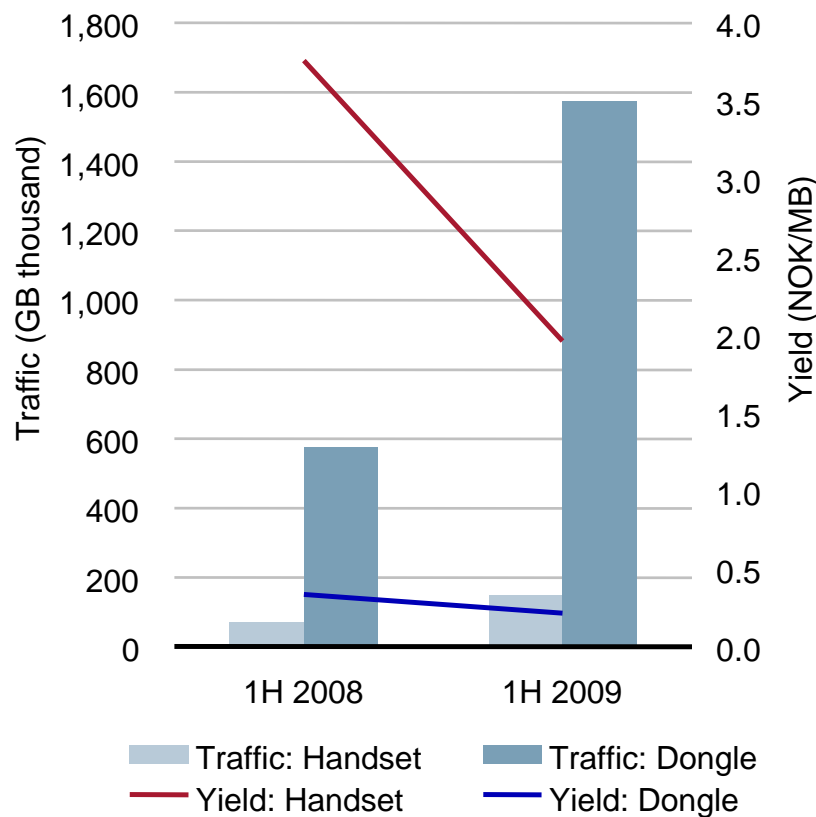
Framework for mobile data: dongle broadband and handset data



This presentation focuses on dongle broadband. The handset data opportunity is covered in a separate document

High capex and low yields in mobile dongle broadband raise concerns about profits, despite revenue growth

Norway case study: handset and dongle Internet traffic and yield* (1H 2008 and 2009)

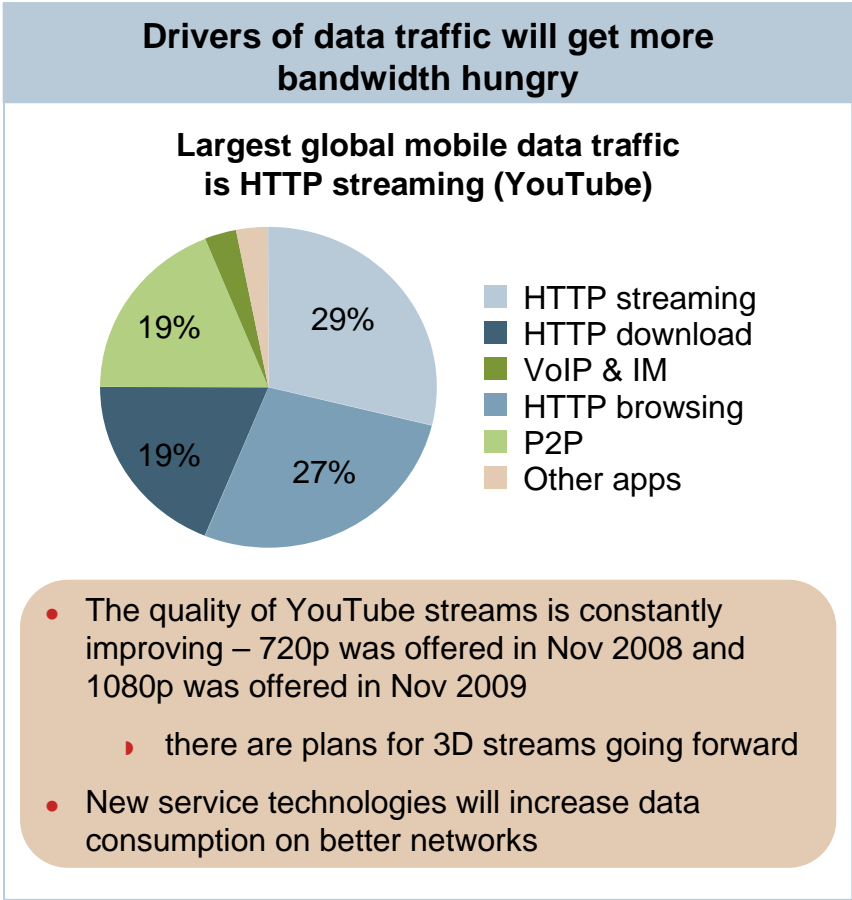
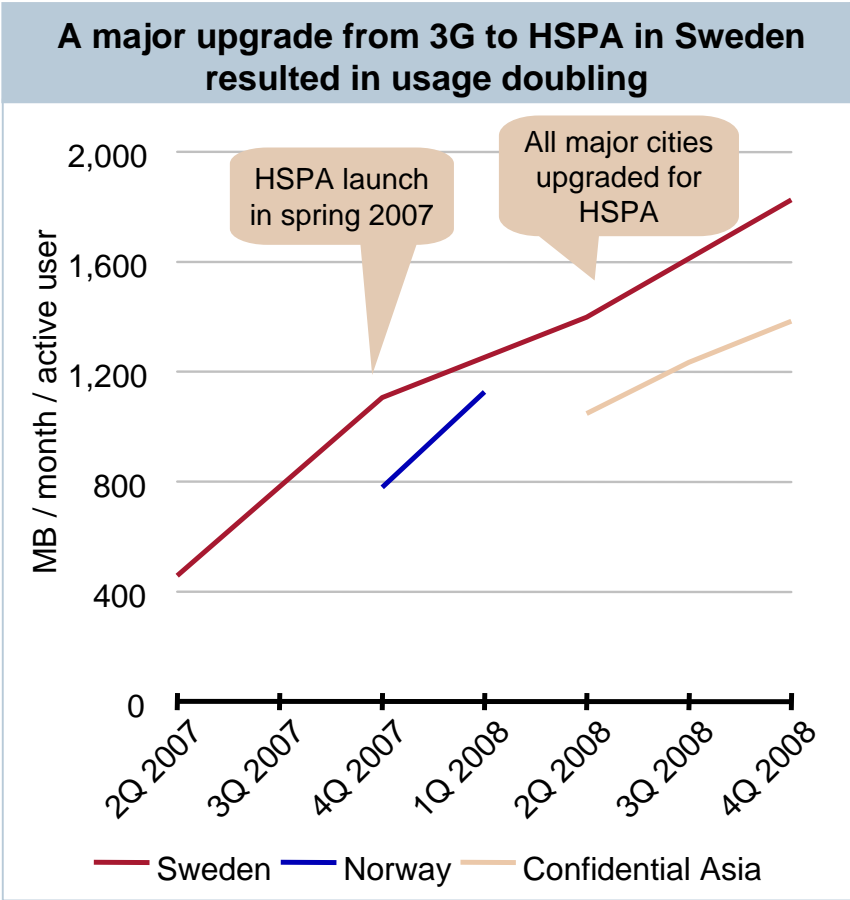


(*) Yield is calculated on a revenue/MB basis

Challenges to profitability in mobile data

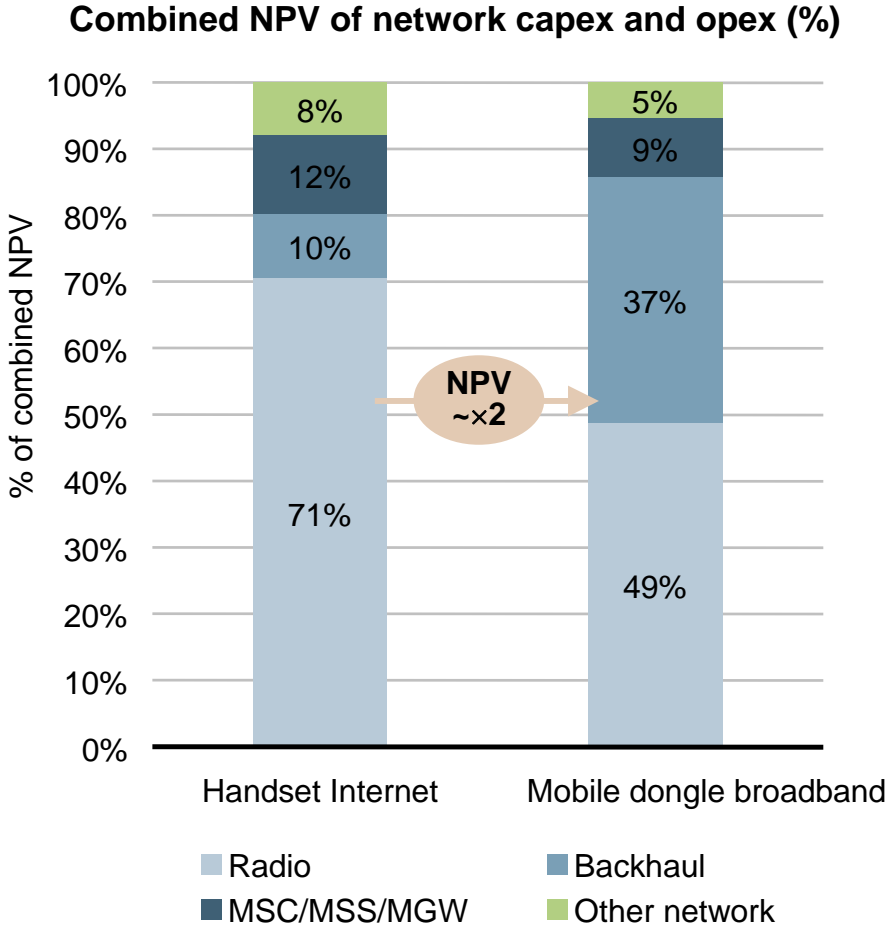
- Dongle revenues have grown 75%, but traffic has increased 175% – dongle revenues are growing faster in emerging markets
- Handset revenues have grown a mere 10% while traffic has more than doubled, decreasing yields
- Dongle traffic is 10 times the handset traffic, implying significantly more capex (and at much lower yield)
- Handset yields are 9 times the dongle yields – similar ratios exist for emerging markets
- Handset and dongle yields have both declined 36% and 48% respectively in the last year

Improvements in network capacity are likely to increase demand: more bandwidth = more consumption



Better throughputs offered by LTE networks are likely to be consumed by higher-bandwidth applications, thereby preventing improvements in yield

The increased costs for delivering dongle broadband are likely to raise significant concerns about profits



- An illustrative example (see figure left) for the NPV of cash outflows in the mobile dongle broadband case shows:
 - a significant increase (in this particular operator’s case, the cash outflow has doubled)
 - a shift in the cost structure with backhaul forming a substantial portion

- The increase in cash flows is unlikely to be recovered as typical yield in the mobile dongle broadband case is about 10% that of the mainly handset Internet case



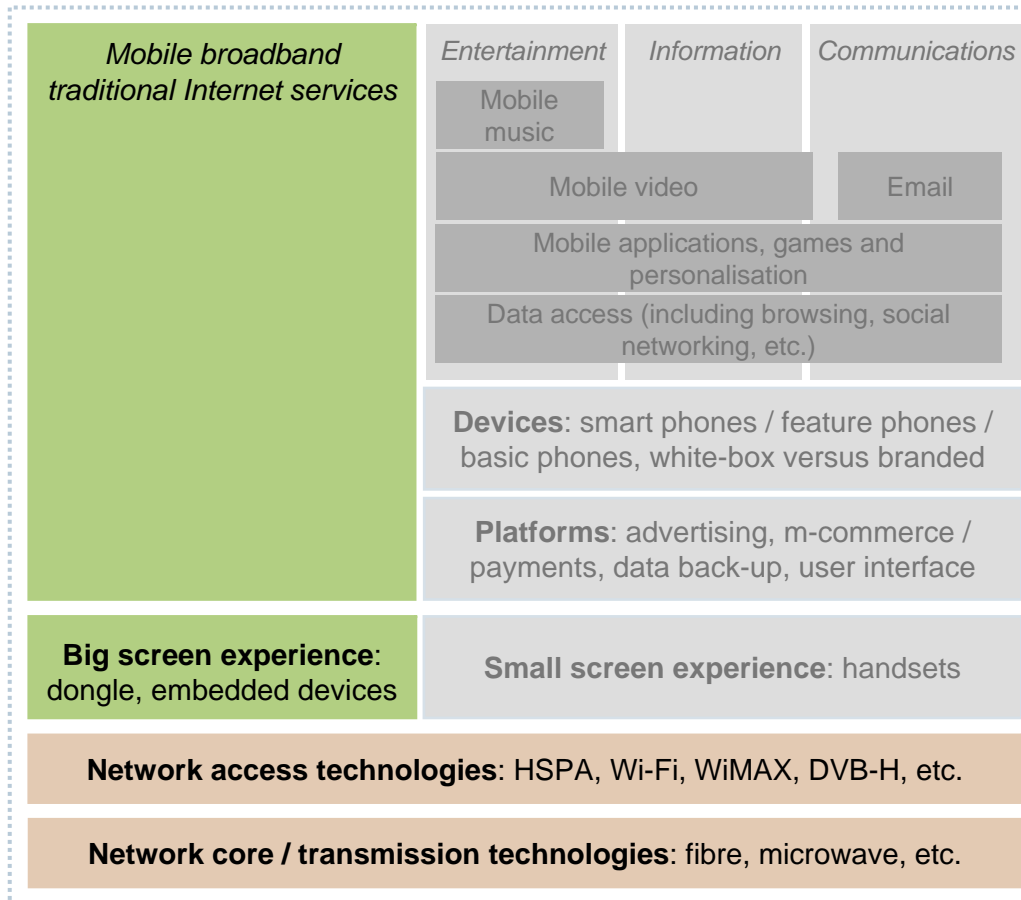
Note 1: The main assumptions of the model are:
 - 22% of mobile user take a mobile broadband subscription
 - average consumption per subscriber is 2GB/month
Note 2: Model only uses E1 TDM links in the access network

Source: Analysys Mason

Ref: 6644-206

This presentation focuses on delivering a profitable mobile dongle service through three effective initiatives

Framework for mobile data: dongle broadband and handset data



Key initiatives to deliver mobile data

1

Commercial initiatives to understand and deliver mobile broadband profitability

Assessing the market opportunity for handset data and identifying winning business models

Enabling the key drivers for handset data – pricing, device, user interface and app stores

2

Network optimisation initiatives to offload traffic and optimise backhaul costs

3

Network transformation through network / RAN share for improved cost economics

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Key issues

Strategic options

Analysys Mason overview and relevant expertise

Strategic drivers require commercial and network initiatives to deliver profitable mobile dongle broadband

Strategic drivers

- **Ownership of the customer:** cross-selling mobile voice and mobile broadband; cross-selling mobile and fixed broadband
- **Uncertain evolution of cost drivers:** changes in fundamental cost parameters and appropriate service cost allocation could result in profitability improvements and prevent a lost revenue opportunity

1

Commercial initiatives

- **Pricing initiatives**
 - Fair usage policy
 - Volume / app-based pricing
 - Reverse charging content providers
- **Traffic management**
 - Shaping
 - Caching
- **Appropriate service allocation**

2

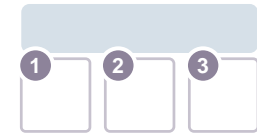
Network optimisation

- **Offload initiatives**
 - Wi-Fi
 - Femtocells
- **Backhaul optimisation initiatives**
 - Portfolio strategy
 - TDM to IP migration
 - Optimised traffic aggregation close to the BTS / Node B

3

Network transformation

- **Network share**
 - RAN share (new investment)
 - Network share / outsourcing



The strategic drivers need to be assessed and agreed as a basis for decision making

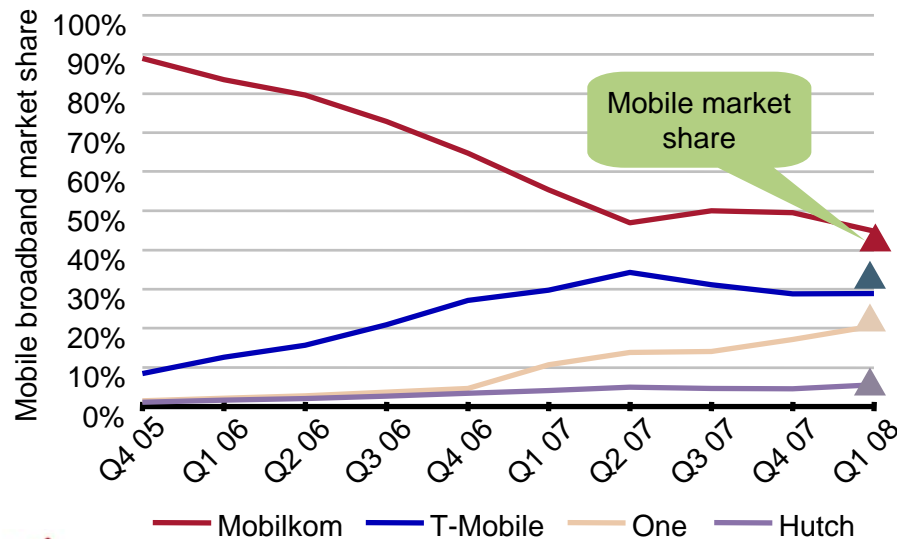
Ownership of the customer

- Mobile broadband market shares are expected to converge to mobile voice market shares (see below). Anecdotal evidence suggests that fixed broadband shares have increased with mobile broadband bundling
- In the enterprise segment, the effect of customer ownership on market shares could be more substantial
- A late entrant in mobile broadband will likely have higher acquisition costs

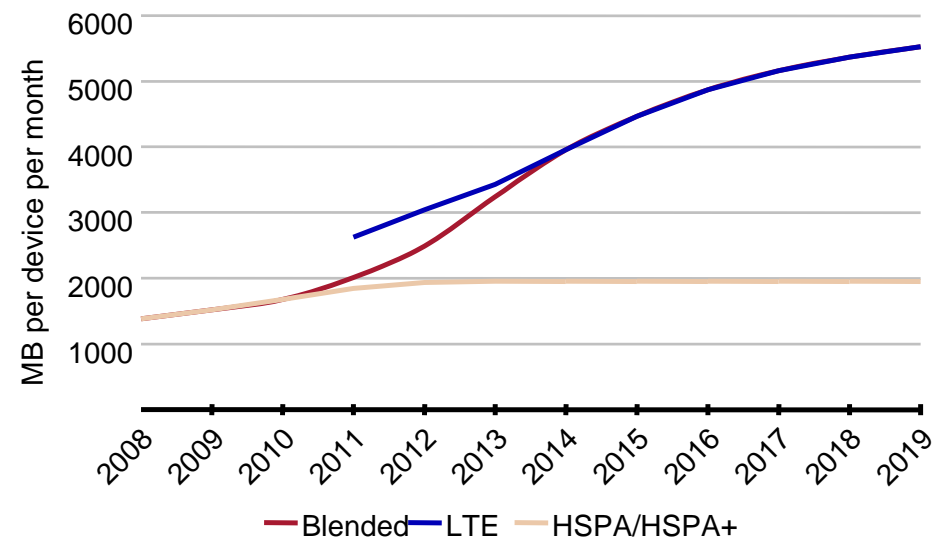
Uncertain evolution of cost drivers

- The ongoing challenges to business profitability are based on the expectation that volumes per user will continue to increase and outpace network capacity enhancements
- The assumption of volume increase is still untested for volume consumption of marginal subscribers and improvements in compression technologies
- Additionally, understanding of traffic patterns and cost implications by service will become increasingly important

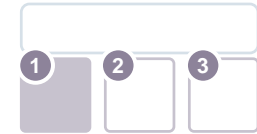
Mobile broadband market share: Austria



Evolution of mobile dongle per user volume



Commercial initiatives: pricing is likely to deliver the highest yield benefits



Pricing initiatives	<ul style="list-style-type: none"> • Fair usage – managing abusers’ traffic, which could reduce the average traffic per user by 30–50%, implying a 2–3 level of improvement in yield. Revenue downside is uncertain and needs to be assessed • Volume/apps based pricing – optimising pricing for yield management, i.e. more volume bundles at different price points and potentially free or flat charging for specific apps (e.g. Facebook) • Reverse charging – assessing the potential approach of reversing net neutrality for heavy traffic content. Untested for willingness of content providers to pay for preferred treatment
Traffic management initiatives	<ul style="list-style-type: none"> • Shaping traffic (especially P2P) has the opportunity to improve yields by 10–20% • Caching has the opportunity to reduce international bandwidth costs, although this needs to be traded off against storage costs
Appropriate service allocation	<ul style="list-style-type: none"> • Service allocation must take into account differential peaks between voice and data, incremental cost due to data, and potentially a long-run cost rather than a depreciated value

Network optimisation and transformation initiatives can provide substantially lower network costs



Network optimisation

Offload initiatives: femtocell / Wi-Fi

- 50–75% of total usage is expected to be indoors
 - net potential savings of 12–15% of network costs
- Femtocells provide an opportunity to offload in-building traffic (e.g. at homes and offices) but needs initial upfront costs and fixed broadband links
 - several trials but no large-scale deployment
- Wi-Fi handover technologies are already being tested
 - PCCW and Orange are considered leaders

Backhaul / transmission optimisation

- Developing an appropriate portfolio of solutions – own, lease, outsource/copper, fibre, microwave/TDM (PDH/SDH), xDSL, Ethernet
- TDM to IP migration provides scale benefits (2.5 times lower costs for high bandwidth purchases)
- Efficient aggregation reduces backhaul/core capacity requirements
- Network cost savings of 7–10% can be achieved

Network transformation

Business models

Spectrum lessor

- Limited savings

Shared passive network

- Already undertaken in several cases (Indian operators)

Fully shared passive network and partial RAN share

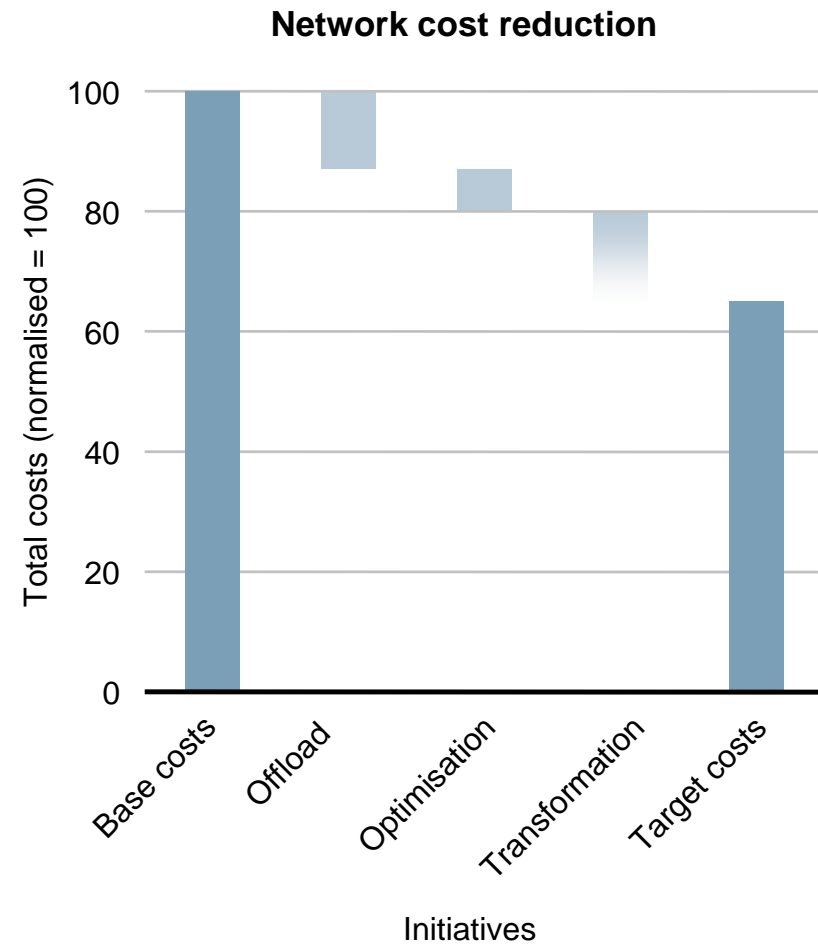
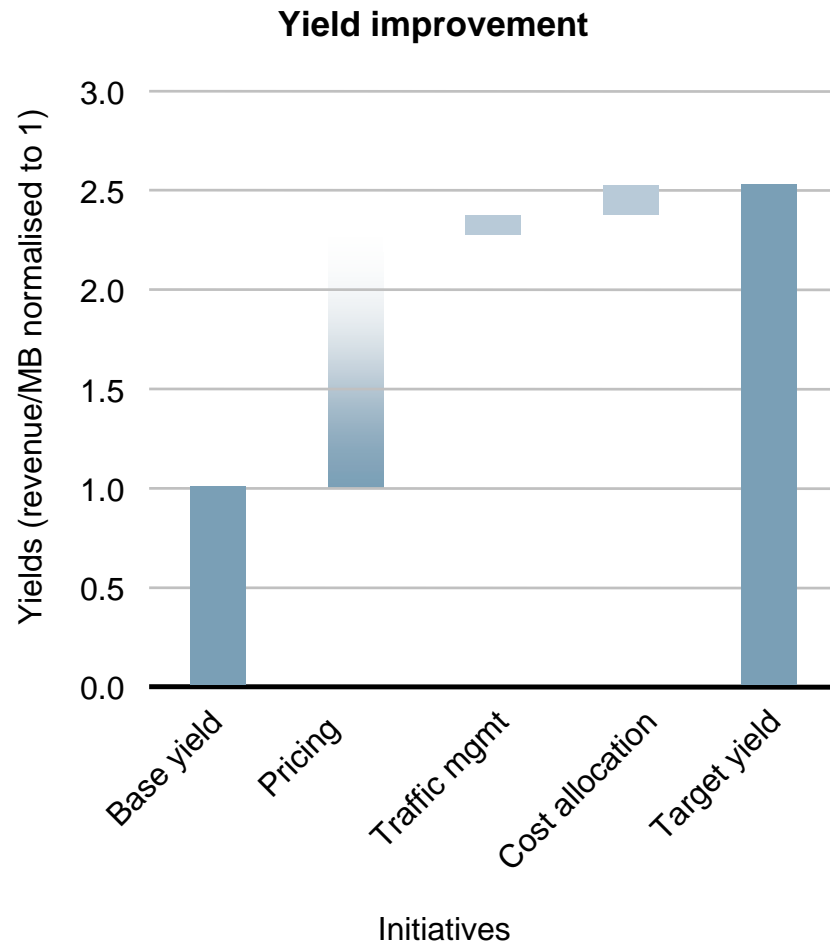
- Potential for savings from new network build (PCCW/Hutch, 3GIS Sweden)

Fully shared passive network and RAN

- Fully shared model – large savings if legacy included

Increasing savings benefits: up to **15–20%** reduction in network cash outflows

A combination of yield improvement and network cost reduction is critical to create a profitable dongle business



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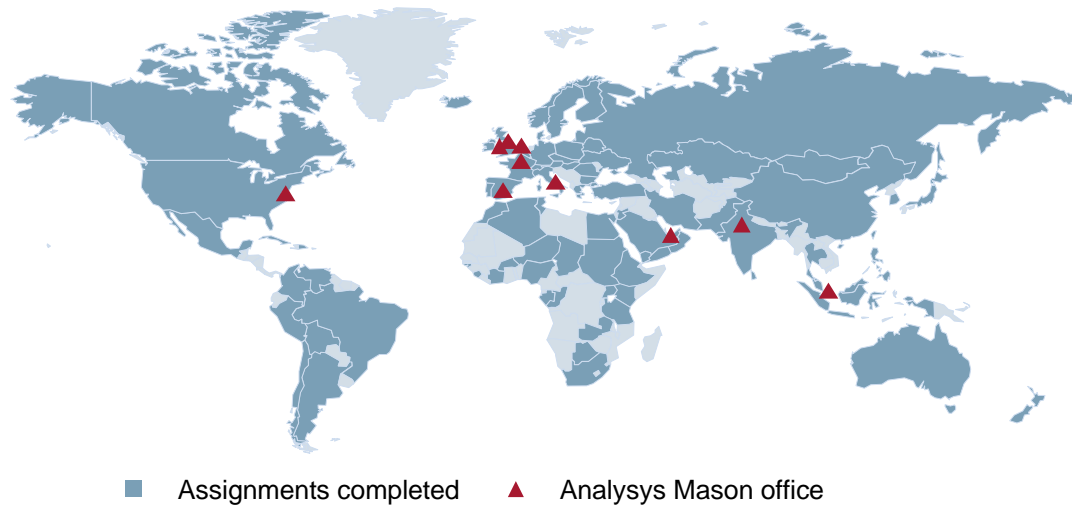
Key issues

Strategic options

Analysys Mason overview and relevant expertise

Analysys Mason is the world's premier adviser in telecoms, IT and media

Global presence and experience



Integrated service offering



- Through our global presence, we deliver strategy advice, operations support and market intelligence to leading operators, regulators, financial institutions, broadcasters, vendors and enterprises in over 80 countries
- Our people have had a major influence on the industry for more than 20 years
 - led the liberalisation of telecoms across Europe and Asia and mediated in policy issues for operators and regulators
 - supported several hundred transactions and licence acquisition processes for operators and financial institutions
 - provided strategic and operational support to major operators in the roll-out and expansion of businesses across the sector, enhancing enterprise value

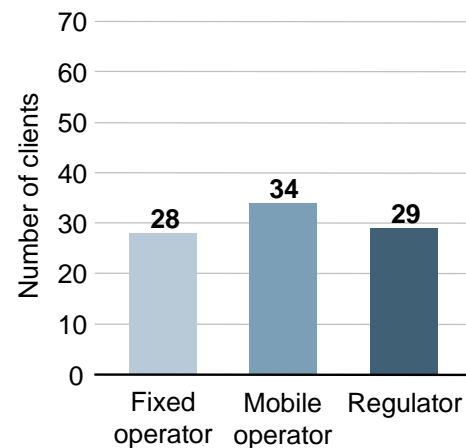
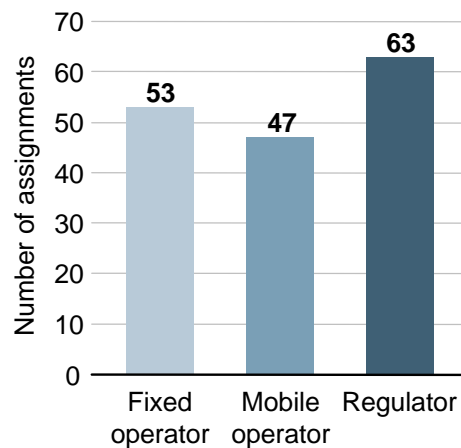
We have extensive global experience in key initiatives to establish profitable mobile broadband

<i>Initiatives</i>	<i>Region</i>	<i>Asia-Pacific / South Asia</i>	<i>Europe</i>	<i>Americas</i>	<i>Africa / Middle East</i>
<i>Understanding strategic drivers</i>					
Bundling strategies					
Costing mobile networks					
<i>Commercial initiatives</i>					
Pricing					
Service costing					
<i>Network optimisation / review</i>					
Offload review					
Backhaul review					
<i>Network transformation</i>					
Network share					

Analysys Mason has a proven track record in analysing service profitability

- Over the last 10 years, Analysys Mason has been at the **forefront of cost modelling** for telecoms operators and regulators. Our models have been used both for **internal purposes** (profitability analysis) and **regulatory purposes** (interconnection rates)
- We have a **unique understanding of the financial, marketing, technical and regulatory** aspects of cost and profitability models. This enables us to provide our clients with **reliable results and high-value business insight**
- We have **extensive international experience** of cost and profitability analysis

Costing and profitability assignments since 2003



Selected recent cost and profitability assignments

For a global mobile operator

- Designed and created a profitability analysis system for a mobile group to analyse the profitability of 200+ services of one operator. Samples of analysis undertaken are presented in the next slide
- The system was also adapted for use by a second operator in the group

For an international network operator

- Developed and delivered a global network cost model, informing bid/no-bid decisions across 20 products and on routes worldwide. Provided reliable product profitability information to focus cost-improvement initiatives
- Model signed off by the national CEO and the engineering community

For an integrated alternative operator

- Developed a cost and profitability model for a rapidly growing fixed and mobile operator. The results of the cost model were fed into a profitability model, to produce a profitability analysis for each product, calculate the lifetime value of a customer, and quantify relevant cost elements to help design commercial offerings. We helped our client define a process for using the model results across its organisation and provided knowledge transfer
- Costs for fixed and mobile call termination services were provided to the regulator as part of the negotiation on interconnection rates

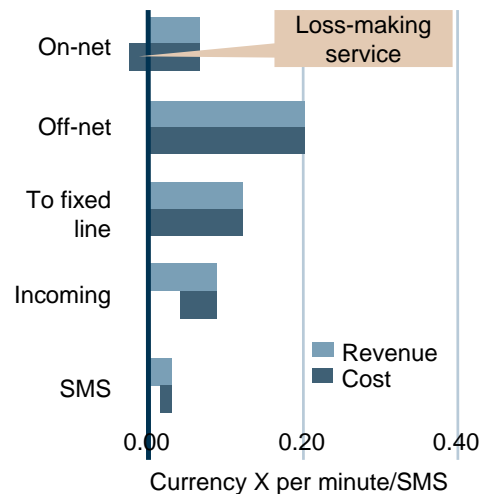
Development of a cost and profitability model for the retail and wholesale services of a mobile group

Project description

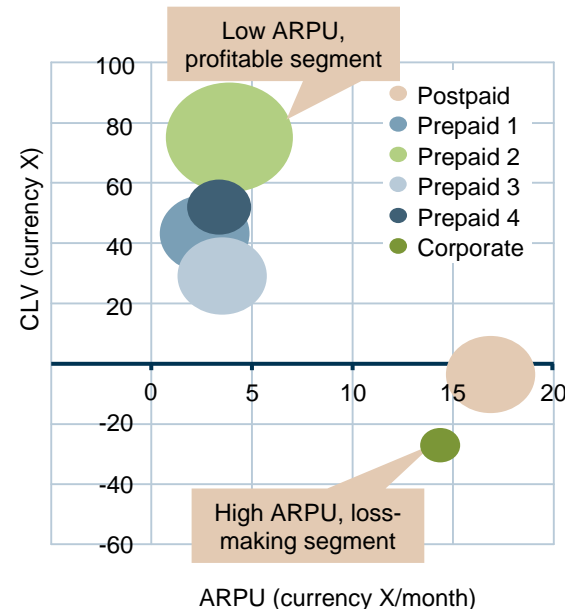
- | | |
|----------------------|---|
| Business challenge | <ul style="list-style-type: none"> • A market-leading operator needed to adapt its commercial strategy to protect value in response to increased competition from new entrants • This included a shift from pure acquisition to retention and focus on profitable customers |
| Approach | <ul style="list-style-type: none"> • We developed and populated a costing and profitability analysis tool enabling CLV calculations on the different segments • More detailed analysis included peak/off-peak and rural/urban de-averaging, and simulation tools to evaluate the impact of action plans |
| Benefits and results | <ul style="list-style-type: none"> • By taking into account the total network costs, the client was able to review its pricing strategies for different traffic types • The model clearly showed a negative correlation between ARPU and CLV, and made it clear that some segments were not profitable |

Sample results

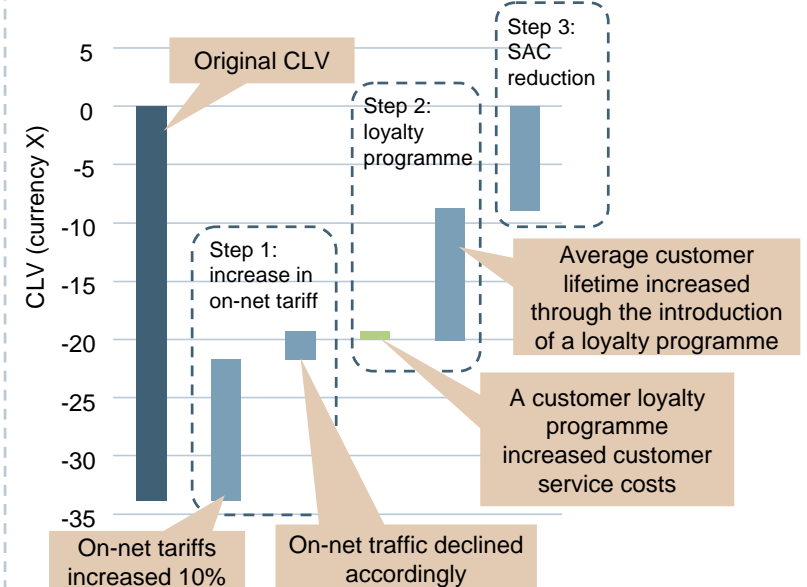
Cost and revenue by service for prepaid package



Profitability of different market segments



Improving segment profitability



Core network planning and optimisation for a Middle Eastern incumbent operator

Business challenge

- A Middle East incumbent operator required a study into the economic impact of investing in a national backbone fibre network
- Analysys Mason was asked to conduct a market study and then subsequently design a national transmission network

Approach

- Undertook a preliminary feasibility study, including a comprehensive PEST analysis
- Documented and modelled the existing infrastructure
- Reviewed and considered telecommunications technology development
- Compared and benchmarked with other telecommunications markets and considered target economic performance indicators
- Highlighted the positive impact the national fibre network would have on the economy
- Designed the PTT's national transmission network, which included:
 - developing a market demand model
 - developing the five-year target network design using specialist modelling software
 - planning the implementation of the five-year network upgrade
 - producing a high-level ten-year plan and scenarios
 - demonstrating how the ten-year plan could be achieved

Benefits and results

- The network design extended and improved the current infrastructure and included more than 100 transmission nodes covering the whole of Iran
- Delivered a ten-year network growth plan driven by a market model for a highly resilient, high QoS, 100+ node SDH/DWDM network with a core capacity of 8×STM64
- Ran network design scenarios to identify optimal upgrade paths to minimise costs and upgrade time but increase resilience, protection, reliability and QoS. This included giving best advice on different protection mechanisms to meet financial and service requirements

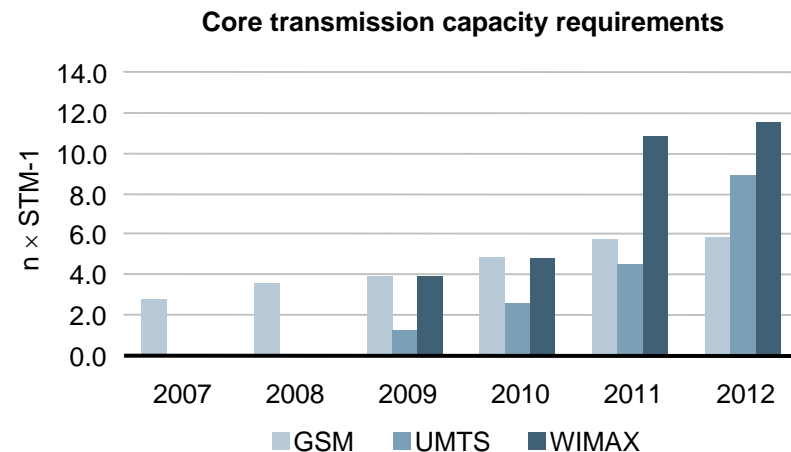
Network capacity planning for GSM, UMTS and WiMAX transport networks

Business challenge

- An equipment vendor required an independent assessment to be made of the transport network capacity requirements of a West African operator looking to expand its capacity to support additional existing GSM and new WiMAX and UMTS based services
- The vendor was working with a West African operator in determining the capacity required for its proposed network extension

Approach

- First estimated the traffic requirements for GSM, UMTS and WiMAX services based on industry data and previous experience
- Modelled the impact that the capacity requirements of the new services would have on the network
 - the modelling included sensitivity analysis and considered different service penetration scenarios and network configurations



Benefits and results

- The client and its customer were able to understand the impact of the proposed network expansion on transport capacity requirements
- Analysys Mason's experience of UMTS and WiMAX helped increase understanding of the technology's impact on the network
- Analysys Mason's understanding of the advantages and disadvantages of different network topologies enabled the optimum solution to be chosen for the customer
- Our work enabled the equipment vendor to advise its client in an area beyond its core competence

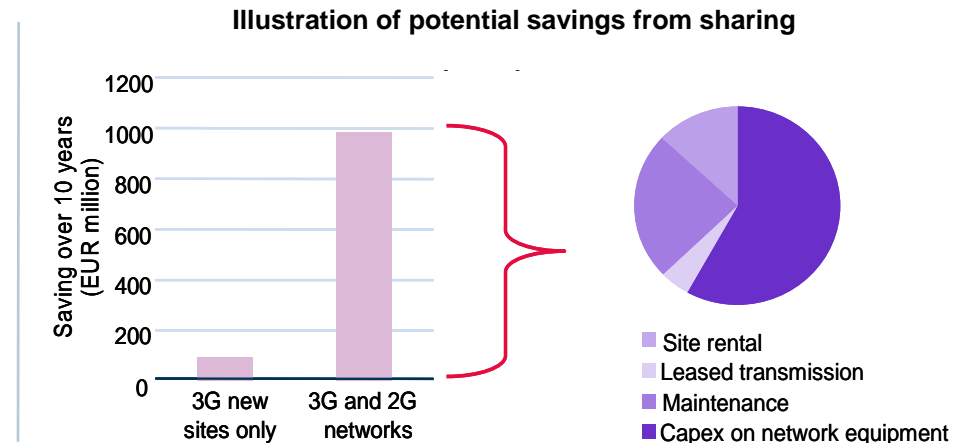
Shared RAN operations business case development and implementation

Business challenge

- Two MNOs in a major Western European market engaged Analysys Mason to develop the business case for RAN operations sharing
- Minimising the cost of the venture was a major project consideration

Approach

- Developed different operational scenarios to be considered. Namely, unified operations, unified operations with national roaming and unified operations with RAN share
- Considered different rollout-strategies – 3G sharing only, 2G and 3G sharing, national or rural implementation
- Developed business models to enable the most appropriate strategy to be identified
- Following successful evaluation, gave assistance to the two operators in creating a new entity, manage the re-structuring and operation of the combined network including organisation design, financial budgeting and due diligence



Benefits and results

- Analysys Mason's understanding of market and business processes enabled the business case to be proven within a strict regime of mutual confidentiality protection so that competition law was not compromised
- Analysys Mason was able to provide detailed business, operational and network modelling which gave confidence to the Boards of both stakeholders
- Our understanding of the deployment environment allowed significant opex and economies of scale cost reductions to be identified

Advice to Indian MNO considering options to spin-off a tower company / RAN share business

Business challenge

- Our client in India (confidential) needed an independent consultant to help them assess the costs, risks and benefits of developing a TowerCo business
- This needed to consider business models for passive sharing (site sharing), various levels of active sharing (RAN sharing, backhaul sharing etc) and all other additional services that a MNO could wish to outsource to a partner

Approach

- We reviewed the mobile market in India to determine what demand there would be for TowerCo and RAN share services. This included using case studies from more developed markets to determine how the “site” market could evolve and how MNOs’ needs and priorities could change
- We assessed competition from other MNOs and the existing TowerCos
- We assessed the client’s site assets and potential for site sharing and RAN sharing
- Successful TowerCo benchmarks were used to determine processes and organisational structures to market and sell TowerCo services, including commercial recommendations
- A high-level business review of the various options were presented



Benefits and results

- Analysys Mason’s experience enabled the client to gain a full picture of the global TowerCo and RAN share market including trends over recent years, the values of transactions for acquisitions and mergers and the lessons learnt and key success factors
- Vendor RAN sharing products were assessed, some proven, some in development. The options available would ultimately dictate which options would be available over a five-year timeline
- Our client was presented with high-level options together with benefits, risks, costs and revenues

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