Fixed-to-mobile substitution in Europe

High pace of irreversible fixed-to-mobile substitution

Introduction

Countries such as Finland and Italy have undergone an enormous migration of voice traffic from fixed to mobile networks. If Germany were to follow a similar fixed-to-mobile substitution trend between 2004 and 2007 as Finland did between 1997 and 2001, the result would be a 300% growth in traffic and a 200% increase in revenue compared with 2003. In this context, analogue is not that simple and, in this paper, we provide an analysis of the reasons leading to major differences in market evolution.

Northstream has identified three trends that are accelerating fixed-to-mobile substitution (FMS) across Europe:

- Increasingly mobile lifestyles demand flexible communication concepts
- Decreasing prices for mobile voice services lower the barrier for migrating traffic
- Increased interest among service providers to undertake developments for fixed-to-mobile convergence.

In this paper, Northstream presents the current market status and tries to identify reasons for the differences between markets in the Nordic region, Italy, Germany and Russia. In addition, the market dynamics of Italian, Russian and Swedish fixed-to-mobile substitution are analysed and discussed in country case studies.

All of the identified trends exert an irreversible impact on communication behaviour in favour of mobile alternatives.

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Irreversible societal changes behind fixed-to-mobile substitution

In this paper, Northstream analyses fixed-to-mobile substitution in the Nordic region, Italy, Germany and Russia and tries to identify reasons for the differences between operators' strategies and markets. In addition, market dynamics for Italian, Russian and Swedish fixed-to-mobile substitution will be analysed and discussed in case studies.

Fixed-to-mobile substitution is a common term for a number of market developments that all result in a proportionate increase in the volume of voice calls carried by mobile networks, compared with the volume carried over fixed networks. In this sense, fixed-to-mobile substitution is driven by users opting to make calls on their mobile phones rather than on their fixed-line phones. The discontinuation of fixed-line subscriptions or the use of a mobile solution to meet basic connectivity needs in an area where fixed-line access is not available are often referred to as fixed-to-mobile line substitution.

Key FMS trends in Europe

Northstream has identified three trends that are accelerating fixed-to-mobile substitution across Europe:

- Increasingly mobile lifestyles demand flexible communication
- Decreasing prices for mobile voice services lower the barrier for migrating traffic
- Increased interest among mobile service providers to undertake development for fixed-to-mobile convergence concepts.

The evidence of these trends varies between markets depending on market maturity in terms of fixed-to-mobile substitution, the competitive situation and other market-specific variables. All identified trends provide irreversible impact on communication behaviour in favour of mobile alternatives.

Mobile professional and private lifestyles are increasingly demanding flexible communication

There is a global trend toward increased focus on individual performance, integrity and control. This trend could be found in both fashion and demography. In Sweden, for example, the proportion of single households increased from 45% in 1997 to 48% in 2003. The increasing proportion of single households further intensifies the demand for individually customized communication solutions, supporting lifestyles with a focus on keeping in touch with friends and family, as well as enjoying an active professional and social life.

Simultaneously, the borderline between private and professional life is diminishing, with flexible working hours and location-independent work (away from the office).

Mobile communication is in tune with this societal value shift as it offers a means of expressing individualism. Mobile communication has become an integrated part of this lifestyle.

These societal value-shifts initially reflected technology pioneers and progressive youth segments. Looking at the current market, it is evident that mobile communication impacts the mass market. In the UK, 26%[1] of the surveyed

[1] MORI survey 2004

population have now either disconnected or are interested in disconnecting from wireline services.

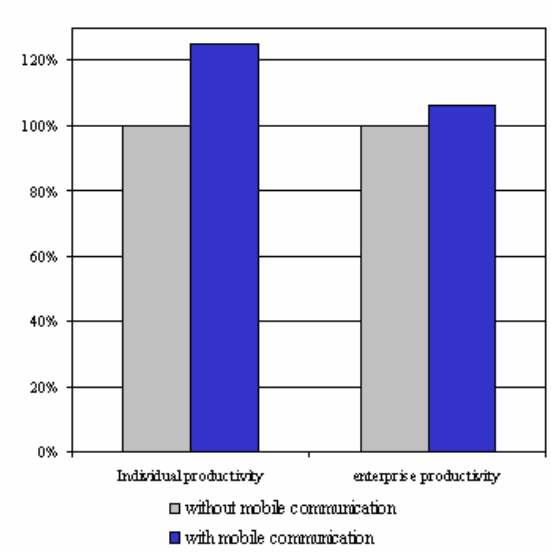

Figure 1 Impact of mobile communication on individual employee productivity and enterprise productivity

In Enterprises, mobile communication is used as a means of creating efficient communication, as well as a tool for increasing the availability of employees. A recent Finnish study for the OECD verifies that, irrespective of industry, individual employees' productivity can be increased by 25%, resulting in a 6% overall company productivity increase by using mobile communication.[2] Undisputedly, the potential for productivity gains will be substantially higher in, for example, multi-site companies or companies with explicit requirements regarding mobile communication.

Interest in such mobile office applications as calendars and mail has increased and, accordingly, e-mail functionality is becoming a key handset selection criterion when enterprise segment users buy new handsets. Access to mail and calendars over phone further strengthens enterprise users' dependence on mobile services.

In addition to improved productivity, fixed-to-mobile substitution solutions with integrated Centrex offer enterprises the possibility of minimizing or even removing capital and operational expenditure related to PBXs and duplicate handsets This results in a reduction in total spending on voice communication. For enterprises with intense international calling patterns, a fixed-to-mobile substitution solution may still be challenging from a cost perspective due to price levels for international mobile calls.

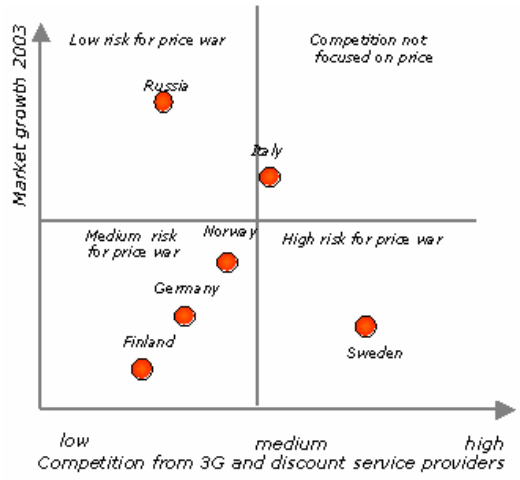

Figure 2 Price-war risk assessment 2H 2004

Decreasing prices on mobile voice service

Pricing mechanisms and price levels for mobile voice are rapidly changing. The market introduction of 3G is focused on advanced mobile data and messaging services. However, to break into the existing customer base in stagnated markets, 3G subscriptions are designed for high-volume voice consumers and offer large buckets of voice minutes in subscriptions. The 3G capacity advantage over 2G networks is utilised to offer low price on net traffic and mobile to fixed network traffic in

[2]Research Institute of the Finnish Economy (ETLA) 2004

order to stimulate churn from competing mobile operators as well as fixed-line operators.

The price development in Europe shows signs of evolution towards international price-level convergence. There is no underlying persistent difference in cost structure between markets that would be large enough to defend substantial long-term price differences. Yet the pace of this development is determined by a number of different factors, of which the following are the most significant:

- Capacity supply situation, including impact of 3G network capacity
- Competition from discount service providers with low-price service offerings, using the web as the main sales channel
- Maturing penetration challenges operators to seek alternative strategies for growth. Growth must come from competing operators.

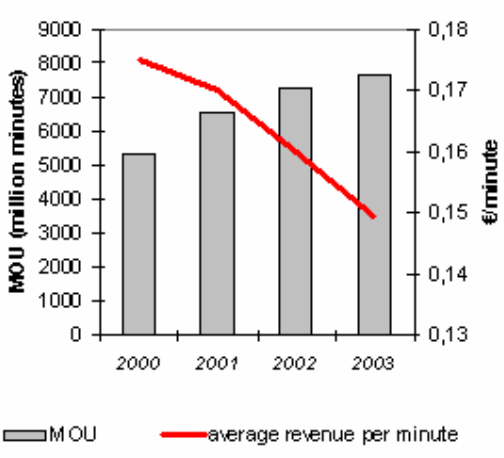

Figure 3 Finnish MOU and average revenue per minute

In Finland, price competition was boosted by the introduction of discount service providers such as Saunalahti. The intensified competition resulted in a 7% price decline in mobile voice during 2003.

The price war further increased fixed-to-mobile traffic as well as line substitution. At the end of 2003, 42% of all voice traffic originated from mobile and, during 2004; this proportion is expected to already increase to above 50%. Line substitution has reduced fixed household penetration to 49% in 2003. There was also a 22% decline in the number of fixed-line calls and the decline continues.

Fixed-to-mobile convergence

End-user perspective

From an end-user perspective, fixed-to-mobile convergence can be defined as the convergence of fixed and mobile services, meaning that the same services become available in fixed and mobile networks. To support service convergence, the convergence of devices, network or industry may be required. Both fixed and mobile operators try to exploit fixed-to-mobile convergence to support their strategic ambitions.

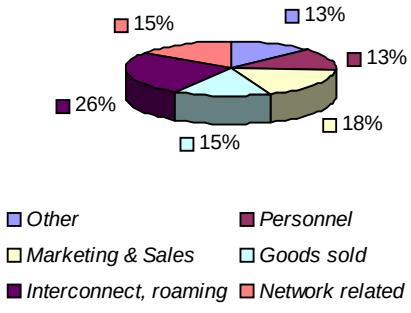

Figure 4 Global average OPEX split

Operator perspective

Coexistence of multiple network technologies opens ideas for combining benefits of different technologies, for example:

- Coverage
- Price /Cost
- Performance

Network convergence is often explored in combination with device convergence,

which increases the requirement to identify mainstream convergence trends. Parallel usage of different network technologies is likely to increase network-related operating cost (see figure 3), which could reduce the advantage of lower investment.

Fixed-line operators operating hybrid solutions, such as BT Bluephone, must be careful in balancing the potential advantages in network investment with increased OPEX in order to outperform mobile operators that have streamlined network operational processes.

Industry perspective

During the dotcom era, industry-convergence projects covered a large variety of industry segments seeking synergies in forming cross-industry companies. Today, industry convergence in telecom is more about operators and media companies understanding each other's businesses and business-model cooperation. Media and application companies need to increase their knowledge about the widening range of networks over which they deliver content and services.

Fixed-network operator dilemma

Throughout Europe, fixed-line operators are experiencing a proportionate increase in revenues from subscriptions compared with revenues from traffic. This opens the way for increased exposure for fixed-to-mobile line substitution, as voice traffic volumes over fixed networks are approaching the threshold for justifying fixed-line subscription for an increasing proportion of users.

Fixed-network operators need to counteract fixed-to-mobile substitution drivers and reinforce barriers in order to slow down this development. Fixed-to-mobile convergence is on the roadmap of fixed-line operators eager to address the irreversible market trend.

Changes in modern lifestyles, in terms of an increased need for communication flexibility cause an irreversible development in terms of how people use communications technology.

Consumer market example

BT has announced plans to launch a convergence concept that specifically addresses indoor coverage, which has traditionally been challenging in UK. The concept is based on a combination of Bluetooth and GSM/WCDMA handsets called 'Bluephone'. The handset is planned to function as an ordinary mobile handset, serviced by BT as an MVNO, when the user is outside home or office. However, when in range of the user's fixed terminal, a Bluetooth short-range wireless link is made with the fixed-line terminal, so that calls can be made and received over the fixed line.

The service offers potential advantages for users in limiting the number of handsets, bills, phone numbers, voice-mail and address book.

Bluephone is mainly positioned as a consumer convenience product that would prevent consumers from disconnecting from BT fixed-line services. Bluephone is scheduled to be launched in the market in early 2005.

The challenge remains even though the concept potentially addresses a large consumer market, the Bluephone does not represent mainstream technology evolution. The business opportunity exploits the declining price differences between mobile and fixed prices, which means the market window is limited.

Addressing enterprise's need for service convergence, GSM replacement of fixed-network solutions offers an alternative to existing multi-device and service-provider solutions. The enterprise fixed-to-mobile substitution offering has to address all aspects of enterprise communication requirements, including PABX functionality, voicemail and low-cost company-internal communication.

In Finland, interest in mobile Centrex is demonstrated by large customer inflow to market-leading service providers, particularly from the SME segments.

Low costs for company-internal and incoming traffic are being addressed by various mobile operators. In Sweden, Tele2 offers a GSM enterprise network

based on micro base stations, where traffic carried in the enterprise network is treated as fixed-line traffic. Fixed-line tariffs are offered for fixed-line terminated calls and there are free-of-charge voice calls between employees.

Recent offerings demonstrate that Italian mobile operators are now also targeting opportunities for line replacement in the business segment with tariff profiles at the same cost as fixed-line, including free-of-charge, in-office mobile calls and location-based billing.

The voice-related service proposition contained in 3's aggressive market entry strategy clearly targets fixed-line replacement. Initial target segments comprise consumer segments, but can be expanded to include business segments.

FMS development in Europe

Fixed-to-mobile line substitution accelerates fixed-to-mobile traffic substitution by focusing demand and expenditure for voice communication on mobile usage. However the likelihood of total line substitution is dependant on market- and culture-specific conditions. Fixed-to-mobile traffic substitution drives mobile revenue, whereas fixed-to-mobile line substitution in itself only indirectly drives revenues by accelerating fixed-to-mobile traffic substitution.

	Finland	Italy	Norway	Sweden	Germany	Russia (Moscow)
Mobile penetration	91%	97%	85%	97%	83%	69%
Residential fixed lines per 100 households	64	83	86	99	80	NA
Fixed-line channels per 100 capita	49	48	72	73	66	39
Mobile-originated minutes	46%	40%	21%	15%	13%	16%
Mobile-terminated traffic as a percentage of all fixed-line traffic	13%	15%	13%	10%	6%	NA

The Russian market is the fastest growing mobile market in Europe. As in Latin American countries, such as Brazil and Chile, as well as Central and Eastern European countries, such as the Czech Republic, low fixed-line penetration results in demand for mobile phones as a substitute for fixed lines and as the primary means of personal communication.

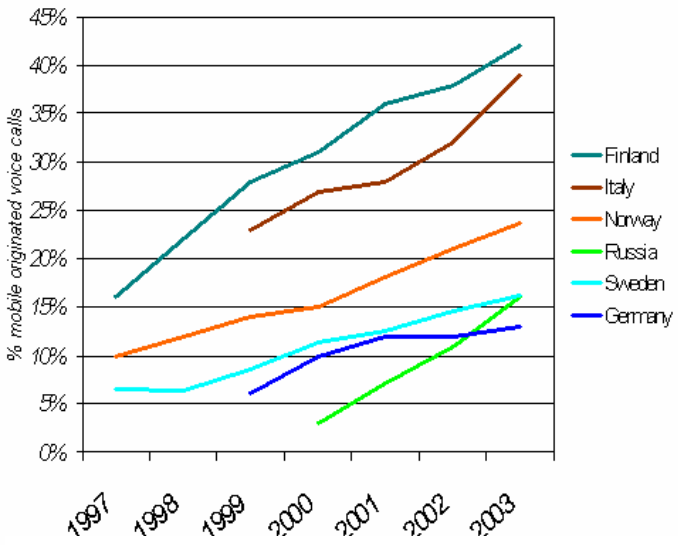

Figure 5 FMS development 1997-2003 in Europe

German fixed-to-mobile substitution is held back by both high prices on voice mobile services, insufficient competition and conservative values in society. The Swedish market is also held back by high prices, but increased competition is expected to drive fixed-to-mobile traffic migration during 2004 and onwards (see figure 5).

In many markets, there are certain types of calls for which the landline phone is the handset of choice, in

particular long calls. Mobile communication patterns still differ from fixed-line and are a result of the characteristics of the mobile calling environment. With a larger proportion of mobile-originated calls being made from home or another traditional fixed-line environment, this will gradually change. In Finland, the average length of mobile calls increased by 5% from 2002 to 2003, and the difference in call length between mobile and fixed-line calls is diminishing.

Consumer segments have traditionally been more progressive in terms of fixed-to-mobile line substitution, but with the increasing viability of substitutes, enterprises are also gradually changing. The need for mobility and availability is the key driver in introducing mobility in companies. Line substitution is driven by a desire to simplify the communication environment by only having one device, as well as limiting the cost of maintaining multiple systems and handling multiple suppliers.

IP telephony has also gained ground due to the way it is addressing combined demands for data and voice access solutions and low prices, particularly for international voice calls.

Which drivers control the pace of development?

Northstream identified a set of drivers impacting fixed-to-mobile substitution in Europe. These are outlined in the below model. This set of drivers is identical between markets but intensity varies over time depending on market maturity. There are internal dependencies between drivers, for example between 'competition' and 'price', which must be acknowledged when analysing a market. Drivers also differ in terms of control. Operators control such drivers as service, marketing and price whereas the opportunities for a single operator to influence such macro-economic drivers as competition and market regulation are usually limited and correlate with the specific operator's market dominance.

Modelling fixed-to-mobile substitution development

When analysing interdependencies between fixed-to-mobile substitution developments, drivers' timing and the sequential flow of drivers are critical to gaining full advantage of the drivers. By outlining a fixed-to-mobile substitution stage model, different stages of development and the key drivers applicable to a specific stage can be identified.

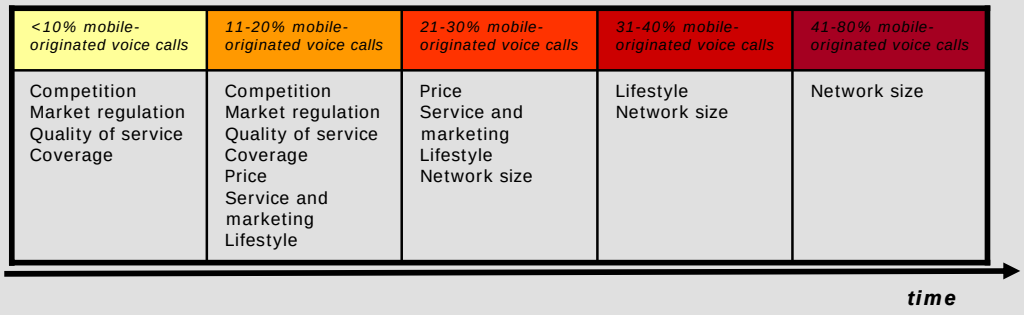

Figure 7 FMS-stage model outline. Source Northstream FMS white paper February 2004

The model is based on a relative scale, represented by the proportion of outgoing voice calls made in mobile networks. By applying this perspective to fixed-to-mobile substitution development, the relative level of development in a market can be assessed. The model is based on the market development stages and driving forces observed by analysing European fixed-to-mobile line substitution development.

In a multi-market consumer survey[3], three critical factors were identified for making calls from home:

- Sound quality
- Reliable connection
- Value for money

This verifies that line substitution is highly sensitive to basic drivers, such as 'quality of service' and 'price'.

In Sweden and Germany, market development is held back by a low level of competition, resulting in high price levels. In Sweden, a low level of attention to non-voice services from the established players has made the market miss out on positive voice-related usage effects from an increased focus on mobile devices. Introduction of 3G services, especially pushed by 3, is improving the situation.

The Russian communications market is experiencing very positive growth that is focused on mobile communication. Growth is driven in particular by quality of service aspects relating to coverage and availability. There is no sign of decline in fixed-line penetration or absolute volumes of fixed-line traffic, but growth is concentrated to mobile networks.

In Norway, fixed-to-mobile substitution is resulting in substantial line as well as traffic substitution. Messaging services have become an integrated part of everyday day life in Norway. Combined with a growing network of users with mobile as the primary or single means of communication, these are perceived as key drivers for continued fixed-to-mobile substitution.

Italian fixed-to-mobile substitution is driven mainly by a pronounced mobile and fashion-conscious lifestyle, and mainly comprises fixed-to-mobile traffic substitution.

In Finland, mobile is established as the primary means of communication, and continued fixed-to-mobile substitution is driven by a 'network effect'. Existing fixed-to-mobile traffic substitution is to a large extent derived from users disconnecting from fixed-line services.

Italy- a European forerunner in fixed-to-mobile substitution

Despite very high mobile penetration, Italy is experiencing continued penetration growth. The market revenues for mobile voice grew nearly 7% between 2002 and 2003. In the same period, revenues from value-added services grew 30%.

TIM and Vodafone have dominated the market. However, availability of 3G handsets has allowed '3' to increase its customer base reaching one million subscribers in July 2004. Further, mobile number portability has helped small operators to address the existing market base, which has helped Wind and '3' to gain market share.

Italians are using mobile devices to an increasing extent, not only when they are on the move, but also from home or office, since mobile communication satisfies the need for personal communication and the status-consciousness of talkative Italians.

Despite slow economic growth and the reduction of families' disposable income, Italian families grew their communications budget by 42.4% from 1998 to 2003. There are some aspects that can be regarded as Italy-specific. In contrast to many other European markets, family relationships are a fundamental part of

[3] MORI group (2004)

social life and it is common to have daily contacts with parents and relatives. In addition, students lack financial means to live separately from their parents and 60% of people aged between 18 and 34 still live with their parents. It is no surprise that 62% of mobile users state that they use mobile communication primarily to communicate with family members and only 28% use it for business purposes.

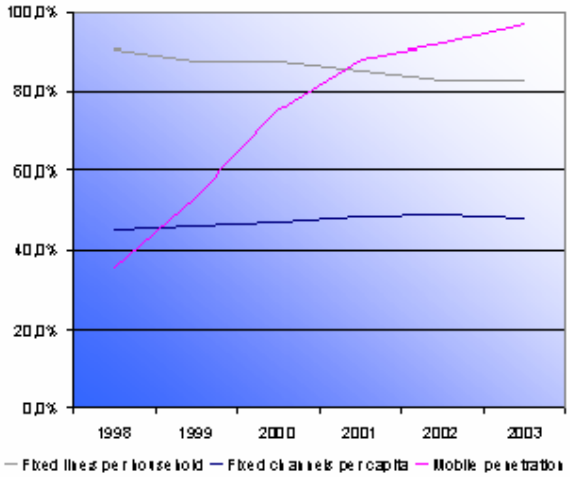

Figure 6 Technology uptake in Italy

As a consequence of the unexpected success of the prepaid offering when introduced in 1996, Italian mobile operators proactively introduce new services and marketing concepts to encourage and stimulate consumption and deepen the customer relationship.

A strategy for stimulating traffic and increasing customer loyalty has been the usage of SMS to communicate with the customer base, using such initiatives as “Do you know that…” by TIM, which notifies customers of unsuccessful call attempts received while their handset was turned off, thus encouraging people to return calls.

Non-voice services have been used, not only to generate new direct revenues, but to deepen the relationship with mobile communication and the operator, e.g. the more MMS are sent, the more people will phone and talk about their pictures, their vacations, their experiences. In 2002, Italy was the first country in Europe to launch MMS.

The market proposition of ‘3’ includes bundled offers of voice, data and messaging and has resulted in an increased focus on bucket offers without implying a clear price reduction. SIM numbers are still growing as a result of bundled packages of terminals and subscriptions and offers that promote twin SIM cards, two SIM cards with the same number and billing profile and SIM cards with two numbers (number A and B) active at the same time.

High pace of fixed-to-mobile growth substitutions in Russia

Three national operators dominate the Russian mobile market. Unlike other European markets, the PTT has not played a significant role in the market evolution of mobile communications. The Russian market has virtually exploded over the past few years and reached 37% mobile penetration nationwide in July 2004. The growth in telecom is powered by a continuous trend of positive economic development since the recession in 1999. Despite uneven wealth distribution, penetration is over 70% in such metropolitan areas as Moscow.

The tremendous growth in mobile penetration, particularly from 2002 and onwards is evidence that there is a suppressed market demand for communication. The low penetration of fixed-line, combined with limited investments in fixed-line telephony, in particular for consumer segments, means that we can conclude that an uptake in mobile telephony largely comprises line-substitution growth. The mobile market is predominantly a voice service market.

Internet usage is relatively widespread in metropolitan and urban environments, especially within companies. Unlike developments in Western Europe, there is no uptake of online lifestyles in the residential segment that would influence mobile usage.

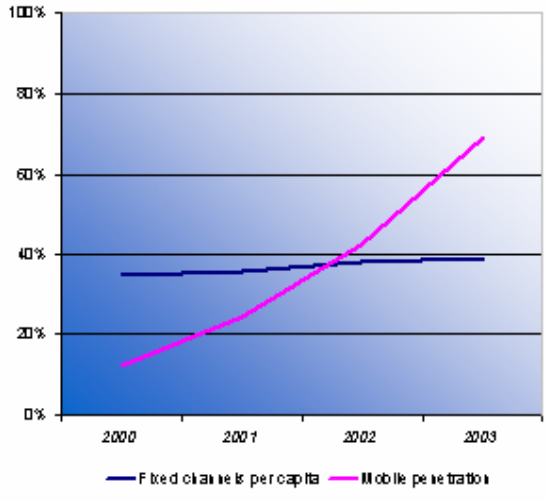

Figure 7 Technology uptake in Russia

However, there is strong fashion-consciousness among Russians, demonstrated by strong brand awareness concerning handsets and accessories. Due to the drastic changes in society in recent decades, and despite being conservative, Russians have developed a curious interest in novelties, which makes them open to trying out alternative solutions, such as mobile telephony instead of fixed-line.

Similar to North American markets, Russian mobile subscribers have to pay for incoming calls. This has a negative effect on users' willingness to accept unexpected calls and, consequently, on MOU. The main reason for this is insufficient network support for introducing interconnect mechanisms that would enable calling party pay schemes between all mobile and fixed operators. To address this problem mobile operators have set up different kinds of internal CPP schemes and created proprietary models to solve interconnect between operators, without regulator involvement.

There is a race among leading national operators to move beyond Moscow and St Petersburg into the regional markets. To secure success in expanding services beyond densely populated areas, operators are dependant on low investment costs and narrow operational expenditures.

Besides expanding operations into new regions, there is a trend in the market for consolidation. Historically, regional markets have been characterized by the presence of multiple local operators that operate on various mobile standards (AMPS, CDMA, NMT and GSM). On a national level, competition between the three major players is intensifying. National TV is used as a marketing channel, both for brand awareness as well as for lifestyle- and service-marketing campaigns. This has resulted in broad awareness of mobile communication, even if actual services may still be unavailable.

Continued fixed-to-mobile - line as well as traffic - growth substitution is highly dependant on continued economic growth and stability.

Pending fixed-to-mobile substitution in Sweden

The Swedish market was early in adopting mobile voice services and the local perception is that the market is advanced. Despite this perception, the market lacks operator initiatives extending beyond mobile voice. In 2003,'3' entered the market trying to address this but its success was not immediate. Fifteen months from service launch, '3' reports 17% non-voice ARPU at SEK 367 ARPU, which far exceeds the market average.

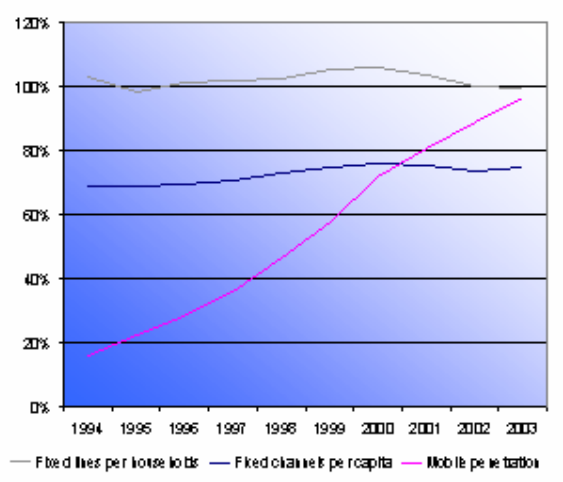

Figure 8Technology take up in Sweden

In addition to '3' entering the market, Djuice, backed by Norwegian Telenor, became established as a discount mobile service provider in H2 2003. With the arrival of these two new operators, using low price on voice as a key differentiating factor, price competition for consumer segments intensified substantially.

Sweden balances two contradicting phenomena: extreme mobile lifestyles with strong focus on individual performance and yet a very low pace of fixed-to-mobile substitution.

Northstream has identified a positive correlation between intense usage of non-voice services and fixed-to-mobile substitution. In contrast to Norway, where users are extremely keen on using SMS to communicate with friends and family, high price and a lack of commercial focus on mobile data has kept the Swedish usage of non-voice services at a low level. However of the terminals sold during the first four months of 2004, 40% were camera phones and 60% had MMS capability.

The high price level has been appreciated by existing players and has resulted in a relatively stable market in terms of market share and market positioning. The Swedish mobile operators experienced the highest EBITDA margins in Europe at around 50% 2003.

The lower prices of mobile voice services will allow for lifestyle to start driving Swedish fixed-to-mobile substitution. The intense focus by '3' on non-voice services challenges the established players and forces them to boost the effort made on non-voice services. '3' has used voice pricing as a tool in its market-entry strategy. Large buckets of minutes and free calls between '3' subscribers made their market offering the most popular in May 2004 at one of the leading Swedish resellers, The Phonehouse.

Summary and Conclusions

Fixed-to-mobile substitution is occurring at a rapid pace in Europe. The market situation and operator positions impact local market conditions and the strength of factors driving fixed-to-mobile substitution.

Northstream has identified three key trends speeding up fixed-to-mobile substitution across Europe:

- Increasingly individualistic lifestyles drive demand for mobility, which imposes irreversible fixed-to-mobile substitution as mobile communications offer means of supporting modern lifestyles.
- Decreasing prices on mobile voice services lower the barrier for migrating traffic. This trend opens the way for exploiting the price-sensitivity mechanisms for traffic substitution in such high-price markets as Sweden and Germany. Further, decreasing prices as a result of attractive, large voice bucket 3G offerings will spur line substitution, as this provides an offer comparable with fixed line in terms of usage and subscription cost.

- Increased interest in fixed-to-mobile convergence is a symptom of an ongoing communication shift towards mobility. Simplicity and cost control is to an increasing extent addressed by operators. Both fixed and mobile operators try to leverage fixed-to-mobile convergence. In the short term, there are fixed-to-mobile convergence opportunities that can be served by fixed-network operators. However, in the long term, these opportunities are better addressed by the mobile industry.

Of the markets covered in this white paper, Finland is the most significant example of true *substitution* of fixed-line communication by mobile communication. In other markets, such as Italy and Norway, a reduction in fixed-line traffic but strong growth in mobile has resulted in total communication market growth. The decline in fixed-line penetration is not as evident as in the Finnish market, even if there are clear signs of decreasing fixed-line penetration in Norway. Fixed-to-mobile substitution in Sweden and Germany is held back by high prices and lack of competition. In Russia, telecom growth is focused on mobile communication.

Fixed-to-mobile substitution is an irreversible evolution, where mobile operators' 3G investments will benefit from larger volumes of voice traffic. The appropriate product and marketing strategies will help the leading players to win market share from traffic growth in mobile networks. Incumbent operators with both fixed and mobile operations have more to win on aggressively addressing the fixed-to-mobile substitution opportunity.

Northstream™

Contact:

Northstream has studied FMS in-depth and is well-positioned to help industry players regarding how and when they can best benefit from this new phenomenon.

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