

## PROFITABLE AT ANY SPEED?

Back in 2000 and 2001 the promise of I-Mode in Japan, Blackberry in the US and SMS (Short Message Services) in Europe aroused interest among investors worldwide. The reasoning seemed to be that, if slow-speed services such as these were so much in demand, then increasing the speed and capacity in order to provide even richer content would uncover new demand and new revenues to be shared among operators, content providers and other vendors.

### The Technologies

Some of this might actually come true for the operators of Wireless LANs, also known as WLANs, Wi-Fi, or 802.11, now rapidly being deployed at airports, railway stations, hotels, restaurants and other public spots, and which can even be made available inside aircraft and trains. As these services can provide up to 11 Mbps or even 54 Mbps they have a claim for the much-touted marriage between Wireless and the Internet. However, the very merit of providing "true broadband" takes away a bit of the newness seen from the perspective of the content providers. Pricing and other aspects of the business model might look pretty much like those that apply to fixed broadband and other flat-rate services. Some possible exceptions to this simple observation will be discussed later in this presentation, after new mobile services such as "3G" and "2.5G" have been brought into the picture.

Cellphone operators have settled into a "generation" mindset, where "1G" analog voice-only networks were replaced by "2G" digital voice-only networks, which in turn were to be replaced by "3G" voice and data networks. The movement from "1G" to "2G" went well, but the jump to "3G" has not.

The original concept of UMTS (3G) was laudable especially since users were assumed to be able to use the same device in Europe, the US and in Asia. That vision has foundered on the rocks of lack of coordinated spectrum between the US and the rest of the world, spectrum scarcity most everywhere, resultant high prices for the spectrum available, hardware and software development problems, and perhaps most importantly, customer disinterest.

The 'solution' has been a 'mid-generation' or "2.5G" solution (also known as GPRS), offering low-speed data and digital voice in the existing "2G" bands. It is in this generation I-Mode, SMS, Blackberry, and most other cellular data service currently available live.

The outlook for mobile operators geared to provide true "3G" services looks far from hopeful. Providing higher speeds implies not only higher costs, but also less revenue per MHz compared to using the available and scarce spectrum for less "capacity-hungry" applications such as voice, SMS (Short Message Services) and email. Consider the following.

Each 3G operator has a finite number of channels to offer customers per serving point and, although the channel may be used for either voice or data under 3G, it cannot be used for both at the same time. Therefore, any data channel in use takes away one voice channel. Since the 3G model calls for data service to always be available the ability of a serving point to service voice

calls will be reduced by the number of 3G data users on a one-to-one basis. Now consider the pricing model for data use throughout most of the world. Users expect to pay for packets or for flat-rate access, not time of connection, and neither volume nor flat-rate pricing is likely to replace lost revenue from voice or SMS-type usage.

Even sending and receiving digitized photos directly through a cell-phone or a PDA does not require more bandwidth compared to what is now used for voice over mobile networks or faxes over fixed as well as mobile networks. Thus MMS (Multimedia Message Services), which is supposed to supersede simple SMS messaging can well be handled even at present speed levels of 9,6 kbps, especially if supported by Java and other means to minimize the need for more transmission capacity.

As indicated above, the proven success stories like I-Mode in Japan, SMS in Europe and Blackberry in the US are working at low transmission speeds. However, they are offering other qualities that might be of greater importance to users and customers, like reliable nationwide coverage and low cost for each transaction, not to speak of the importance of "Always On", an inherent feature of packet switching as opposed to traditional circuit switching. Getting a laptop up to work is still a matter of minutes rather than seconds. Any device and service that can provide instant access is a winner for those on the move. This might well be one of the reasons behind the success of I-Mode in Japan as opposed to the failure of WAP in Europe that was launched prematurely, before the availability of packet switched services.

Given these customer reactions, voting with their feet and their wallets, how is it that the mobile operators have been so obsessed by the increase of sheer transmission speeds rather than other qualities where they can still claim a unique advantage? Other options like WLANs can offer radically higher speeds (Mbps rather Kbps) at a rapidly increasing number of Hot Spots, but nationwide coverage and roaming is still far off.

Anywhere/Anytime/Any Device on Anybody's Network is a truly forceful concept, even at more modest speeds, especially if access by traditional mobile services can be seamlessly combined with the higher speeds provided over WLANs. From a technical perspective it is already quite feasible to offer uninterrupted sessions over networks running at different speeds.

Commercial roaming agreements are quite another matter, as mobile operators are still pondering over whether WLANs are to be seen as friend or foe. The initial knee-jerk reaction of mobile operators in France and the UK was to ban public WLANs, considered to be a threat to the revenues much needed to pay for extravagant 3G license fees. WLANs might lower their (projected) revenues by tens of percentage points. However these projected revenues look to be very problematic, even without taking WLANs into account. The operators have rather good reasons to welcome public WLANs as a Blessing in Disguise rather than any threat to any theoretical revenues,

As shown above, any migration to higher speeds in a mobile network is bound to provide less revenue per MHz or Mbyte compared to plain voice or other not so capacity-hungry non-voice services, like SMS and transmission of still pictures. Any downloading of hi-fi music, not to speak of movies at higher speeds than 100 kbps, is simply not realistic unless the price per Mbyte is

drastically lowered to a level encouraging arbitrated delivery of more basic services. The rapid deployment of more cost-effective WISPs (Wireless Internet Service Providers) only underlines this fact of life.

### Implications for Content Providers

Classical vertical integration is slowly but steadily being replaced by more horizontal market structures. Content providers are not bound by the treacherous concept of "generations" (like 3G) which supposedly deliver radically new opportunities. Digital content can readily be re-packaged for access through a plethora of different networks and devices. On the face of it mobile services might provide another opportunity to get paid for content, repackaged to differentiate it from that available over flat-rate Internet services.

Revenue sharing between content providers and mobile operators has already become more common. In the near future however, there is simply more revenue to be shared by providing high-interest but low-bitrate content, like ring signals, logos and e-mail services, compared to more capacity-hungry applications. A possible way out from what looks like a Catch 22 for content providers and mobile operators alike could be a multi-channel approach. Operators of "3G" networks could prosper by providing anywhere/anytime instant access, coverage and position-based services, including giving "always on" referrals to locations where more content-rich services, provided by WISPs, can be accessed and downloaded. This is another case for revenue sharing between flat rate versus per minute or Mbytes charging mobile operators.

A recent announcement by BT would seem to indicate recognition of this. In early October 2002 BT announced it would bundle Wi-Fi access with its 2.5G cellular offering allowing the subscriber to use the same account to access the Internet over either a BT-owned hot-spot or via GPRS, thereby extending the reach of the network considerably. Another announcement from Nokia and several carriers in Europe indicated that the carriers will allow the use of 2G or 2.5G Subscriber Identification Module (SIM) cards as authorization for roaming on Wi-Fi networks.

In any case mobile operators look bound to charge for capacity used, whether measured by minutes or Mbytes, given the scarcity of frequencies available. Any other scheme, like billing for the perceived value of content, can not attract more than a few really hurried businessmen, eager to download their latest PowerPoint presentations in a taxi to the airport. Given the possible multi-channel approach discussed above, even they will have the option to make the download by a WLAN (at higher speed and lower costs) after arriving to the airport or the hotel or to the customer's premises. By contrast, most providers of public WLANs look bound to provide flat-rate services, even if access can be conditioned by permitting use only per day or per hour. Others, like airlines or hotel chains, might find it of interest to provide free access (at least to their own websites) in order to attract new customers.

Perhaps a bit more discussion of "value-based pricing" is in order. "Value-based pricing" is already in full use when it comes to basic SMS. A fixed price is natural because the content size is also fixed (to 160 characters, total). When it comes to "premium SMS" with logos, ring tones, and such pricing on "perceived value" is also natural because the revenue is to be shared between the content provider and the operator. Fixed pricing is also logical when it comes to sending MMS-

messages such as still pictures, which again have a fixed maximum size and use only a fraction of the capacity needed for voice calls.

There is however a limit to how far this fixed price (for a given content) can be scaled up. For capacity-thirsty applications, like downloading music or films, the sheer capacity cost increases in proportion, taking up more and more of total "perceived value" and leaving less and less room for a content provider to get its share. To some extent this can be met by differentiating the offers, such as a lower price asked for a low-resolution and brief streaming video version, and a higher price for the full version. As stated elsewhere any full video version over a cellphone might however simply be too expensive to attract more than a handful of customers, as customers have the choice of some other and far less costly option, like a WLAN, for any serious downloading. In the early days of 3G some operators might well choose to offer almost unlimited usage at a flat rate. This is not a sustainable strategy however as any 3G network has only so much of total capacity.

When it comes to customers browsing the website of a newspaper, it is up to the customer to decide how long any session might last, as well as the amount of downloading required, which might necessitate some kind of billing measured in minutes and/ or Mbytes.

The unregulated WISP/WLAN business has unresolved challenges of its own. Some services might be provided for free, sponsored by airlines and hotel chains, banks and so on, while other services might be more costly as the owners of the most attractive venues see a new opportunity to exploit the value of its location and hence a captive market.

From the perspective of content providers this is a new challenge. Some might prosper by providing "must have" content. Others might suffer if they either fail to generate interest or subsidies from airlines, hotel chains etc, or if venue owners ask for too large a share from a yet undeveloped WLAN business opportunity.

In any case, the market for wireless is not only a matter of sheer content delivery. Quite a large share of the market might simply be produced by the end-users and customers themselves, not simply by email but photos of the kids sent to grandparents and photos from tourists sent back home rather than postcards. Within the business sector, access to the company Intranet (more or less internally produced) might be the driving force. The human urge to communicate is fact of life, which even Graham Bell failed to recognize. He assumed that the telephone was to be mainly used for access to concerts rather than peer-to-peer communication. That said, there might be a business opportunity in the editing or processing of customer-produced content.

## In Summary

An increase in speed will not necessarily enhance revenues and profits, rather the contrary for operators of mobile networks as well for content providers. Other aspects than sheer speed are more likely to attract interest and willingness to pay. Multi-channel approaches, combining the virtues of always on/anytime/anywhere and far higher speeds/lower costs provided by WLANs look a winning combination. There is no need to look into the future for a "4G" solution, it is actually an option available today.

From the perspective of content providers, 3G operators (and 2.5G operators as well) might be of interest as discussion partners. Even if operators might be reluctant to put any high-priced bills for content on their own invoices (already high enough), they might be able to offer other convenient models for billing and revenue sharing. Content providers need not even consider services requiring more than around 100 kbps however, as higher data rates are unlikely to ever be delivered by 2.5G or 3G at an affordable price.

Providers of WLANs are clearly more interesting when it comes to capacity-hungry applications, like downloading of music and movies or large business documents or presentations at off-site locations. However, this is still an industry in its infancy, for better or for worse.

There has however lately emerged a possible combination of the two worlds. In Scandinavia Telia and its counterparts in Finland and Norway have already built an extensive network of Wi-Fi hot spots, offering joint use of WLANs and conventional cell networks. This is also being done by BT in the UK, by other carriers in Japan, and similar initiatives have begun in Germany.

Perhaps this new combination will offer users "Seamless Mobility" as well as an opportunity for the content industry to more freely choose and combine alternate channels. It may also lead to some truly innovative uses of mobility and content, or so we can all hope.