Griefing 3G Revenue Generating Applications

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1 Preview

There is a great deal of coverage of the vast sums spent acquiring 3G licenses. This has resulted in questions about the viability of some mobile operators. One of the premises that the operators used in justifying the high prices paid is that there are a large number of alternative revenue sources outside of voice. These not only include the existing messaging and data but a new area of applications which is seen as a largely untapped potential revenue source. Unlike the existing WAP applications that are mostly frustrating for users and have generated largely negative press sentiment, the new networks promise much more engaging rich media experiences. For the operators, these are compelling areas for generating additional revenue.

3G promises a next generation technology but it involves much more than technology. Most of the systems are being built from scratch with new capabilities and constraints and this is allowing new areas of flexibility to be built as well. From an application perspective this means a brand new environment that is characterised by many new factors. These include:

- Higher Bandwidth
- Packet based networks
- Integrated Payments Systems & Billing integration
- Sophisticated user interfaces
- High degrees of personalisation through CRM
- Location Enablement
- Intelligent devices / Java
- Installed Base
- Aggressiveness of the operators

Although many of these factors are discussed in the press, it is the combination of all these factors that will likely provide the "Wow" experience for the 3G user. This paper provides a quick tour of these topics. If you would like to discuss any points in more depth we would be delighted to hear from you.

2 Bandwidth

Bandwidth is probably the most hyped factor in 3G. Promises of 2Mb connections and high resolution streaming video are mostly hype in the near term. In fact, in everyday use, the speed of the connection may only resemble the speed attained in dial-up connections on home PC's. This is not to say that peak performance will not be greater but that anyone designing applications will be designing for expected or worst case scenarios and this will be the dominating constraint rather than theoretical maximums.

Applications

Reasonable bandwidth will be available and given the size of the device screens, it will be feasible to fill the screens with interesting content quickly and in an engaging way. The movement of small applications to the phones will be possible in only a few seconds and this will facilitate much better user interactions than have been possible before.

Video

So is streaming video a possibility? It is certainly feasible just as Real Networks has shown on the PC using dial-up connections. In addition, special video processing is possible on a chip level at both the operator and handset equipment. So we are likely to see this early on as a technology demonstration. Will this translate into widespread adoption? I am inclined to be sceptical. Outside of the obvious bandwidth issues, there is still the issue of cost. Bandwidth is expensive and video is a rabid consumer of bandwidth. It is likely that everyone who gets a 3G device will play with video but it will not prove to be the compelling 3G application. In a few years when network capacity is further increased, we will likely see some small exchanging of short clips between users. This will be in the form of "Happy Birthday" and "I love you" video-clips of a couple seconds duration. Contrary to the aspirations of the operators, it is not likely to be a satisfying experience to view content that is oriented for broadcast such as sporting events or soap opera highlights.

3 Costs

Another element to consider with bandwidth is cost. It is not likely to be cheap. An interesting analysis of one operators pricing for GPRS calculated that a single MP3 song would cost more than \$30 to download. The pricing will likely come down but bandwidth will remain reasonably expensive. This could also be a benefit as the operator will be making money from this bandwidth use and it is conceivable that a business model can be built on a free system that shares bandwidth revenue with the operator. Whether the operator is willing to entertain this is another question.

4 Packet Based

3G will be a packet based rather than circuit switched environment for data. This means far greater efficiency in the use of the bandwidth. Rather than reserving a data channel as is done today in GSM (circuit switched), data will be divided into packets and bandwidth will only be consumed as the actual data is transmitted. Pauses in GSM/WAP take as much bandwidth as streamed data. The other implication other than efficiency is in the interaction model. In a circuit switched environment, a circuit must be allocated and opened and this is a time consuming operation that requires 10's of seconds. This is why when you use WAP you must wait, until you are connected. With packet switched, you are 'always on.' The implication is that while it might not be worthwhile to invest 30 seconds to check a stock quote, a 2-3 second wait may be much more compelling. If one combines the packet nature with the capabilities of the intelligent devices discussed later, whole new areas of applications can be foreseen. One must be careful, though, when using the term 'always on' as it is a bit misleading. GPRS is a packet system that is always on but even when always on, there is a delay for the allocation of air resources, and user authentication. In GPRS this can take 15 seconds. On i-mode it is in the range of 2-5 seconds. 3G will hopefully be on the low-end of i-mode.



5 Integrated Payments Systems & Billing integration

One of the most important and exciting features of 3G is the integration of payment systems and integration of the billing systems. Unlike the Internet user, the 3G user already has in place a way to facilitate transactions. There are several implications of this. One is the facilitation of micropayments, another is subscription-based payment, and in addition secure integration to external payment systems is also possible.

Micropayments

Micropayments are small payments generally under a few dollars. This can be even construed to mean fractions of a cent. The important issue here is that processing micropayments with traditional systems, the cost of processing the transaction can often exceed the value of the transaction. Imagine using a Mastercard to buy a stick of chewing gum. The credit card processing infrastructure is not geared to handle small transactions. Telecom billing systems, on the other hand, are specifically designed for a large number of small transactions. Individual call values are often pennies. For this reason, it is feasible to piggyback on the billing system for an assortment of micropayment applications. All that is needed is a billing system that allows non-call related charges to appear on the bill. This ability falls within the scope of a convergent billing system. Most of the 3G operators require new billing systems to handle other unique characteristics of the 3G system and as a result have installed new billing systems that have this capability. It is now feasible to request payment and have it appear on the monthly phone bill or be deducted from the prepaid balance. An example of this might be to pay for your parking on your phone that would appear on your monthly bill.

Subscriptions

In Japan, the success of i-mode is often attributed to the amount of content and the ability for the companies providing it to make money. This is done through monthly subscriptions. An i-mode user can subscribe to different services such as CNN news for a \$1-\$3 monthly charge which then appears on their bill. This means that it is convenient for the user, the content provider receives revenue and the operator is compensated for facilitating the transaction.

External payment system integration

In addition to charges that appear on the bill, it is often advantageous to provide a gateway to external payment systems such as debit and credit cards. The information can be stored securely by the operator and rely on the operators authentication systems to reduce fraud. This would allow the users to complete transactions even where there is no defined relationship between the operator and the vendor. It also would facilitate high value transactions that the operator may not wish to be party to.

Issues

There are many complex issues regarding payment systems. First and foremost is that of liability and risk. Fraud is rampant in the wireless space and operators are loath to take on a financial liability. Obviously much of this can be dealt with in the contractual relationship with both the user and the third party but it still represents a significant risk. Further, operators are concerned that the monthly bill size can grow to an unwanted size and thus credit risk. The management of this credit risk is not a core competence of the operators and they don't necessary want to be a credit

provider. They are also not interested in having to comply with all of the regulations that being a credit provider entails.

6 Sophisticated user interfaces

3G requires completely new handsets. This means that even the lowest end handsets will have fairly sophisticated capabilities. Large colour displays which are bitmap addressable, Java enablement, and large memory are some of the features that will be standard on 3G handsets. This will allow richer user interfaces including much richer controls than available in WAP. A great deal of the problem in adoption of WAP applications is that they are cumbersome to operate. A new XHTML standard has also be introduced to provide better browsing capabilities. If one looks at the new 503 series of i-mode devices, it becomes clear that the interaction model will be much more compelling. That said, there is still an issue with the fact that there is no keyboard and input is made through a standard keypad. Over time Palm style handwriting recognition and touch screens will enable more complex interaction but initially this will not be present in all devices.

Obviously new handsets will also support custom ring tones and graphics but this will also be enhanced by the better resolutions and colours to better display photos. We expect that the exchange of snapshots will be very popular in both the consumer and business markets. In Japan, J-Phone already supports this and it is very popular even though the images are of low quality. All of this will fall into the category of MMS or the multimedia equivalent of SMS. This will be standardised across phones and operators and should prove to be as popular as SMS.

7 Intelligent devices / Java

The 3G devices will almost universally support Java applications conforming to Sun's MIDP standard. This will allow users to download small applications that execute on the phone and communicate with the network. This can enable everything from multi-player games to sophisticated presentations of data. Instead of requiring a user to download a large graphic, the Java application can draw it. Imagine graphing a stock price. This can be done by downloading a list of prices and then graphing them on the device. This will significantly reduce bandwidth requirements and also allow offline data viewing and manipulation. At present in Japan, the operator is limiting downloadable applications to 10-30K although the devices can support larger apps. It is surprising how much capability is possible even within a 30K limit and this size will allow very fast downloads. It also means that downloading apps will be very inexpensive and we expect embraced by the users. There is already some precedence for this in the form of downloadable games on GSM networks.



8 Location Enablement

Location enablement will allow a user to opt-in his location for use in the application. The location of the device is available so that applications that rely on location can be foreseen. This could include getting a taxi, finding the nearest Italian restaurant or calling up a map. In addition, it will be possible to push content to the user based on location, such as sending everyone in a shopping mall a coupon for use in the mall.

9 Installed Base

It is important to realise that there is still a large installed base represented by the GSM networks. This means that it is valuable to consider them when designing applications for two reasons. Firstly, it may provide a larger market to help fund the applications until 3G reaches broad acceptance. But more importantly, it is expected that 3G will not provide universal coverage initially and as 3G users move out of coverage they will step-down to GSM. Having a plan to cope with this will greatly increase the value of the application.

10 High degrees of personalisation through CRM

Outside of the technical details of what is possible, there are also the organisational issues of what can be done. Most 3G operators are looking very carefully at how to maximise the value of their customer relationships. This means that they will have a very high degree of personalisation that will encourage even more use of their network. This will also result in very targeted products that might not have made sense in the GSM world. Because they can deliver the marketing message directly to the handset and process the provisioning automatically making it cost effective to reach small focused audiences.

11 Aggressiveness of the operators

The mood of the operators should not be dismissed. The operators have spent a great deal of money on their licenses and are determined to prove that they can be profitable. This has resulted in a very open attitude to new ideas for creating revenue. Rather than the old cultures where caution was paramount, many operators are planning on introducing products in areas where they previously feared to tread. An example of this is gambling. Casual gambling represents huge revenue potential but has some negative connotations associated with it. The operators have almost universally embraced it.

New ideas are being considered where previously they might have wanted more proof. This is going to result in a lot of applications that fail but will result in many that succeed. The operators recognise that it is hard to predict what will be successful. In Japan, one of the most popular i-mode applications was a fishing game. Not something easily predicted but instructive.



12 Constructing a compelling application for 3G

It is difficult to define the space for 3G applications with any certainty. The operators are still finalising plans and many variables may change. But there are some guidelines that can be followed.

Using the topics discussed above many questions should be asked in relation to any application being considered:

Higher Bandwidth – Can the application work well in a non-optimal bandwidth environment? Does the cost of the bandwidth correspond to the value provided? **Packet based** – How can the application take advantage of an environment where the device is almost 'always on' the data network?

Integrated Payments Systems & Billing integration – How will the application generate revenue? What will be the size of the transactions and what is the most appropriate way of processing them?

Sophisticated user interfaces – What are the possibilities of the devices and how can the application take advantage of the unique characteristics of the device?

High degrees of personalisation through CRM – Who is the customer and can I present a value proposition to the operator so that they will use their base to market the app?

Intelligent devices / Java – Java apps on the phones will quickly become necessary for any application. How can one produce a compelling app in the small size allotted? What is data is sensible to download and what should remain online? **Installed Base** – What does my application do when it goes out of coverage?

Aggressiveness of the operators – Show me the money! Produce a compelling revenue model for the operators and they will consider almost anything.

The most important issue in application development is the user. Are you providing a compelling value proposition? It is very important not to underestimate the value of fun. Games will probably be one of the most popular of applications.

13 Application Revenue Models

We have touched on many of the ways an application can generate revenue. Luckily there are many new ways of generating revenue that haven't existed prior to 3G. It is important to review many of these models and understand the implications of each and how much flexibility you might have to use alternate or complementary models.

No Revenue – It may not be a requirement to generate revenue. Goodwill is often reason enough to deploy an application. Many applications are not revenue generating and masquerade under some of the other models.

Subscription – This involves the user paying a monthly fee to access the application. This is the model used by DoCoMo with i-mode. For mass market applications it seems the best pricing for this is \$1-\$3 where a consumer can impulse purchase a subscription and will often remain subscribed even if they are not using it.

Transaction Fee – A transaction fee is a charge based on a financial transaction. If you are selling goods or services this may be more appropriate. This is basically a commission.

Usage Fee – This would be a charge raised each time the application is used. For example it might cost \$0.10 to get a weather report.

Bandwidth Fee Sharing – If your application will generate a lot of revenue for the operator, they may negotiate a sharing arrangement.

Voice/MMS Commissions – Don't forget that the primary revenue source for most operators will be voice calls and MMS. If your applications encourage voice and messaging traffic, this could also be a source of revenue sharing.

Advertising – Sponsorship and advertising could be an avenue. The requires a well targeted audience.

Loyalty Fees – An operator may be willing to pay for an app if they believe it will increase their customer loyalty and decrease churn.

Licensing/Rental fees – Of course the application can simply be licensed or rented to the operator for a fixed price.

Public Service Offering – In some jurisdictions certain emergency service applications may be a condition of the license and the operator cannot directly accrue revenue. Additionally, low revenue anchor applications may be in place as portfolio competitors and complementors rather than as commercial offerings of themselves.

14 Current state of 3G (July 2001)

So where are we now? 3G is quickly moving from concept to reality. Operators are beginning to build their networks and handsets are being tested.

Networks

- Currently in operation: "Foma" in Tokyo
- Q3 2001: Trials at earliest stage in Europe
- Q2: 2002: Limited Coverage
- Step Down to 2.5G/2G a necessity as coverage will be limited
- Limited Bandwidth
- Mast Objectors are probably the major event risk facing operator

Handsets

- Small Screen (3 x 4 cm)
- Resolution (170x 220)
- Limited Memory 2-4Mb
- Limits of ~10k available for java MIDlets
- 12 bit colour
- No Video (at least initially)
- Keypad Input only
- Java J2ME (KVM, MIDP 1.0+)
 - MMS
 - Security model still evolving

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This information is evolving quickly but is very encouraging. We expect a very strong growth in application development as the networks launch and handsets become available.

Alatto Technologies Ltd. is a consultancy specializing in providing services and applications in the 3G and wireless space. We provide strategic consulting to define new applications as well as providing application specification, design and implementation services in Europe, US, UK and AsiaPac.

Thank you for taking the time to read this brief overview of 3G application revenue areas. If you found this briefing paper useful, would like more in-depth information on any of the areas mentioned or if you would just like to chat about wireless topics we would be delighted to hear from you.

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