1. INTRODUCTION

The mobile phone made it possible to communicate wherever you are and whatever you do. This made everything from finding out where friends and children are at all times to having a telephone conference in the cab going to the airport possible. The mobile phone thus provided two fundamental and important factors, namely increased mobility and time saving possibilities. These factors are becoming increasingly important in today's society.

The step from only using the mobile phone for voice calls to combining the usage with sending and receiving data will further increase mobility and time saving possibilities. The ability to reach Internet using the mobile phone means that the users are no longer required to be in reach of a PC to do their e-shopping, Internet bank transactions, e-mailings, etc.

So, is mobile Internet just an extension to regular Internet enabling users to do their Internet surfing while being on the move? No, mobile Internet provides many new interesting services and possibilities, both for the users and the commercial interests. The mobile phone is personal and is brought by the users wherever they go. This creates great advertising and m-commerce possibilities as well as the possibility for the user to tailor make his or her wishes as to which information to receive. There are also several techniques that enable the operator to locate the mobile phone, which opens up a set of new value added applications. These include everything from safety services to navigation and tracking of individuals and assets. The possibilities of the mobile Internet are perhaps best shown in an example:

Going home from work you go to the car park where you, still sitting in the car, use the mobile phone to pay the ticket via a point-of-sale transaction. When driving out of the car park you start your navigation system that directly tells you not to drive the regular way home since there has been an accident on the freeway but instead shows you an alternative way. While driving you suddenly remember that you were supposed to pick up some groceries for dinner but has forgotten what was needed. After having called home but not received any answer you decide to log into the fridge camera. Ok, now you know what to buy. Heading for the regular supermarket you pass the main competitive supermarket that sends you a notice that lobsters are on sale. Perfect, just in time to get off the freeway. Once home the door opens automatically, the light is switched on and the radio is turned on to your favorite station.

This might sound like a scenario way into the future. But once the new mobile network technologies are in place this will be possible. Since the launch of these enabling technologies is scheduled within the next couple of years these kinds of services will be offered within this period as well. Scandinavia has grown to be the Mecca of Mobile Internet. With Ericsson and Nokia, two of the world leading companies in the wireless industry, and the worlds highest mobile and Internet penetration the region has become a perfect breeding ground for mobile Internet startups. This has also attracted the attention of international players in the wireless industry, and many of them have established mobile Internet research centers in the region.

4. LOOKING FOR THE KILLER APPLICATION?

There is no doubt that there exist many interesting new applications within the mobile Internet segment. But with the experience from the Internet revolution the last years one can also conclude that all applications might not be suited for some types of mediums. The applications mentioned in this report do all provide value to users and players within the mobile Internet industry, but there are however differences in future potentials of these applications. One of the more value added applications is *location based services* due to its great ability to make use of the most important features of mobile Internet, mobility and time saving. Since both the users and providers of these kind of services have much to gain, the rollout of these services should not take long after the enabling technologies are implemented and standards have been worked out by the Location Interoperability Forum. The economic rational behind the positive future possibilities of these services are strong. Users will be prepared to pay for the possibility to receive information that has been filtered to be location relevant and thereby reducing the roaming necessary on the mobile. Operators can charge application and content providers and companies to allow access to the users locations, provided that the operator has the users permission to do so. With this type of information together with the user profile that the operator holds, the hit ratio of advertising and offerings are extremely high, meaning that the companies that buy the information will have a superior way to reach its customers. The usage of the mobile should also increase with these services and thus once more making the operator happy. The ways to earn money on this application are many and this together with the demand from emergency services of being able to locate distress calls are pushing for a fast implementation of the technology, a large range of services being offered and in time a widespread use of the services.

There are and will be, at least in the foreseeable future, problems related to the small screen and keyboard of mobile devices. Users hesitate to use services that are available because of the hassle and difficulties to find the information they are looking for. This is where the important role of the *portals* comes into the picture. The portals are a way to avoid some of these problems thanks to a personal profile that every user can build for themselves on the portal. Portals will therefore be an enabler of other applications as well as heighten the user experience when using other mobile Internet applications. We believe that a frequent user of mobile Internet services will have to use a portal in order to find and receive the information in a desired and effective way. Once mobile Internet services have become a part of everyday life the market for portals will be very large and grow in line with new subscribers. A relevant question is nevertheless how portals will generate earnings. There are two ways to make profits on portals. The obvious way is to sell whole portal solutions to companies such as operators. It is however, despite the necessity of the portals, not as easy to figure out how the portals will earn money themselves. First of all it is not necessarily the case that a portal has to generate large profits, it might instead provide differentiation possibilities and tying of users for companies, in particular operators. If the portal is independent, possible revenue can come from companies that are highlighted on the site, percentage of sales when transactions are carried out over the portal, percentage of operator earnings as a result of usage of the portal etc. The reasons for the expected large market for mobile portals are therefore not as much driven by interests in making profit on the portal itself, but rather to get hold of the users, facilitate access and increase usage of other mobile Internet applications. The above reasons make the portal a real killer application. The success of i-mode

has gained a lot of attention in media and in the mobile Internet industry. As mentioned before the reason for the success lies in *entertainment* services. The question arises for European and US players whether there will be the same development in their home markets as the 2.5G and 3G technologies are rolled out. We believe the entertainment applications will be received with great interest in both the European and US markets, especially by the younger users. There is however one main difference between these two markets that might have an impact on the usage of entertainment applications, that is the usage of cars as a mean of transport. In the US there is a more widespread usage of cars rather than using public transports. Entertainment services will to a large extent be used to kill time and is therefore a perfect service to use on public transports. This might slow down the development in the US, but in the long run entertainment services will probably be popular in the US as well. The push for these types of applications will come from, beside the obvious interest from the application developers and providers, the network operator. The operator loves a service that is used to kill time; the more time being killed (or the more data sent depending on the way the user is charged) via the mobile, the more money for the operator. This mean that the providers of the entertainment services should not have any difficulties in selling their services either to the operator itself or via the operator's network for a percentage fee of usage time or a fixed fee per usage. With entertainment applications track record in Japan and the fact that the services bring value added to a large part of the mobile Internet value chain as explained above, we believe that these applications will have a bright future.

Although the three applications above are the ones that we believe will be the true killer applications and drivers of the mobile Internet revolution, there is another application that might belong to these selected few as well. Just like portals have an important role as a facilitator of mobile phone usage and other applications, the *security* applications will help users to feel comfortable in using services that require sending sensitive information over mobile networks. This is of great importance for other applications such as m-commerce and mobile office where credit card numbers and passwords are used. We believe that there is a great need for security applications and that there is a big market for the companies that will prevail as market leaders within this segment. For the users however security will, once it is high enough, probably be regarded as a matter of course. This leaves security as one of the most important underlying enablers of the future success of many mobile Internet applications. But once the users feel secure in using the mobile, it will no longer be a driver for usage like the other applications. When looking back a couple of years the headlines and thoughts about the future mobile Internet killer applications in many cases included *m-commerc*e. This was before the B2C e-commerce was downgraded from very interesting to not interesting. Naturally the thought about the potential of m-commerce where mind-blowing since it was even newer and more high-tech than e-commerce. Today the reality is somewhat different. We do not believe that m-commerce will be one of the real drivers in the future. The features of the mobile devices are not optimized for that kind of usage. The transactions that will be made are probably in the form of microtransactions that provide value added when they are done while the user is mobile or require real time services.