

Mobile Phone Evolution



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Quantitative Projection of the Capabilities of Mobile Devices in the Period 2008-2010

We will provide a short overview over capabilities of mobile devices in the period 2008-2010, together with the specific services we will expect on these phones. The data were collected by Movation AS¹, Norway's innovation company for Mobile Services.



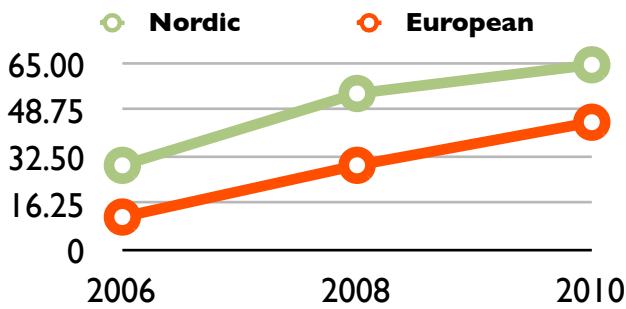
What are the major trends in mobile evolution? Remarkably, the mobile phone has become the main driver for applica-

tion development. As IT, Telecom and Multimedia have merged, information is moved towards the mobile devices. But before approaching the services on the devices, let us have a look at the market for mobile phones:

- People get mobile, 40-70% of employees of a group work in different locations [1]
- 90 % of the employees work away from headquarters [1].
- The sales numbers of 2006 show that mobile phones outreach PCs by the factor of 5 [2]: 209 million PCs and 1020 million mobile phones sold
- In 2008 more than 4 Billion people will have a mobile phone [3]
- More than 30 % of all phones sold in Norway in Q4/2006 were smartphones (worldwide 10 %). More than 50 % of all new Nokia phones are S60 phones [4]. 20-30 % of all phones worldwide will be smartphones by 2009.
- Symbian S60 phones have currently 53 % market-share in the smartphone segment, and

¹ Movation is owned by Birdstep, Comperio, Fast, Opera, Radionor, Thrane Norway, and Telenor, and fosters Open Innovation in Mobile Services. <http://www.movation.no>

prices for S60 phones will drop under 200 € by end of 2007.



Smartphone penetration [%] in Europe and the Nordic
 We conclude that the trends visible in the Nordic market will also be present in the European market, with 30 - 50 % of all phones becoming smartphones by mid 2009.

Service infrastructure on mobile platforms



The service infrastructure on mobile devices described here will cover roughly 85 % of the market, represented by Smartphones and advanced non-Smartphones (e.g. S40). We expect that the remaining 15 % will use

the phone as communication tools for voice and SMS communication [4].

The service infrastructure will cover development tools for simplified user experience, Web standards like AJAX, standardized Java, and application development tools like Phyton and Open C.

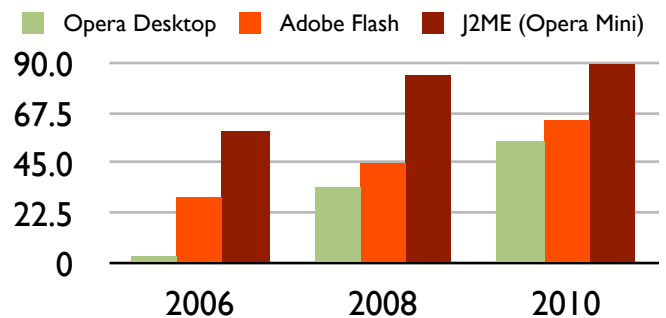
The Web infrastructure on the mobile phone has reached full Internet capability: the Opera Browser, S60 Browser, iPhone Browser and Opera Mini are examples of implemented Internet standards. T-Mobile equips mobile phones of their Web'n Walk series with Opera Mini, or the full Opera browser. "Full Internet browsing on mass market mobile handsets is now a viable service for most consumers," said Tony Cripps, Wireless Software Analyst, Ovum. "Smartphone owners have already shown the potential of full Internet services to boost ARPU. Now mobile operators can extend that op-

tion across their customer base and free users from the confines of the walled garden."

Next step in the development is full Web2.0 standards as e.g. AJAX, which is expected to happen on Opera Desktop and S60 browsers by end 2007 [4]. These interfaces will allow full service functionality on the supported smartphones.

Adobe Flash Light supports Multimedia applications including video, and is available for more than 300 devices, covering 200 Million potential phones.

Expectations for a common application development framework are based on usage of Java (J2ME), which currently supports more than 85% of the mobile phones in the market. A typical application of this type is the Opera Mini browser. Current trends are to develop higher order software applications like UML which will create mobile handset applications directly.



Handset functionality in market share [%] for the Nordic market

Underneath Java, the mobile phone manufacturers have their own application development tools, like Open C, Phyton and C++.

Currently huge efforts are undertaken to let the mobile platform become the security infrastructure in the digital world. Nokia expects a 27% market increase from 2005-2009 [1]. Mobile Banking is expected to happen in 2008 in Norway, and payment solutions based on NFC will also reach the end-customer market in 2008.

We expect a service interface to SOA architecture by 2009/2010. Current developments tend towards agents in the network, controlling the communication to the phone.

There are two big uncertainties in the future:

- I. What will be the tariff which operators can/will take for mobile data?
- II. Can business models from the Internet, e.g. advertisements, play a significant value in mobile service delivery?

Both questions will considerably influence the usage pattern on mobile applications.

End-user services in 2008-2010 in the European Market

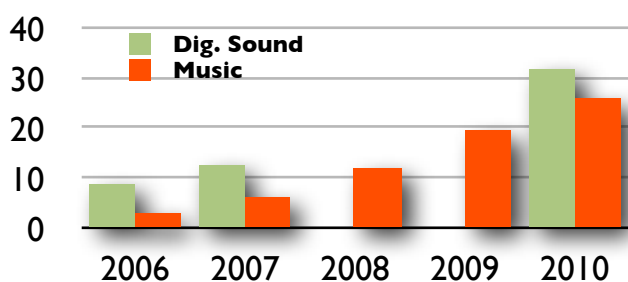


Communication is and will be the major mobile application. However, the forms of communication have changed; voice is expanded by SMS/MMS, mobile messenger, email, presence and video messages. From a

mobile consumer point-of-view, enhance communication will be the dominant service.

While ring-tones and pictures tend to decrease importance, music download is the upcoming growing market. Gartner expects the worldwide market to grow from 9 Billion US\$ in 2006 to 32 Billion US\$ in 2010.

“Big trends over the next five years include adop-



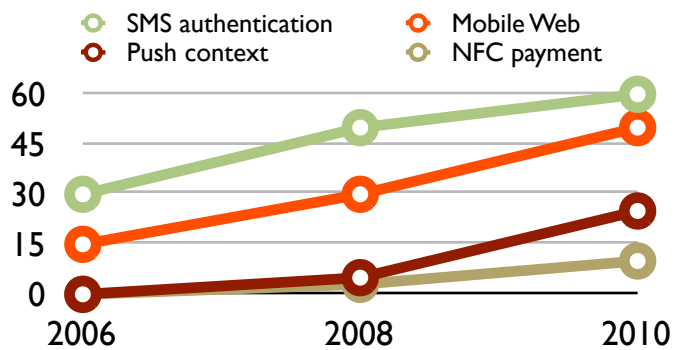
Global sales in Billion US\$ for mobile sound/music

tion of wireless phones as a mobile wallet, that and more users will carry multiple devices,” says Bill Hughes, In-Stat analyst [6]. “The primary changes in phones over the next five years are that they will become more capable, incorporate beefier security, and be more targeted as organizations have greater involvement in the wireless service decisions of their employees. Perhaps more importantly, they will help us be safer.” In-Stat also states that only

less than 5 % will not use at least one of the new features coming with the phones.

Authentication, near-field communication (NFC), and payment by phone are upcoming trends. While about 30% of Nordic customers have used authentication services, e.g. pin code, through SMS, NFC services are currently in the prototype stage. We’ll expect them to see the market in Q1/2008, with a potential of reaching 10 % of customers by 2010.

Location, map and navigation services have reached the market in Q2/2007, and will develop further. Their success and market penetration depends on pricing strategies of operators and/or technical developments of GPS-type of chipsets for mobile devices.



Expected customer usage [%] “have tried” of mobile services in the Nordic Market

The mobile enterprise market is subject to further studies, but trends towards mobile email, intranet and database access are visible. Current application development and roll-out lack a secure infrastructure. The role of multi-network handsets is also subject to further investigations.

We have not considered machine to machine (M2M) applications, like meter reading, power regulation, controlling etc. We expect that these services will have a high value for the user, e.g. on-line monitoring of fish-farms, but will not contribute significantly to the overall data volume.

References:

- [1] Tom Farrel, Nokia Enterprise, March 2007
- [2] Steve Jobs, Apple, Jan 2007
- [3] Nokia estimate, no reference, Feb 2007
- [4] Josef Noll, Movation estimate, March 2007
- [5] Mikko Röntynen, Nokia, March 2007
- [6] [Global wireless handset market grows 23% in 2006 and will reach \\$250 billion by 2011.](#)

[7] Gartner report on mobile music download, Jan 2006