



small device

Smaller and smarter

A study of Smartphone and Symbian Market

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Introduction

Well, all the research reports from various research groups have a single conclusion, - Smartphones are happening and they rule the market. Technology advancements by smart phone vendors (Nokia, Sony Ericsson, Microsoft, Palm Etc), development support by Smartphone OS providers (Symbian, Microsoft, Linux Etc), evolution of mobile downloads provider (Handango, Nokia Software Market Etc), shift from voice centric offerings to value and data service offerings by mobile service providers have created a synergetic shift across mobile value chain. Mobile application developers too have made significant contribution by developing innovative mobile applications, utility tools, mobile games etc. End of the day, mobile users are the most demanding and benefited party in this mobile convergence revolution.

This paper addresses smartphone revolution, trends, generic smartphone features, smartphone market share, Symbian position in smartphone market and future outlook for smartphone market. This paper also gives a brief insight about Symbian history and its market statistics.

Evolution of Smartphones

The growth of wireless computing belongs to the smartphone, a powerful device that extends the superb voice functionality of a mobile phone into the realm of data communications. Though the market has already embraced smartphones, with over ten million of them sold in 2003, most people don't fully grasp the impact that they will have on working life as these devices become more pervasive. For the enterprise, smartphones will have an impact on par with that of mobile telephony itself. Most of us already take for granted our ability to place and receive voice calls from anywhere at any time. But few of us yet take advantage of instantly having any data we wish at any time from that very same mobile phone.

Smartphones, which were initially designed primarily as mobile phones with data-communications functionality along with advanced computing capabilities, have the ability to handle and host a number of applications letting them behave exactly like handheld computers.

Smartphones maximize the effectiveness of a broad range of mobile workers, from road warriors whose office might be in the backseat of a taxi, to corridor warriors who are mobile throughout the enterprise. The key to achieving the full productivity potential of all mobile workers is the smartphone.

Why Smartphones?

Smartphones offer compelling advantages, not only to the degree that they mitigate the need to carry multiple devices, but also because they allow for integration of voice and data applications. This convergence facilitates both simple capabilities like easily calling someone by highlighting the phone number in their email signature, to more advanced integrated and interactive messaging capabilities.

Beyond email, messaging, calendaring, and contact management, even greater payback may be achieved by integrating smartphone technology into business processes. Once organizations get to the point where their mobile workforces are always connected, many more processes become real-time. For example, by using smartphones as part of sales force automation strategy, up-to-the-minute information can be provided to customers leading to new accounts, closed sales, and greater customer satisfaction. Business effectiveness is enhanced by increasing top-line revenues.

Smartphone Technologies

Symbian OS

Symbian OS is specifically designed for data-enabled mobile phones and is owned by Ericsson, Nokia, Panasonic, Motorola, Psion, Siemens and Sony Ericsson. Symbian comes in three varieties: quartz and crystal for 'communicators' and Pearl for smart phones. All those involved are major players in the market, and that gives Symbian OS immediate legitimacy. The Symbian OS SDK provides C++ APIs and the choice of Java (running on Symbian's Java Virtual Machine), C++, Visual basic and a phone emulator. Symbian provides direct access to the phone's API, even from Java.

Different mobile phones have different device needs. The application framework sub-system in Symbian provides a powerful environment for developers to create differentiated user interfaces, an important aspect in any smart phone. The principal aim of Symbian's GUI application framework is to provide infrastructure while enabling flexibility. The main features of the user interface (UI) application framework are:

- ❖ An event driven GUI and widget architecture
- ❖ A windowing system for sharing keyboard, screen and pointer board, screen and pointer between applications
- ❖ A direct navigation link (DNL) system that enables close task-based integration between applications
- ❖ A mechanism to customize the look and feel of the GUI
- ❖ A plug-in mechanism for handwriting and speech recognition
- ❖ Multiple simultaneous semi-transparent windows.

Core to any mobile phone is the handling of user data. Symbian provides highly optimized engines and API's for key applications, including contacts, calendar, to do lists, messaging and browsing among others.

Microsoft Smartphone OS

Another Smartphone operating system in focus today is the Microsoft Smartphone operating system. Unlike the PocketPC Phone edition OS (another form of operating system for hybrid phones) that accepts stylus inputs and drives larger screens PocketPC with GSM capability, Microsoft Smartphone OS caters to hybrids with smaller screens and mobile phone-like profile. This scaled down version of OS is written specifically to support joystick/keypad-based navigation. If you're used to the stylus input of PocketPCs, a fair bit of time will be needed to get yourself adjusted to this joystick/keypad based input and navigation.

Almost all candy-bar Smartphones floating on the market today look fairly identical to one another. This is because they are using a hardware reference design by a company called HTC Canary. Smartphone vendors such as O2, T-Mobile and Siemens are just some of the names that are using this reference design for their Smartphone line-ups.

A quick surf around Microsoft Smartphone software website and one would soon realized that the operating system is designed and marketed primarily around PIM and mobile multimedia entertainment. Full email and messaging functionalities are carried out through Pocket Outlook; Appointments and schedules are organised through Pocket Calendar; Multimedia aspects include web surfing through Pocket Internet Explorer; Instant messaging capability through MSN Messenger; and audio/video entertainment with Windows Media Player. The keyword to bear in mind here is GPRS, the abbreviation for General Packet Radio Service. The whole concept behind Smartphone is to allow mobile communication and information through the use of GPRS over your GSM carrier.

The ARC Group now forecasts worldwide shipments of high-end smartphones to reach 45 million by 2007, representing 5% of all handset sales.

Source: ARC Group

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Smartphone Market

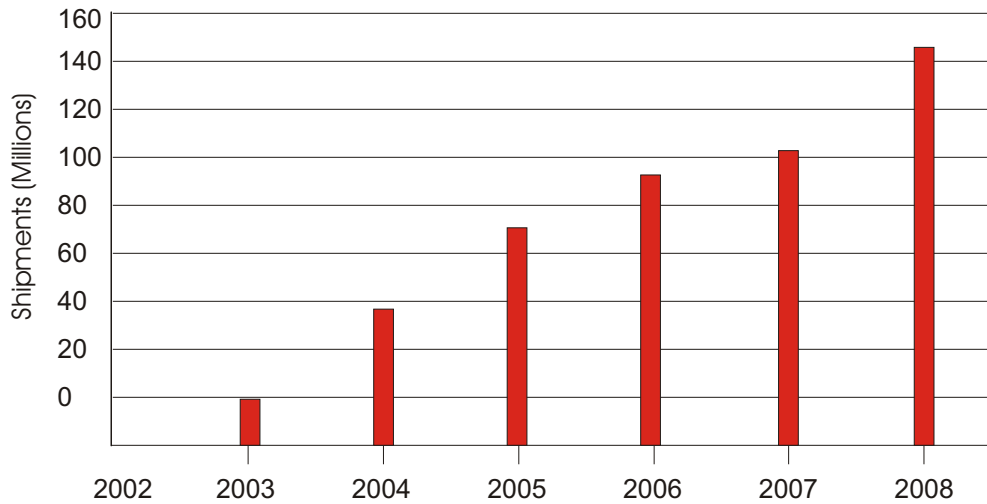
The market for smartphones is still small. But it is growing fast, as new features are added to handsets, making them even smarter. Of the 400m mobile phones that will be sold this year, around 16m will have built-in cameras. Nokia, the world's largest handset maker, expects to sell 50m-100m color-screen handsets next year. A new report from Analysys, an industry consultancy, predicts that by 2007 nearly 300m Europeans will be carrying handsets with color screens, cameras, music players, support for downloadable games, and other features that are now available only in the most advanced models. Such features are already common in Japan and South Korea, and they are starting to appear in Europe and America. These advanced handsets are, in effect, pocket computers but they have emerged from the consumer-electronics industry rather than the world of computing.

There are two notable trends in mobile computing that can be readily quantified. One is the meteoric rise in sales of smartphones. The other is the declining PDA market. According to Ovum ("Symbian and the Smartphone Market" 2003), the smartphone market has grown from just two million units sold in 2002 to some 10 million sold in 2003, with 25 million expected to be sold in 2004 and 130 million in 2007. Projections from other market research firms are consistent, with IDC forecasting 30 million devices in 2004 and 86% compound annual growth through 2007 (IDC "Worldwide Mobile Phone Forecast and Analysis Report, 2003-2007" and "IDC Worldwide Smart Handheld Devices Forecast and Analysis, 2003-2007").

ABI (Research, in a press release of Oct 28, 2003), predicts similar growth, expecting 150 million units by 2008. These global sales figures include both consumer and enterprise markets.

Based on various market reports, we can project the relative growth of smartphones with respect to other mobile computing segments as follows:

Smartphone Market



Key Features of Smartphones

Features	Details
Price Range	\$150-\$450
Main Function	Phone, PIM, VPN client, thin client Voice, email, IM, web browsing, fax
Other Functions	Music player, video conferencing Digital camera, scanner
User Interface	Pen, browser & speech recognition
Operating System	Symbian, Microsoft, Palm OS, Linux
Microprocessor	RISC or X86, 2000-3000 Mhz
Connectivity	Cellular 3G: Up to 384 Kbps IEEE 802.11g: Up to 54 Mbps Bluetooth: Multi megabits/sec
Display	QVGA or full VGA
Program Memory	512-2048 Mbytes RAM
Flash Memory	256-1024 Mbytes
Expansion Slot	CompactFlash, SD, MMC
Mass Storage	2048-4096 Mbytes memory cards 10-20 Gbytes hard disk

Note: Some features are futuristic.

“Even though they will remain a small segment of the total handset market for the next several years, smartphones will present a significant revenue opportunity for manufacturers and carriers alike, according to In-Stat/MDR. As 2.5 and 3G wireless networks are improved and the global economy gains momentum, more users will demand the new features these devices offer. As a result, global smartphone shipments will grow from 9.9 million this year to nearly 16 million in 2006.”

Source: In-Stat/MDR

Symbian - Leading Smartphone OS

Symbian History

Symbian was established as a private independent company in June 1998 by Ericsson, Matsushita, Motorola, Nokia and Psion. It is currently owned by Ericsson, Nokia, Matsushita (Panasonic), Motorola, Psion, Siemens and Sony Ericsson. Headquartered in the UK, it has offices in Japan, Sweden, UK and the USA (see Figure 1). Non-executive directors, representing each shareholding company, sit on Symbian's supervisory board. Their role is to set the standard licensing terms and conditions for Symbian OS. Licensing and technological issues are dealt with by Symbian senior managers on the operational board, ensuring a clear distinction between Symbian ownership and management.

Nokia sees itself as one of the world's leading players in wireless communications. Ericsson is focused on providing communication solutions. Motorola's thrust is on integrated communication solutions and embedded electronic solutions. Psion's vision is centered on mobile computing and wireless networking. One common theme among the vision statements of these companies is "mobile or wireless solutions." This theme was reflected in Symbian's original mission statement, which was "To set the standard for mobile wireless operating systems and to enable a mass market for wireless information devices."

The Symbian coalition started out with the goal of developing an open standard operating system for existing and next generation interactive multimedia devices. Nokia, Ericsson, Matsushita and Motorola, the world's leading producers of mobile telephones, are fierce competitors in their market. The British firm, Psion produces portable microcomputers that use their own operating systems (a version called EPOC)--not Microsoft's Windows operating systems. The aim of the joint venture was to produce the OS software for "intelligent" mobile telephones and devices of the third generation that will function as an electronic diary, manage the mail, access the Web and the worlds of m-commerce and m-entertainment.

Symbian share in Smartphone market

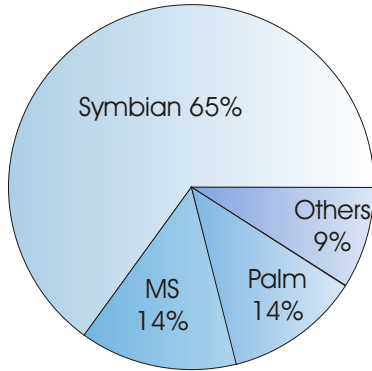
Symbian OS is the market-leading smartphone operating system, with the broadest support of the industry's top phone manufacturers resulting in the largest range of smartphones in the market. In addition to the high level of support from phone manufacturers, Symbian also has partnered with key ISVs to deliver the entire range of business solutions, including essential management and security features.

As a result of these actions and support throughout the mobile community, Symbian continues to outpace its competitors in every key metric: more smartphones sold, more 3G phones in the market and more available devices from more manufacturers on the market today. As the market continues to expand and evolve, Symbian is poised to grow with it.

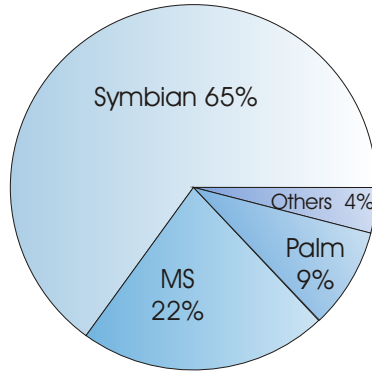
According to a research report, in the global smartphone sector in 2007, Symbian will continue to maintain the 65 percent market share it currently holds. Palm's share will slip from 14 percent in 2004 to 9 percent in three years, while Microsoft will grow from 12 percent in 2004 to 22 percent in 2007. In EMEA market, Symbian (91.2%) is far ahead from its rival competitor Microsoft (7.8%).

Symbian - Leading Smartphone OS

Global Smartphone Market share



2004



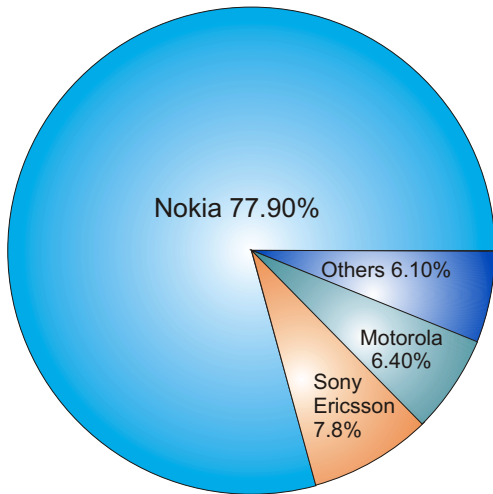
2007

Existing Symbian OS Phones

Manufacturer	Available Model	Planned Launch
Nokia	Nokia 6600	Nokia N-Gage QD
	Nokia N-Gage	Nokia 7610
	Nokia 3660/3620	Nokia 9500
	Nokia 7650	Nokia 6620
	Nokia 3650/3600	Nokia 7700
	Nokia 9290 Communicator	
	Nokia 9210 Communicators	
NTT DoCoMo	FOMA F900i	
	FOMA F2102V	
	FOMA F2051	
Sony Ericsson	Sony Ericsson P800	
	Sony Ericsson P900	
Motorola	Motorola A925	Motorola A1000
	Motorola A920	
Siemens	Siemens Sx1	
Samsung		Samsung SGH-D710
Panasonic		Panasonic X700
BenQ		BenQ P30
Sendo		Sendo X

Symbian - Leading Smartphone OS

Symbian handsets market share



Vendor	Q4 2003 Shipments	Market share (%)
Nokia	1,743,910	77.90
Sony Ericsson	216,990	9.71
Motorola	142,200	6.40
Others	136,080	6.10

Fig: Symbian handset market share, Source Nokia.Com

Symbian Statistics

- ❖ 5 Licensees have already announced series 60 devices
- ❖ 100 operators globally are selling devices based on Series 60
- ❖ Smart phone shipments are expected to realize 100% growth in 2004
- ❖ 10 million Symbian devices shipped globally as of December 2003
- ❖ There are now 7 Series 60 licensees LG Electronics and Lenova being the latest to sign on
- ❖ 1400+ Series 60 based applications available in Nokia sales channels alone
- ❖ 2100 Symbian based applications on the market
- ❖ 460,000 tools and documents are downloaded each month from Forum.Nokia alone
- ❖ 7 million Symbian devices sold in 2003
- ❖ 17 million Symbian handsets expected to ship in 2004
- ❖ There are currently 40 Symbian OS devices
- † Coming later this year... Series 60 will support CDMA!

Conclusion

Like all other research experts, even we at Small Device believe that Symbian is going to rule the smartphone market though its market share might fall. The Symbian OS' biggest appeal for handset makers and telcos is the ability to customise the software's functionality and appearance. Microsoft will follow the Symbian in second place for next few years but with increased market share. Microsoft is expected to eat palm's market share and strengthen its position in second place in smartphone market. Linux will be the next biggest choice, appealing to mobile phone makers who are uncomfortable with the dominance of either Microsoft or Nokia, Symbian's largest shareholder. It is tough to predict or forecast exact market scenario at this stage. But at the moment, Symbian clearly rules the smartphone market.

About Small Device

Small Device (SD) offers consulting and technology services to mobile & wireless communities across wide array of wireless devices. Small Device's service mix includes Mobile Enterprise Solutions, Product Engineering and Mobile games development services to global players. Our complete understanding of product development lifecycle has empowered us to develop end-user focused innovative mobile applications on various mobile platforms like PocketPC, Symbian OS, Palm and J2me.

Small Device is at the forefront of the development and application of Smartphone technologies. It is closely involved in the latest developments in the world of mobile communications and related distributed services. SD's knowledge of Symbian OS is extremely broad but the company has particular expertise in the development of user interfaces, communications, device drivers, messaging and secure mobile enterprise solutions.

Mobile Assist, SD's flagship Symbian Solution became a huge success with more than 20000 downloads in last 1 year. Mobile Assist is a complete call management solution for Symbian Smartphones.

SD's unique value proposition is further delivered through our pioneering Offshore Outsourcing Model-G'Pro and stringent Quality Processes - UAD Mantra

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In the converged mobile device segment, sales in the fourth quarter of 2003 grew 182.3% year-over-year and 77.4% sequentially to 3.7 million units. The strong sales during the fourth quarter drove worldwide shipments for 2003 up 181.6% year-over-year to 9.6 million devices.

Source: IDC

International Data Corp. estimates the number of mobile devices combining the PDA and the cellular phone will rise by 58 percent annually between now and 2007. These smartphones are expected to be connected even more using Bluetooth and wireless fidelity (wi-fi).

Source: International Data Corp