

# symbian

## Developer Expo 2002

### Where the mobile industry meets to create the future

#### Summary

To summarize all of what has happened, here are the main highlights, conclusions and promotions of the Symbian Developers Expo.

- The introduction of the color screen seems to make a revolution on the market, bringing multimedia messaging and streaming video (Real Networks presented their client for Nokia 9210) to mobile devices
- 2.5G and 3G network rollout to come soon. There are already more than 100 GPRS networks established worldwide (and hence support programs like OMAP™ brought by Texas Instruments [See <http://www.ti.com/sc/omapdevelopers>] and hardware support from ARM)
- The current goal is to provide more applications for office as well as for entertainment (and many companies seem to share this view as nearly the whole Expo was about various applications, starting from 2D and 3D games and messaging applications ending with SSH client for Nokia 9210)
- Connectivity is a key feature of the future devices (that's why SyncML is widely accepted)
- Still only two Symbian-based smartphones on the market (Nokia 9210, Ericsson r380), expecting two more until fall this year (Nokia 7650 and SonyEricsson P800), and more to come
- J2ME is widely accepted (and Sun promises to deliver even better performance with their "Project Monty" VM [See <http://www.sun.com/smi/Press/sunflash/2002-03/sunflash.20020327.5.html> for the press-release])
- Symbian OS is going to address mid-tier devices
- Symbian OS is to be widely accepted by device manufacturers
- The price for one MMS should be around 50 Euro-Cent. Nokia's Executive VP, A. Vanjoki said, a price of round about 20 Cent would bring exponential growth. Every Price above 50 Cent would inhibit growth.

- At the beginning 3G Networks will be "empty" because Voice traffic is still routed through 2G infrastructure.
- At the moment 1/3 of the capacity of our mobile networks is not used, mainly at night. This could be used for Push Services.
- WAP Roaming remains as a big problem: If customers go abroad the WAP settings are not usable as they were set up for the home country. For each country the user must request regional settings that wipe away the home country settings.

Yet another technology that was promoted on this Expo was Symbian's **Magpie**, that addresses the problem of dynamic data services delivery to mobile phones [See <http://www.symbian.com/technology/magpie.html>]. The concept looks very similar to the "MIG"-Idea, but is a more integrated and complex approach.

Symbian's Web site also provides a coverage of this event, including "Breaking News" section [<http://www.symbian.com/devexpo/news.html>] and a transcription of CEO David Levin keynote [<http://www.symbian.com/events/devexpo02/keynote-dl-1.html>] (probably other transcriptions/workshop overviews are to come).

## **The Expo: Day 1**

### **1. Keynote session**

The session started with the announcement that Siemens joins Symbian as shareholder (see <http://www.symbian.com/press-office/2002/pr020423b.html>). This was followed by three presentations.

#### **1.1. Presentation of David Levin, CEO, Symbian**

This was a kind of foreword into the whole Symbian Expo event; the presentation was concentrated around such questions as why the Symbian OS is going to be a standard in the mobile device world, and where is the potential for mobile market. The highlights of this speech are:

- The Symbian OS was designed to power mobile devices that makes it preference of choice for many device manufacturers
- Symbian already powers some real devices, setting the standard in this market
- The real goal for device manufacturers and mobile applications developers is to provide to a customer a useful, charm devices; if this goal is achieved, then this is not a millions/tens of millions sells, but this becomes a mass market (actually, many of the speakers share the same vision).

As a side note, there was a promise to improve Symbian OS internationalization.

#### **1.2. Presentation of Katsumi Ihara, President, Sony Ericsson Mobile Communications**

The market's perspectives from Sony Ericsson point of view.

- The current goal is to provide the customers with attractive applications – this is what caused a huge boom on the Japanese market
- Applications should be focused on imaging, entertainment and connectivity

- The goal for Symbian is to address mid-tier devices (that are probably not that powerful, but much cheaper than the current Symbian-powered devices)
- Sony Ericsson expects worldwide sells of Symbian-powered devices to be as high as 5 million in 2002, 10 Million in 2003 and 25 million until the end of 2005
- The next Symbian-based product from Sony Ericsson is P800, which is fully open (Java/C++ SDK should be available soon, bundled with Metrowerks Code Warrior)

### **1.3. Presentation of Fernando Gomez, Senior VP & General Manager, Motorola EMEA**

This one was not particularly interesting, especially keeping in mind that Motorola does not have Symbian-based devices available on the market or in the development. Just a few points from this presentation:

- Motorola sees the following challenge for the mobile market: market saturation and huge 3G license fees
- Motorola will have a device with SyncML support (a380, to be announced later this year)
- They also expect a big growth of mobile software market (forecast for 2005)
- They expect J2ME to become a standard of choice, with a mass rollout later this year
- Games are important for the mobile software market. "Who wants to be a millionaire" already has 500 mio subscribers in the United States. The development of leisure software showed a growth of 27% in the years 1996-2000.

## **2. Workshops**

### **2.1. The Symbian OS kernel**

This workshop gave an overview of Symbian OS internals. Most of the discussion was about hardware-centric issues, such as low-level memory management (including MMU etc.) and various possible optimizations. Also, process and threads management was discussed. A special attention was paid to the most outstanding features of the Symbian OS, such as highly object-oriented structure of the system, even at the hardware interface, availability of pre-emptive and co-operative multitasking, use of event-driven model and its applicability to the power management (as low power

consumption is a key feature of Symbian OS phones). Basically, aside of hardware-dependent issues, most of the topics covered in this workshop could be found in the SDK documentation.

## **2.1 Introduction to Java development on UIQ SDK for Symbian OS v7.0**

Introductory workshop explaining the first steps that have to be taken for the Java development on Symbian OS. Toolkit was explained and the emulator was shown.

## **2.2. PersonalJava, CLDC, and Symbian's Java roadmap**

Maybe most interesting workshop of the day, it is started from Symbian OS overview, than made it through networking issues and finally covered Java availability and roadmap. The basic highlights are:

- Again, it is considered that there is a potential for the Symbian OS to create a mass market, because
  - o It was developed for mobile phones and PDAs, i.e. it is not a conversion of another OS, nor a cut down OS
  - o It is based on EPOC developed by Psion that has 18 years experience in developing power and memory efficient, mobile, ROM-based operating systems and software
  - o It is highly optimized, multi-tasking, 32-bit OS and it includes a suite of fully featured PIM, productivity and communications applications
- "After talking to Network Operators & Licensees", the Symbian expects 2.5G networks rollout/wide coverage by the middle of this year in W.Europe, end of the year in the U.S., and for 3G networks it is the beginning of the 2003 for Japan, mid of 2004 for W.Europe and the end of 2004 for the U.S.
- Why to use Java:
  - o It provides security mechanisms
  - o It is already standard (and it is easy to learn; more than 3 mio skilled developers over the world)
  - o It handles device variability
  - o Development with Java is much faster than the development with C++, and is more robust (no pointers and advocacy like that)
- Developers and operators will choose Java, not C++ because:
  - o C++ is too difficult
  - o Java is the only cross-platform solution

- With Symbian, Java provides access to application engines, native windows controls, communications and messaging, and more
- With Symbian, it is fairly fast (better than 1 Caffeine Mark per MHz on Symbian OS v6.0)
- Symbian OS Java road:
  - Symbian OS v6.0, August 2001: PersonalJava/JavaPhone, ~2.5MB in size on every device
  - Symbian OS v7.0, February 2002: MIDP1.0/CLDC/KVM, <0.5 MB in size on smartphones, PersonalJava/JavaPhone/MIDP1.0, with the performance as the first priority, ~2.5MB in size on communicators
  - Future releases, 2003 and beyond: MIDP-NG/"Monty" VM, 0.75-3MB on all devices
- Performance on Symbian OS (Caffeine mark/MHz):
  - Symbian OS v5: 1.34
  - Symbian OS v6: 1.40 (improved cache algorithm)
  - Symbian OS v7: 2.22 (VMA, other optimizations)
  - Future, with "Project Monty" VM: 6-7 (nearly native performance!)

Also, it was explained why there are two different Java packages for smartphones and for communicators, such topics as MIDP OTA provisioning model and Java services were also highlighted.

**Note:** the "Monty" virtual machine was presented on this Expo by Sun Microsystems. Developed by the same team as was previously working on the "HotSpot" project, it is designed to provide the fastest VM on the market.

### **2.3. Memory Management**

A good overview on Symbian's memory management, with the accent on memory leaks detection and low memory handling. This workshop also featured Symbian OS exception handling and some useful debugging techniques. This was rather introductory course than an expert one, mostly reiterating the respective chapters from SDK documentation.

### **2.4. JavaPhone PIM**

After a quick look at JavaPhone architecture, the whole discussion was about JavaPhone PIM API overview (javax.pim.\* classes).

## **2.5. Client/Server programming**

An introduction into Symbian client/server programming. It is quite important as many of the services offered by the system are in fact provided by a respective servers. Some communication peculiarities were covered, among them session creation, session sharing, session handling from both client and server sides, session operation in multi-threading environment and session communication.

## **The Expo: Day 2**

### **3. Keynote session**

The second's day keynote was featuring three speakers, but it was a little bit shorter than the first day's session, thus allowing to spend some time wandering around the exhibition.

#### **3.1 Presentation of Anssi Vanjoki, Executive VP, Nokia**

This was a Nokia's vision on Symbian and mobile device evolution. The presentation has started from a small incident, though curious enough. First of all, Mr. Vanjoki asked all of those who has a Nokia 9210 device to raise up their hands, and nearly everyone who was sitting in the hall has raised up his hand. Then, Mr. Vanjoki claimed that those who has raised their hands are "real developers" because others simply do not know "the platform for which to develop". After that, he promised that the whole presentation (i.e. slides) will be running directly from his 9210, and re-iterated that this is the only true platform to develop for. Sure enough, then it nearly failed to work. However, with the help of two support engineers, the presentation has begun.

- Nokia made a comparison between the black & white era of TV and the time when the color TV came. On the mobile phone, colors and imaging will drive the growth.
- In the next 12 months 1 billion GSM customers worldwide will upgrade to new mobile phones. Nokia sees this as a benchmark.
- Nokia is now running two E-commerce-websites: [www.softwaremarket.nokia.com](http://www.softwaremarket.nokia.com) for consumers and [www.tradepoint.nokia.com](http://www.tradepoint.nokia.com) for operators.

- There was a claim that Nokia has had a good market research, so they have really identified the needs of mobile market. So, the Nokia has the following propositions:
  - Consumers expect seamless experience from using a device
  - Consumers expect the devices to be cheap, faultless and easy-to-use
  - There is a clear separation of users by their needs and moods, or "values based segments". For example, there are people who would like to have the most recent device just to impress others ("Impressors", by Nokia's term), those that simply like to have their own experience with every new device ("Experiencers"), those who simply need such a device to organize their working day or to help them to solve their real business problems, "Copers" that go with the flow and so on. Each user group has its "life strategy" concentrating i.e. on entertainment or business use.
  - The introduction of color on the mobile devices is the key of their success, as this is the way to provide picture of a better quality and as the result to provide new services (such as streaming and multimedia messages). In fact, a parallel was shown between the revolution in TV industry caused by the introduction of the color television and the innovation of the color screen on the mobile devices. Again, "The critical enablers of the color era are multimedia messaging, XHTML and Java". Among Nokia UI, series 60 and 80 (actually, starting from series 40 – but only series 60 & 80 are Symbian-based) are specifically targeted to the color screens.
- What Nokia considers as unique benefits of Symbian OS:
  - Symbian has broad mobility experience
  - Symbian OS is highly reliable and highly usable
  - There are real products in the market running Symbian OS
  - More Symbian-based Nokia products to come this year (in fact, many people speaking at the Symbian Expo were citing the official Nokia statement that they are building towards having 50% of the company's 3G phones using Symbian OS by 2004)
- Nokia supports the vision that one of the keys for Symbian OS success should be entertainment support, mobile commerce support and communications, as this will push customers to upgrade their gadgets

- Devices that are better, faster and cheaper will become a mass phenomenon.
- Real business opportunities will be discovered through trial and error and not through market research.

### **3.2 Presentation of David Wood, EVP Technical Consulting, Symbian**

This one was particularly hard to follow. The red line of the whole speech was about Symbian OS opportunities in the mobile telephony.

- Hard problems in mobile telephony that Symbian OS is designed to address:
  - o Variety of standards
  - o Variety of platforms and vendors
  - o High performance must be squeezed out of a fairly weak hardware
  - o While communication is the key of these devices, it still needs to be secure
- Advantages of Symbian:
  - o Symbian has insight to the future plans of telcos (as many of them are Symbian's shareholders)
  - o A lot was learned from previous projects (e.g. during v5/v6 releases a lot of new features and changes were requested by telcos and other participators)
  - o Transparent financial model – the license fee is the same for all participators
- "Killer applications" that should appear, as envisioned by Symbian:
  - o Presence (what state person is in: available/not available, etc.)
  - o Call initiation features (call subject, call urgency, caller identification by picture)
  - o Community Communications like peer-to-peer games using Bluetooth
- Symbian supports the vision that their OS should address mid – tier devices (as customers expect to have the features that are already available on high-end devices)
- Entertainment is one of the keys to success for this market, so it is particularly important to have more wireless applications and to introduce 3D graphics on mobile devices (ARM is working on this hard; they even demonstrated the new hardware developed

- for that purpose. Symbian itself has a division developing 3D games – they were looking quite impressive)
- Some core aspects of SmartPhones:
    - o On the one hand, some intelligence has to be put on the device so that it should not be constantly connected to perform some basic operations (e.g. text editing)
    - o On the other hand, phones are not PCs and users do not want to be frustrated by using traditional OS, with their booting, error messages, file systems and so on.
  - Substantial financial benefits are expected by Symbian for this market, based on the fact that around 4 mio phones being sold every year (so if new features become available for SmartPhones it would be possible to cause users to upgrade their devices)

### **3.3 Presentation of Warren East, CEO, ARM**

This was rather short overview of current ARM position on the market and of their future developments.

- About one million of ARM units being sold every year
- 3D graphics and wireless applications are the current goal of ARM development
- Development tools (mainly for kernel and device drivers developers) are a big part of ARM business (18%)
- It is ARM view that a critical mass of application penetration has already been achieved

## **4 Workshops**

### **4.1 Nokia Symbian OS phones**

This one was very good in presenting the overview of Nokia Symbian platforms, those that are on the market and those to come soon. Of course, 7650 was in the spot as this is the next product to be available this summer. A brief summary includes:

- Nokia SmartPhone strategy, originally targeted technically knowledgeable people, usually 25-44 y.o., is currently moving to address younger people and people which have no/very limited technical knowledge
- 9210 – best selling PDA due to Q3 2001 results

- Nokia developed UI for series 60, which is being licensed to 3<sup>rd</sup> parties. The idea of licensing is to have the same scheme of operations for a variety of available devices, while allowing hardware manufacturers to provide their own, distinguishable interface for their mobiles. The other point is to help application developers to design solutions that can be easily deployed on a variety of platforms, without having platform-specific programming. Basic distinction between series 60 and series 80 is that series 60 is one-hand operated platform whereas series 80 is two-hand operated platform.
- Nokia strongly supports J2ME on their platforms, in particular on series 60
- They are strongly on the side of SyncML support, but SyncML DM is not implemented yet (although it is on the way)

The workshop also covered various issues of development for Nokia platforms, including overview of available tools and technologies, and provided a few examples of UI applications.

## **4.2 Developing for the P800 smartphone**

The P800 smartphone was officially launched on this Expo. The workshop officially presented the device, and gave insight on Sony Ericsson developers support.

- P800 is the first smartphone to support UIQ interface (developed to provide unique interface for both smartphones and communicators, i.e. it supports two different screens sizes. See <http://www.symbian.com/technology/UI/uiq.html>)
- It is focused on a bunch of "key technologies", including WAP, WEB, EMS/MMS, J2ME and, of course, Symbian OS
- 26 Ericsson Mobility World (EMW) centers already launched, to provide SDKs, documentation, support, prototypes
- Prototypes availability:
  - o Engineering prototypes only available at Sony Ericsson
  - o Factory prototypes (HW release candidates) available for 3<sup>rd</sup> party
  - o 6 months prior to commercial launch: Prototypes are available for "Selected key developers (very limited)"
  - o 3 months: EMW centers and developers (that gives a rough estimate of P800 prototypes availability in June this year, which was confirmed by Sony Ericsson exhibitors)
  - o Prototypes must be returned

- P800 SDK: to be bundled with Metrowerks Code Warrior (although not sure about pricing model)
- Certification program will be launched due to May this year

### **4.3 Wireless Java Games**

Provisioning of wireless games through SMS, WAP and WWW. MIDlet provisioning model, PersonalJava Applications, Server mediated games, JavaPhone architecture. Games that use JavaPhone for program-to-program communication. Explanation of all the features on an example case study with source code.

## **5 Sessions: Connectivity**

This was one of the most interesting readings throughout the whole Expo. It gave a good overview on the products available on the market at it also presented a feeling of how currently important SyncML is.

### **5.1 Preface of Timo Bruns, Product Manager Connectivity, Symbian**

Just a first introduction to give an overview on most promising technologies and futures of connectivity.

- Connectivity landscapes: SyncML, TCP/IP, FTP
- New stuff is here to provide local connectivity: USB, Bluetooth (BT)
- Moving forward: OTA is on the way
- There is a vision that the whole connectivity concept will indicate a move from client/server model to peer-to-peer model soon

At the end, it was announced that Time Information Services (TIS) has joined Symbian Connectivity Partner Program (and that TIS clearly indicates its commitment to SyncML support).

### **5.2 Presentation of Jeff Warner, Product Manager, Extended Systems**

Extended Systems provides device management solution to the enterprise market.

- Enterprise issues:

- There is a need to have cross-platform support for different devices
- Several desktop's synchronization solutions to manage
- Providing desktop synchronization experience, the same feature is needed in absence of desktop
- XTNDConnect solutions:
  - Provide remote synchronization mobile/server and server/mobile
  - Provide a suite of tools to manage mobile devices from one central location
  - Device/database independent (supports variety of both)
  - Supports SyncML
- XTNDConnect server overview:
  - Device management (application deployment, backup/restore feature, connection logging)
  - Groupware synchronization (i.e. PIM and such)
  - Custom application data synchronization (e.g. user's preferences for particular application)
  - Complete e-mail synchronization (including attachments and address book)
- SyncML is in the center of their strategy as leading open standard that brings a solution for low-bandwidth and fixed networks
  - They are using SyncML (at least) to synchronize PIM (contacts, etc.)
  - They provide a SyncML solution (client?) for Nokia 9210

The interesting thing is that Extended Systems already have a software to sell, and there are some big customers of their software, such as British Airways. Further information is available at <http://www.extendedsystems.com/>.

### **5.3 Presentation of David Multer, CTO, fusionOne**

The future of mobile communications, as it is seen in fusionOne.

- The future of communication technologies:
  - BT, short-range communications
  - SyncML
  - Peer-to-peer communications
  - Messaging
- To keep up with the technologies, fusionOne provides synchronization and mobility solutions, including:
  - OTA synchronization using SyncML
  - Synchronization portals, and more

## **5.4 Tom O'Brien, VP Marketing, Starfish**

This was a case study of Starfish's OTA Sync solution for Nokia 9210, followed by the demonstration of synchronization between 9210 and Starfish's server in the U.S. Highlights of their product:

- Since SyncML was not supported by Symbian at the time of Starfish's Sync solution development, they developed their own SyncML client
- This client is not limited to 9210 (although it seems that this is just a client, and not API)
- This SyncML solution was requested directly by Nokia

## **5.5 Lee Joseph, Real Networks**

Experiences in creating media subscription services.

Experiences in utilizing narrowband audio content.

Partnership with Cap Gemini for full integration of billing and customer care.

Real Networks has more than 600.000 paying customers and over 50 Mio downloads of their free Realplayer. There are still problems with the music industry preventing Real Networks from offering a premium audio content solution with content from all music labels.

## **6. Impressions**

Just a few words about the Expo. Although relatively small (just about 45 stands) it was featuring many big players on this market, including Nokia, Motorola, Sony Ericsson, and others. Quite good organized; actually, the biggest inconvenience was that they were running 5 workshops and two parallel sessions simultaneously, so that it was not possible to see some interesting events as they were sacrificed in the name of those that were looking more promising. Also, it was rather disappointing that the major device manufacturers did not come up with at least announcements of new Symbian-powered devices as one might have expected (not counting Nokia 7650 and Sony Ericsson P800, as they were actually announced earlier). In particular, Motorola did not present any Symbian-powered device at all and it is quite interesting that one of the Symbian co-founders (or co-sponsors) does not have a single device running Symbian. Another thing (that probably was

expected) is that it was not often easy to get technical information at any of the stands (this is particularly true for the questions regarding SyncML support in Symbian OS as well as in the particular devices). Despite these shortcomings, this Expo still gave a good overview on what happens on the market, which technologies are considered to be promising, which devices are available and which are coming soon. Also, one of the most impressive things was that nearly every attendee had a Nokia 9210/9290 (actually, Nokia claims that it sold more 9200 series than any other PDA manufacturer during Q3 last year; see <http://www.heise.de/newsticker/data/anw-01.11.01-003/> [in German]). Another thing is that the Expo exhibitors were highly application-oriented. Of course, there were a few hardware manufacturers, like Texas Instruments, Intel and Epson, a couple of telecommunication companies like Orange and Vodafone, but the rest were application developers, developing various solutions like games, text converters/viewers, messaging programs and such. It is probably worth to note that SSH presented their client developed exclusively for Nokia 9210 (although they said that in case of customer's demand it can be ported to any Symbian-based device within a few weeks).

## **7. New Devices**

There were just two new devices presented on this Expo: Nokia 7650 and Sony Ericsson P800. Both featuring a big color screen (it is 1/4 VGA for P800) that delivers a high-quality image, both are relatively small and easy to use, and fairly light (and P800 seems considerably lighter than its counterpart). Both have a camera on the back side, and naturally both are running Symbian OS – v6.1 in case of 7650 and v7 in case of P800. Both devices support SyncML synchronization, and in case of P800 it is SyncML 1.1 (including SyncML DM) – unfortunately, guy who was presenting P800 denied to talk about availability of APIs for that (as well as about product's pricing strategy). Nokia promises to start selling 7650 in the middle of this summer while P800 launch is scheduled to the late of Q3 (probably, September). This may explain why P800 gives the impression of somewhat unstable device – it was possible to freeze the device within 10-15 minutes of using. Nokia 7650 is already available for developers (although one must prove to Nokia that his application is an impressive one and that it cannot be developed with the emulator before he gets an approval of the device request), and P800 should become available in June through Ericsson's World Mobility Centers.

## **8. Organization**

The Expo was running just for two days. Each of the days has a similar schedule: 2-hours keynote in the morning, than lunch break, and after this there was a number of workshops and sessions running in parallel. At any time, the exhibition itself was open, so there was a plenty of time to see all the stands and to ask any questions. Workshops were primarily targeted to the developers, giving an overview of the new products and features and providing some technical background for programming under Symbian OS as well as for particular devices. Parallel sessions and keynotes included rather marketing issues; however, some of them were quite useful to get a feeling of what is going on in this industry. Also, it was a very good idea to provide a booklet for each of the workshops – this allowed attendees to concentrate on the workshop's details instead of spending their time trying to write down the things (I have most of these booklets here at NBC; because of this the workshops are only slightly covered in this report).