

The GUI Bits

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Welcome

Welcome to this new issue of *The GUI Bits*, Degel Software Ltd's newsletter, covering a selection of software news that we think will be relevant to our clients. Our group of experienced software professionals strives to keep up with the latest developments, and this newsletter is one product of those efforts. This issue continues our focus on handheld platforms and wireless computing, with Java getting the spotlight this time around. See our website at www.degel.com for complete information about our company and how we can work with you.

David Goldfarb
President of Degel Software Ltd.

Degel News

Degel Software has recently ported a major consumer Internet application to the Symbian platform. We've also been busy helping more than one client get ready for the upcoming CeBIT conference. If you need any last-minute help to get a demo ready for CeBIT or another exhibition, let us know. Once you've worked with us, you may realize that the impossible *is* possible after all.

Spotlight On Java and J2ME

In this issue, we will be paying special attention to Java for small devices, which usually implies J2ME, the baby of the Java family. The other two variants are J2SE (standard) and J2EE (enterprise). J2ME does not refer to a single Java specification, but rather to a family of what Sun calls *configurations*, each of which supports a number of *profiles* tailored for individual markets. In this way, J2ME takes a number of different approaches to "Java Junior" and presents them under a single moniker.

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For more information, contact:

Degel Software Ltd. Tel: (02) 999-5721
7 Ha'Iris St. Fax: (02) 991-6718
Beit Shemesh, 99512 info@degel.com

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One flavor of J2ME, which includes the CLDC configuration and the MIDP profile, is meant for cellular phones and small embedded environments. These broadly overlap the same kind of devices targeted by Symbian's operating system (and potentially by Microsoft's SmartPhone 2002, formerly known as Stinger). Another flavor of J2ME used to be called Personal Java, and it now comes as the Personal profile running on the CDC configuration. It's much closer to J2SE, and is meant for what Sun describes as "the next generation of wireless, handheld consumer devices", and also set-top boxes. It's positioned more or less where Microsoft is positioning Windows CE .Net.

(Sun's J2ME page)

(Sun's CLDC page)

(Sun's MIDP page)

(Sun analysis of J2ME variants)

Java OS's

As Microsoft pursues its "Windows-everywhere" strategy, Sun has been expanding the horizons of Java to the point where it has become not only a tool for cross-platform development, but also a viable, independent platform on its own terms. This coming-of-age is reflected by the recent debut of Java operating systems.

Esmertec's product line, for instance, is based on an "all-Java" strategy. Their flagship product is Jbed, an entire real-time operating system that is Java all the way down. This required a few extensions to allow Java to address hardware, but at the end of the day there's no need to look behind the mirrors—you won't find a C heap underneath. In addition, they have implemented what they call TBCC (target bytecode compilation) technology. Unlike piecemeal JIT compilation, Esmertec's Java platforms compile the program all at once, more or less like a regular language compiler does. This offers both the opportunity for additional optimization and the ability to run reliably in real-time, where on-the-fly compilation delays are not tolerable. The compiler can be run either on the development platform, entirely obviating the need for a JVM on the target, or by the Esmertec JVM running on the target (and therefore transparent to the developer and the user, like JIT).

Esmertec claims an order of magnitude improvement in performance. While the all-Java Jbed RTOS is currently available on ARM, PowerPC, 68xxx and Coldfire processors, the technology is now also available as a drop-in replacement for J2ME on Linux and Nucleus, and recently was made available for Palm OS. The Palm edition allows calling native Palm OS functions, but only on fully precompiled code, for security reasons.

(Jbed press release)

(Esmertec homepage)

(MicroJava; 24 October, 2001)

Before the pixels were dry on the latest J2ME announcements, SavaJe came along and announced SavaJe XE, a full J2SE-compliant Java OS for the Compaq's color iPaks. Like Esmertec's Jbed, this is a full OS that runs directly on the iron. SavaJe claims unspecified performance advantages because of the lack of host-OS overhead, and of course the advantages of supporting the full J2SE specification instead of the more modest J2ME. So there it is: SavaJe XE is a real alternative to Windows CE .Net, running on the flagship PocketPC platform. The company says that the OS can easily be ported to any Intel StrongARM, Intel XScale or ARM-based device, though specific plans are not clear at this time.

(SavaJe home page)

Hardware

ARM, as we reported in our last issue, has been developing its Jazelle technology to give hardware support for Java in its various chips. Recently, ARM announced that the new version of its Developer Suite Software, version 1.2, will offer support for Jazelle, initially to be available in the ARM7EJ-S and ARM926EJ-S processor cores. This announcement follows an earlier announcement of Jazelle licensing by Symbian, on the OS side, and a recent announcement by Fujitsu on the hardware side.

(Fujitsu/ARM announcement)

(ARM/Jazelle press release)

MIDP NG

MIDP, the J2ME profile for "mobile information devices" has been at the focus of J2ME efforts and much action in the wireless device industry. Sun and its partners in the MIDP Expert Group are working on the MIDP NG

(next generation) specification, which was due for “Community Review” on February 11 and is expected to have available implementations by sometime in the second half of the year. MIDP NG will include things like XML, security and permission models, and Over-the-Air (OTA) distribution functionality to allow J2ME wireless devices to receive and install MIDlets.

A parallel development recognizes the growing integration of Personal Digital Assistant (PDA) functionality into mobile devices—basically Smart Phones. The PDA profile is being developed to allow access to the built-in features and functionality of such devices, like a phone book, calendar, and voice dialing capabilities. Like MIDP NG, it is also due out later in the year

*(Java Spec. Request (JSR) for MIDP-NG)
(JSR for the PDA Profile)*

Games

THQ, Inc. and Motorola have announced a deal to offer a suite of games for Motorola’s growing family of J2ME-enabled mobile phones. Some of the games will be pre-installed, with others to be available on a website and from wireless network operators for consumers to wirelessly download.

(AnywhereYouGo; 8 January, 2002)

Languages

Java’s Gosling Finds C# Flat

In a recent interview, Java creator James Gosling didn’t mince words when it came to C#, Microsoft’s new Java-like language which is at the heart of the .Net strategy.

Gosling says that “C# is Java without the reliability, productivity or security... You find stuff in it that has essentially loopholes for everything. They had this problem in their design rules that they had to support C and C++, which means you have to have a memory model where you can access everything at all times. It’s the existence of those loopholes that is the source of security, reliability and productivity problems for developers. So on the one hand, they copied Java, and on the other hand, they added gratuitous things and other

things that are outright stupid. That’s amusing.”

(ZDNet; 21 January, 2002)

Curl

A different competitor of Java, targeted at the Web development market, has emerged: Curl. Curl claims to combine the best of HTML and Java, providing a single, integrated language for Web client development. Curl’s impressive development team includes WWW creator Tim Berners-Lee and MIT tech luminary Stephen Ward. Another MIT legend, Michael Dertouzos, who died in August, was also on the team. Curl claims to speed up development time, partly because it’s a single language with an optimized IDE. Run-time performance is also reputed to be greatly enhanced, partly because the language design allows for minimal server access and maximal use of the client CPU for partial re-rendering after small operations. Finally, Curl claims to offer security superior to Java, mostly because Curl does not use a byte-code scheme and retains full type information in its applets. On the downside, Curl requires that users install a plug-in into current browsers. As always, of course, the real question is going to be: does the language offer enough added value to justify the move. Curl’s free development environment makes it easier for each of us to decide.

(Curl home page)

(Curl Security FAQ)

(Dr. Dobbs; February 2002)

Wireless and 3G

CDMA2000

Sprint has recently announced its rollout of a CDMA2000 wireless network and Verizon Wireless is expected to follow soon after. The packet-switched CDMA2000 technology will offer peak speeds of 144Kbps at first, putting it in the league of General Packet Radio Services (GPRS), already available from US operator Voicestream Wireless. Sprint is planning to reach speeds of 2Mbps and more within two years.

(IT-Director; 12 January, 2002)

iMode and GPRS

NTT Docomo's i-Mode mobile phone service, available in Japan, offers its users features that are roughly comparable to what's available via WAP in other parts of the world. Yet i-Mode has been vastly more successful, with over 28 million subscribers.

This success is usually attributed to the always-on nature of the service, which is made possible by the underlying packet-switched network. Because i-Mode users are always connected, there is no connection delay. And rather than paying for connection time, users pay only for the actual bytes of data that they send or receive.

The success of i-Mode suggests that the always-on model is very attractive to users, just as was the case with the landline Internet. This speaks well for the future of GPRS worldwide. We expect that the combination of always-on, high-speed data connectivity, and worldwide availability will lead to dramatic changes in how people use their mobile phones.

(NTT Docomo homepage)
(AnywhereYouGo; 3 January, 2002)

Platforms

Linux

Linux is making exciting inroads into the embedded world. Linux developer MontaVista Software recently deepened its relationship with IBM, committing to full support for IBM's PowerPC microprocessors for embedded system and networking applications. IBM has taken a small equity stake in MontaVista, while the two companies also announced plans to pursue joint marketing activities. Nokia, too, has chosen MontaVista technology to help build their IP infrastructure. These agreements follow, by a couple of months, MontaVista's release of a version of Hard Hat Linux 2.0 for ARM-based embedded devices. The release is aimed at the ARM 9 and ARM 7 Thumb processor core families.

(MontaVista homepage)

Sharp has announced the Linux-based Zaurus SL-5500, positioned to go head-to-head with

Palm and Pocket PC devices. With an Intel StrongARM CPU, 32M of ROM, 64M of RAM, and a high-quality color display, the basic hardware is certainly on par or better. But the surprise here is the software—Trolltech's Qtopia delivers a full set of PIM applications and the Qt/Embedded GUI, which underlies a set of Microsoft Office compatible applications. All this and a Java-based video player mean that choosing a Linux-based device doesn't mean being left out in the cold.

(ZDNet review)
(LinuxDevices review)
(PDAGeek review)
(Trolltech homepage)

Symbian

Symbian, spotlighted in our previous issue, is riding high in Europe. The spectacular success of the Nokia 9210 color PDA/cellphone allowed Symbian powered devices to take the lead in European market share in the third quarter of 2001, leading Palm and Windows CE. Moreover, this occurred in spite of strong sales of the Compaq iPaq, which uses Microsoft's Pocket PC platform.

(MbusinessDaily)
(BargainPDA)

The announcement of the slick, digital-camera-equipped 7650 looks to further cement Nokia's leadership role, with Symbian reaping the benefits. The 7650 is the first of several devices on which Nokia plans to use Series 60, a Nokia variant of Symbian's OS.

(Nokia 7650 webpage)

Nokia is doing even more with Symbian: the Finnish manufacturer announced at its November Mobile Internet Conference in Barcelona that Borland will be making its JBuilder and JBuilder MobileSet developer tools available for Series 60 development. Borland will also produce a C++ development environment, due in the first half of 2002.

(ZDNet; 26 November, 2001)

Yet another company has joined the Symbian bandwagon. Fujitsu Limited has recently licensed the Symbian OS for use on their future 3G phones. With this, they join Japanese mobile phone manufacturers Kenwood, Panasonic, Sanyo, and Sony, who have all licensed Symbian OS. Other licensees of Symbian OS in-

clude Ericsson, Motorola, Nokia, Psion, and Siemens.

(Micro Java Network; 28 November, 2001)

Microsoft

Microsoft announced Windows CE .Net at the Consumer Electronics Show (CES) in Las Vegas in January. Formerly called Talisker, this release smoothly accompanies the transition of the small device market to wireless networking support. More details were in the previous issue of The GUI Bits, where we elaborated on Microsoft's wireless strategy.

The Windows CE .Net operating system includes the .Net Compact Framework, allowing integration with Microsoft's .Net Web services platform. The OS core is down to 210K from the 400K required by CE 3.0. And Microsoft continues to offer a wide range of processor support.

Motorola Inc., Hitachi Ltd. and Casio Computer Co. Ltd. have all said that they plan to use the Windows CE .Net operating system in upcoming products.

(Info World; 7 January, 2002)

Stinger, Microsoft's platform for more limited cellphones, also got a new name in Las Vegas without actually being announced. SmartPhone 2002 is the new name for the platform which Microsoft hopes will take hold on simpler devices that don't have the room or the need for CE Net. However, little in the way of either information or demos is available. According to a report in The Register, what they saw in November was far from ready for prime time. As devices continue to grow more powerful and if CE .Net is as light as advertised, the Stinger platform may soon be squeezed out of existence.

(The Register; 28 December, 2001)

Technology

Passport and the Liberty Alliance

What was shaping up to be another battle between Microsoft and "everybody else" might not happen. What's at stake is how identification and authentication are to be done on the Inter-

net, and the main contenders are Microsoft's Passport and an emerging standard being defined by the inspiringly named Liberty Alliance, headed by Sun and supported by a slew of industry giants including AOL, Nokia, and MasterCard. Microsoft recently announced that they were talking to the Liberty Alliance and considering ways of working together. While the extent of the cooperation is not defined, it is quite possible that the two systems will be at least inter-operable in the end.

(Info World; 19 December, 2001)

New Mobile Video Standard

Emblaze Research, a subsidiary of streaming video pioneers Emblaze Systems Ltd., and OmniVision Technologies, Inc., a leader in CMOS image sensor technologies, announced the availability of EmblazeCam, a reference design for a unique video camera accessory with built-in MPEG-4 compression. This reference design allows people to capture and send pictures and video clips on today's phones with existing networks, rather than waiting for 2.5G or 3G devices. The EmblazeCam connects to cell phones via the standard UART interface present on most of 700 million cell phones running on existing 2G networks. It enables video capture, recording, messaging, and conferencing applications.

(3G Newsroom; 6 December, 2001)

Quantum Computing

Let's face it: much of the technology underlying 3G wireless was invented in the 1940's (by a movie actress, believe it or not!). While Quantum Physics is a bit older than that, Quantum Computing is a much fresher idea. This brings us to a recent successful experiment in which a CPU consisting of seven atoms factored the number fifteen. A team from IBM's Almaden Research Center in San Jose, California was more than happy to be told that the factors of fifteen are three and five, even if they were pretty sure of that before they started. While we at Degel can't yet claim to be experts in Quantum Computing, we can assure you that it's really cool and will probably be a real pain to debug. When the time comes, we'll be ready and glad to help you.

(New York Times; 20 December, 2001)

Conferences

Recent Conferences

The Consumer Electronics Show, held this year in Las Vegas from January 9 thru January 12, kicked off 2002. Bill Gates of Microsoft, Carly Fiorina of HP, and Bill Esrey of Sprint were among the keynote speakers. The mere presence of such figures at this kind of conference certainly says a lot about the convergence of electronics, telecommunications, and computing over the past few years.

Two simultaneous LinuxWorld conferences took place recently on both sides of the Atlantic. From January 29 thru February 1 in New York City, and January 30 thru February 1 in Paris, the penguins were out in force. In NYC, Borland's Kylix 2 took away the coveted "Best Developer Tool" prize. In Paris, all agreed that Linux was making fine progress in Europe, especially on servers. On the desktop, Microsoft's uncontested leadership position was attributed to the strength of its Office suite, which is not yet being seriously challenged by StarOffice.

Upcoming Conferences

Pocket PC New York will be running alongside Internet Wireless East 2002, from February 20 thru 22, in NYC. Pocket PC highlights include sessions on using Macromedia Flash for Pocket PC content development, 3D game development, and using .Net for mobile solutions. Internet Wireless will have forums covering Wireless Security, Enterprise Applications, M-Commerce, Infrastructure, and more.

Embedded Linux Expo and Conference will occur in Stockholm from March 5 thru 7. Participants are expected to represent developers of a broad spectrum of products and technologies, including smart appliances, gaming, set-top boxes, medical equipment, defense/aerospace systems, industrial control/automation, transportation systems, instrumentation, and data acquisition.

CeBIT, the world's largest and most influential IT and communications event, will be held in Hanover, Germany, March 13 thru 20. CeBIT had over 8000 exhibitors and nearly a million attendees last year. A number of Degel's clients will be exhibiting at CeBIT this year.

A JavaOne will be held this year in San Francisco from March 25-29. The conference will cover everything from soup to Java nuts, with the myriad sessions divided into the following categories: Web Services Today and Tomorrow, Java Technologies for the Desktop, Emerging Technology, Wireless and Handheld Devices, "Java Technologies, Products, Solutions, and You", Java 2 Platform - Enterprise Edition (J2EE), and Core Java Technology.

Symbian Developer Expo will take place on April 23rd and 24th in London. Session topics to be highlighted include advanced data services and innovative solutions in the fields of wireless gaming, Java, video streaming and advanced multimedia, tools, synchronization, MMS, messaging and email, wireless browsing and wireless commerce. There will also be hands-on demonstrations of the latest Symbian OS phones from licensees.

Degel Services

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