

NEXIT MOBILE INSIGHTS

 **nexit** ventures

Digital convergence finally reaches the consumer

The use of mobile devices to consume, process and generate content is increasing at a staggering pace. Growing consumer interest in graphics, images, music and video is driving applications such as games, MP3 players, cameras and TV reception on mobile devices ranging from high-end all-in-one handsets to the most basic mobile phones.

The rapid deployment of more capable devices supporting new attractive content and communication services tempts consumers to upgrade their phones every 12 to 18 months. One notable issue that the average consumer is unaware of is the development of the underlying operating systems. High-end devices powered by advanced operating systems such as Symbian are seeing strong growth, but still have a market share that is only a fraction of midrange and low-end devices.

Feature Phone vs. Smart Phone

This raises interesting questions. Will the future consumer favor so-called feature phones, which come with a few cost-efficient and well-implemented key services, and be limited to simpler Java-based applications? Or is the winner the high-end smart phone, with its potent operating system, ample options and broad set of applications?

In the PC world, the outcome was clear. The operating system that managed to reach critical mass first and to create a large community of application developers came out ahead and built a huge software industry around itself. Is the higher price and fragmented market for smart phones a serious hindrance or

just a delay for their future success? Or will the ubiquitous Java, with its increasing support for more media formats enable the feature phones to reach critical mass first?

Content is king, again

These are big questions with wide-ranging effects. No ultimate answers are easily available, but two trends seem likely. First, the continued development of handsets and the network infrastructure creates many new business opportunities. Secondly, simple, easily adopted content and communication-related applications and services seem to be dominating the short-term growth of mobile consumption. Both trends drive the need for innovative mobile startup companies.

This is an issue that has created a lot of discussion in the Nordic countries in the past several months. After the bubble burst, many startups disappeared, but the strongest survived, and now with the economy in much better shape again, we have seen signs of comeback from entrepreneurs. The development and widespread adoption of new devices and innovative applications may well be the trigger that sets the number of start-ups on the path of higher growth again.

With this, we want to wish you all the best for this summer and hope you will enjoy the latest offerings on your mobile phone! ■

Handset Type Market Share - 2004

- Basic Phones
- Feature Phones
- Smart Phones
- PDA's



Into the third dimension

Today, all PC computers and modern gaming consoles pack 3D graphics chips. 3D graphics are now being introduced in mobile phones. But why are graphics so important?

Everybody loves a good story. Since prehistoric times, mankind has had but one method of transmitting and preserving a story: visual display. From rock paintings to writing, movies, television, and video games, graphics representations have largely formed our culture.

Vision is the most dominant sense. For human beings, 'seeing is believing'. The desire for experiences through stories and a hunger for knowledge is best satisfied through visual input. 3D graphics are currently the best method of imitating the real world, and graphics in general are most often the best way to visualize complex information.

3D graphics is about seeing ideas come alive.

Graphics in practice

In practical terms, the computer games industry brought 3D graphics to living rooms. The sole reason was that better graphics meant better tools for storytelling.

Another practical example is a functional user interface. PCs became popular only after the text-based user interface had been replaced with a graphical one. A modern passenger car may contain 1,000 different things the driver can do. Even in a SUV, there is not enough space on the dashboard for 1,000 chrome switches.

The need for better user interfaces brought LCD monitors and graphics onto dashboards.

The technical merits of 3D for mobile phones are entertainment and user interfaces. Most people could not care less about the 2,000 features of a phone; they just want to use the phone in a natural manner. Better graphical interfaces are the key.

Complex 3D Technology

The technology behind 3D graphics is rather complex. Simply put, it can be divided into two categories: hardware (which contains all the circuitry) and software (which tells the circuits what to do). The software part can be further divided into two layers: device-specific parts (which are contained in a device) and applications (the bits of software that can be installed afterwards).

Hybrid Graphics is heavily involved in the category of device-specific graphics software; in other words, telling computers how to draw pictures. Hybrid's technology works equally well in mobile phones, car displays and handheld GPS navigators. Hybrid has ten years of expertise in graphics technology, which comes in rather handy.

Telling computers how to draw

The interfaces for the graphics functions are standardized. This serves two purposes. First, the standardization has created accurate definitions of 3D so that various companies such as device manufacturers, operators and technology vendors know what is being discussed. Second, it provides common interfaces for device manufacturers and application developers.

Hybrid Graphics is active in all relevant standardization groups. Hybrid is a board member of the Khronos Group (www.khronos.org), which defines the

native low-level interfaces. On the Java side, JCP (jcp.org) creates different interface standards for Java-equipped phones.

Players in the market

Consumer device manufacturers have little expertise in 3D graphics, and need to buy the expertise from specialist companies. On the PC side, Intel, ATI and NVIDIA control nearly all of the hardware market. Several smaller companies such as Imagination Technologies and Bitboys have managed to secure a foothold in the embedded graphics market.

Software platform vendors such as Ericsson, TTPCom, and Philips Software include new graphics components in their offerings. Several mobile game engine vendors have turned into publishers for mobile games and entertainment. For mobile phones, the content market is about to take off.

About Hybrid Graphics

Hybrid Graphics of Helsinki, Finland is the market leading embedded 3D graphics software provider. It has over 10 years of experience in developing graphics technology solutions for consumer devices, releasing the first official OpenGL ES API software implementation in 2003. It actively participates in several Java JSR standard groups and other relevant graphics standards for embedded devices.

Hybrid's clients are leading device and hardware manufacturers, who currently command over half of the total mobile phone market. The clients include Nokia, Ericsson, Philips, Symbian, Esmertec, Bitboys, MTEKvision and Fathammer. For more information see www.hybrid.fi

Enabling the mass market penetration of



With all the press coverage and promotion from network operators around the globe, it would seem that mobile video is already here. The reality is that the uptake of video services so far has been marginal. The reason for this can be explained when we take a look at the video-enabled handsets that are currently available.

As the encoding and decoding of video is a compute-intensive task, to achieve acceptable video performance (from a consumer perspective), the handset is required to have significant processing power. This factor has primarily limited video capability to the high-end smart phone segment, which, according to Gartner, represented less than 5% of total handset sales in 2004. Whilst forecasts predict significant growth in this segment, it is suggested that by 2008 only around 15% of the total handsets sold will be smart phones. The largest proportion of handsets sold, some 80%, are classified as feature phones.

The Problem

Feature phones are typically designed around a single chip, the baseband processor, which executes the telephony functions as well as the basic applications such as calendar, phone book etc. To maximise battery life, the processing capability of the baseband chip is kept to a minimum, which of course is in contrast to the needs of video applications.

It is clear that the mass-market penetration of mobile video requires video capability of an acceptable level of quality to be brought to feature phones. Due to the limitations of processing resources available, the ideal solution is to integrate the complex video encoding / decoding functions directly into the baseband processor.

The Solution

Headquartered in Oulu, Finland, Hantro was one of the first to identify the potential presented by the device

convergence of the camera and mobile phone. With extensive system-on-chip design experience for limited resource environments (i.e. power consumption and processor capability), the company focused its unique expertise on developing the technology designs necessary to bring video capability to mobile handsets.

Offering a complete range of video encoders and decoders (codecs) supporting resolutions from 128x96 right up to 720x576 (equivalent to the resolution provided by high-end DV cameras today) at 30 frames per second, Hantro's video codecs are ideally suited for integration into mobile baseband processors and provide the capability needed for the successful uptake of all types of video services, such as mobile TV, video messaging, video streaming and video telephony.

A Paradox in the Value Chain

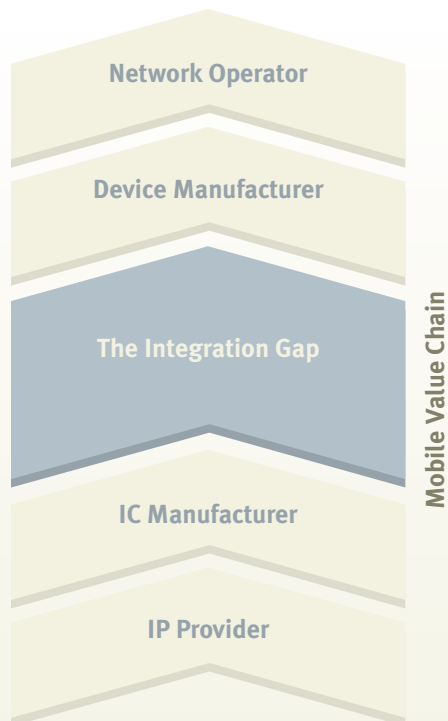
The significant volumes of the feature phone market have naturally attracted a number of new entrants to the device manufacturer segment. With this increased competition driving down prices, the trend is for handset manufacturers to design products based on the integration of proven 'turn-key' modules as this approach significantly reduces development time and the risks of encountering unforeseen technical issues.

Paradoxically, the setup costs for IC manufacturers providing the baseband processor have increased dramatically in recent years. In a move to meet the unit price demands of the market, IC manufacturers are looking to maximise run rates by providing more generic products suitable for numerous application use cases.

The gap in the value chain between the 'one-size-fits-all' product from the IC manufacturer and the 'turn-key' module required by the handset manufacturer requires a unique set of competences that are not native to either party.

The Complete Solution

Because of its unique skill sets and capability in both software and hardware design, Hantro is able to bridge the gap that exists in the value chain. By providing the hardware designs and a complete multimedia application development platform, the company enables IC manufacturers to offer a proven turn-key module with an absolute minimum cost per unit increase that would otherwise be unachievable.





NEXIT VENTURES **bridging wireless opportunities**

As a global, but tightly technology and market focused venture capital firm, Nexit has its finger on the pulse of innovation in mobile and wireless. Investments are made primarily in Scandinavian and US based early stage companies, with products and services for a global market.

Using its relevant operational experience, the Nexit team supports the growth and development of the portfolio companies with a pragmatic, hands-on approach. With knowledge and contacts across the wireless ecosystem, the Nexit team opens up and creates opportunities for its portfolio companies.

Nexit's transatlantic bridge is a significant value-add, linking together the technology hotbeds in Scandinavia and Silicon Valley. For Scandinavian companies, Nexit's network of business contacts in Silicon Valley provide a bridge to markets, partners, experienced management and investors at an early stage. U.S.-based ventures get an opportunity to profit from Scandinavia's market-leading wireless network infrastructure, technology, insight, and advanced user base.

Nexit has offices in Helsinki and Silicon Valley. For further information, please visit www.nexitventures.com.

Helsinki

Nexit Ventures Oy
Kaisaniemenkatu 2 b
FIN-00100 Helsinki
FINLAND
Tel. +358 9 6818 910
Fax +358 9 6818 9117
info@nexitventures.com

Silicon Valley

Nexit Ventures LLC
12930 Saratoga Avenue, Suite B-9
Saratoga, CA 95070
USA
Tel. +1 408 725 8400
Fax +1 408 725 8405
info@nexitventures.com

THE NEXIT PORTFOLIO



www.bitfone.com

Bitfone provides innovative software solutions for customer care automation and mobile device management to wireless operators and handset providers.

Bitfone's products improve usability of mobile devices by diagnosing and repairing software problems and delivering software updates and configuration settings over the air. Bitfone is a global company headquartered in California, with offices in Canada, Japan, China Korea and the UK. Other investors: St. Paul Venture Capital, 3i US, Nokia VP, Prism Ventures, Orange Ventures, Motorola Ventures, KTB Ventures, CIR Ventures and Qualcomm.



www.conformiq.com

Conformiq Test Generator is a solution for dynamic model-based test generation and automatic test execution.

The technology is based on test cases generated from high-level system models enabling automated, thorough and cost-effective testing of complex software systems. In addition to quality improvements and increased test case maintainability, this also results in direct savings in development costs. A special version has been released for Symbian environments. Other investors: erVentures



www.ecrio.com

Headquartered in Cupertino, California, Ecrio is the leading vendor of next generation communication software for mobile phones.

Ecrio provides interoperable and standard compliant software to Mobile Phone Manufacturers and Mobile Operators. Ecrio offers solutions for Instant Messaging and Presence Services (IMPS), IP Multimedia Subsystem (IMS) and Push to Talk over Cellular (PoC). Ecrio's customers include Mobile Industry leaders such as Lucent, NEC, Panasonic and Siemens. Other investors: CIR Ventures, CDB Webtech.



www.ekahau.com

Ekahau, Inc. is the industry leader in location-enabling Wi-Fi networks.

Ekahau's customers are realizing the benefits of accurate and real time Wi-Fi-based location services and innovative network planning tools. Ekahau partners include wireless software developers, leading system integrators, and international OEM partners developing next generation location-based applications. Ekahau is a U.S. based corporation, with its headquarters located in Saratoga, CA, and offices in Helsinki and Hong Kong.



www.exidio.com

Exidio Oy is dedicated to combining extensive, first-hand treasury expertise with enabling technologies to provide treasury service tools.

Trezone is a webbased system that opens up the treasury bottlenecks and ensures automatic information flow throughout corporations. It widens the reach of treasury management to give tools to internal customers, such as controllers and subsidiaries with substantial cost savings and improved forecasting services. Other investors: CapMan, Metso Corporation.



www.fathammer.com

Fathammer is a pioneering leader in Advanced Mobile Gaming, providing high quality 3D games and development tools for mobile platforms.

Fathammer provides its industry-leading X-Forge 2 Game Development System to game publishers and developers as well as mobile device manufacturers and wireless operators. X-Forge Powered games bring console quality 3D gaming to a wide range of mobile devices. Fathammer Ltd has offices in San Jose, Helsinki and Seoul. Other investors: 3i, Sitra, angel investors.



www.futuremark.com

Futuremark is known around the world for its PC and smart phone products and value-added services.

3Dmark benchmark is used by more than 250 computer magazines and major PC hardware manufacturers (like AMD, ATI, Intel, nVidia) and recognized as the world defacto standard. SPMark has become the industry's most widely used benchmark for Symbian OS based smart phones. Other investors: Conventum Oyj.



www.hantro.com

Hantro is the leading provider of hardware and software based MPEG4/H.263 and H.264 video solutions specifically tailored for handheld devices.

The product portfolio also includes video applications for video capturing, playback, messaging, streaming, and telephony. Combined, Hantro is uniquely positioned to provide complete solutions for silicon providers, device manufacturers and network operators. Other investors: CapMan, Atine Group, 2M Invest.



www.hybrid.fi

Hybrid develops graphics technology solutions for consumer devices and is the leader in embedded graphics standards.

The new 3D API's like OpenGL ES and M3G are bringing advanced visual capabilities enabling even more compelling games, entertainment and other content. Hybrid's clients include Nokia, Ericsson, Symbian, Sony Online Entertainment, Discreet, Tao, Synergenix, Texas Instruments, Criterion and Renesas.



www.mobile365.com

Mobile 365 is the global leader in the delivery, billing, and settlement of mobile messaging services delivering reliably messages, premium content, and value-added services for the leading mobile operators, content providers, brands, and media companies worldwide.

Headquartered in Chantilly, Virginia, USA, Mobile 365 has offices in a dozen cities globally and more than 200 employees worldwide. Nexit Ventures invested in the first institutional round of Mobileway. Other investors: 3i, Draper Atlantic, Draper Fisher Jurvetson, IVP, and Mayfield, and strategic investments from Citigroup, Intel, and Visa International.



www.skypilot.com

SkyPilot is a broadband wireless last mile access solution for ISPs serving suburban consumers.

Using a patentpending architecture operating in the 5 GHz band, SkyPilot's mesh network approach results in a self-installing home unit, creating a self-managed and fast penetrating network. It will enable multiple ISPs to provide cost-effective broadband services, including wireless T1 access and video on demand. Other investors: Mobius Venture Capital, Invesco Private Capital, AOL Time Warner Ventures, Softbank Asia, Selby Venture Partners, Palo Alto Investors.



www.thetamicro.com

Theta is a fabless RF semiconductor company focusing on the next generation of cost-effective multi-band and multi-mode wireless systems.

The products will facilitate cost-effective, high-performance Wi-Fi implementations for customers worldwide. Theta is deploying its unique design IP and specialized local knowledge of the diverse requirements of US and European markets, to provide products for emerging volume wireless applications. Other investors: Telos Venture Partners, NBG Technology Fund, Cadence Design Systems, Commercial Capital Group.



www.zonepay.com

ZonePay is a Remote Commerce company enabling one-step ordering and paying for consumables and services from a mobile phone or internet connected device.

ZonePay's WaitLess system eliminates the need for cash payment, minimizes human errors and removes virtually all of the barriers to a fast, efficient and enjoyable consumer experience. The initial deployment is for "build to order" fast food restaurants. ZonePay's headquarters are located in Dulles, Virginia and the company also has mobile development activities in Finland. Other investors: Angel investors.

RECENT NEWS FROM NEXIT PORTFOLIO COMPANIES

Hybrid Graphics and Aplix Corp. announced the integration of Hybrid's 3D graphics technology for J2ME to Aplix's JBlend mobile platform. The technology provides an all-inclusive interface for bringing graphics capabilities to embedded devices. It consists of Hybrid's implementations of embedded 3D graphics standards (JSR 184, OpenGL ES and JSR 239) as well as 2D vector graphics standards (OpenVG, SVG and JSR 226).

Fathammer will deliver ten advanced 3D mobile games for SK Telecom's new game phones. The contract also includes Fathammer's X-Forge™ Game Development System and Support for selected 3D game developers, who create content for SK Telecom. SK Telecom is South Korea's leading telecommunications company with extensive plans to release 3D content to wireless devices.

Hybrid Graphics Ltd. has been chosen as one of the winners of the Red Herring European Top 100 competition. The award was given to a hundred leading and most innovative technology companies in Europe and Israel.

Futuremark® has announced that it certified the first benchmark results for hardware accelerated handheld 3D performance. In Futuremark's SPMark04 3D game test for handheld devices the Mali™ 100 from Falanx Microsystems was certified to yield a performance of 39.9 frames per second at resolution 176 by 220 pixels. In comparison, current smart phones, with no hardware 3D acceleration, yield between 8 and 16 frames per second at resolution 176 by 208 pixels.

Ekahau announced that Palmetto Health, the leading healthcare provider in South Carolina, has chosen the Ekahau Real-Time Location System solution as the basis for tracking critical hospital equipment and assets. The Ekahau RTLS system provides real-time visibility into the whereabouts of critical enterprise resources, assets and people, in indoor and campus environments.

Mobile 365 announced that the Australian Broadcasting Corporation (ABC) has signed an exclusive contract for interactive mobile communication services. The ABC has signed an agreement with Mobile 365 to supply its SMS, IVR, MMS, and other WAP services. The provision of telephone information services to ABC Television and Radio audiences and ABC Online users promotes and encourages audience interaction through the ability to send or receive information via a mobile handset.

Bitfone Corporation has announced that QUALCOMM, Inc. (Nasdaq: QCOM) has made a strategic investment in Bitfone. "Bitfone's over-the-air device management solutions provide a faster time-to-market path, significant cost savings and risk reduction for manufacturers and operators

rapidly deploying increasingly sophisticated handset devices by avoiding recalls and manual repairs of device software. In return, companies are able to offer more convenient support to their subscribers," said Prashant Kantak, senior director of business development for QUALCOMM Ventures.

Futuremark Corporation has announced that ARM (Nasdaq: ARMHY), and Falanx Microsystems, an innovative provider of mobile graphic solutions, are the newest members in Futuremark's Benchmark Development Program (BDP) for handheld devices. Other industry leading companies, including ATI Technologies, Bitboys, Imagination Technologies (PowerVR), Intel, Khronos Group, Neomagic, and NVIDIA, have already joined the program.

Hybrid Graphics has announced that Philips will embed Hybrid's 3D graphics technology into Philips's J-Ware Java product for mobile devices. Philips also becomes a global distributor of Hybrid's 3D graphics solutions. The agreement provides Philips's customers with a comprehensive software-based solution for running high-grade graphics content like 3D games on mobile devices.

Mobile 365 has announced its Operator Charging Gateway. The new product provides a single interface to operator billing systems around the world, enabling content providers to apply a charge directly to a subscriber's mobile phone account for downloaded content, including ring tones, logos, wallpapers, and games.

Hantro has announced that their H.264/AVC software solution will be demonstrated on the SANYO LC690132A application processor at 3GSM. The LC690132A, which incorporates Hantro's MPEG4 hardware acceleration for encode and decode up to CIF resolution at 30fps has been commercially available since October 2004. By adding the new software 6100 decoder and playback engine from Hantro, SANYO is able to provide an immediate upgrade of H.264 capability to existing customers.

McAfee Inc. (NYSE: MFE), the pioneer and worldwide leader of intrusion prevention solutions, and **Bitfone Corporation**, are demonstrating a new active threat management system for mobile phones at the 3GSM World Congress in Cannes, France. The demonstration is a result of technology collaboration between Bitfone and McAfee, and will show how mobile operators can detect, recover from and prevent security threats to mobile phone software from viruses, worms, auto-dialers, spyware and other malicious threats.

Mobile 365 has formed an agreement with America Online, Inc., the world's leading interactive services company, to launch a text-to-vote campaign in conjunction with the AOL® Super Sunday Ad Poll. The

campaign, is part of the AOL Super Sunday Ad Poll, which lets fans view and vote for their favorite Super Bowl television commercials on the AOL services.

Hantro has announced a new hardware decoder for ARM AMBA based bus SoC designs. The 6130 is H.264 / AVC Baseline profile compatible and has been designed specifically to meet the requirements of multimedia streaming and TV applications in mobile handsets.

Bitfone Corporation has announced the award of a patent, Number 6,832,373, by the United States Patent and Trademark Office that covers methods of remotely updating an electronic device with an update package via a public network. The award of this patent enhances Bitfone's position as the leader in FOTA solutions for the wireless market.

Bitfone Corporation has been selected by LG Electronics as their global FOTA provider. Bitfone's mProve will enable LGE to update the firmware and software on mobile devices over the air, using a standards-based client embedded on all LGE handsets. LGE launched mProve-enabled handsets on the Sprint PCS network in 2004, and plans to launch models in Europe on the Orange network in the first half of 2005. Additional global rollouts will occur based on operator requirements and timelines.

Hantro Oy has received a further EUR 4 Million investment from a syndicate, led by CapMan, comprising of Hantro's existing investors: CapMan, Nexit Ventures and Menire. The additional investment will be used to strengthen Hantro's leading position in the global market.

Mobile 365 has signed an agreement to provide exciting new mobile content and services for Yahoo! Europe. Initially launched in the UK and Germany, Mobile 365 will provide the connectivity for Yahoo! Mobile's growing range of products and services. In Europe, Yahoo! aims to extend its range of essential services from the desktop to any mobile device. Current services include the mobilization of Yahoo! Mail.

Mobile 365 has been named to FORTUNE Magazine's list of the top 25 Breakout Companies for 2005. "Mobile 365 does all the back-end stuff that makes global messaging possible. Its software and network systems help deliver messages reliably across different wireless phone standards. They also help mobile-phone companies and content companies bill for messages, ringtones, and other transactions. The private company, which posted \$80 million in revenues for the fiscal year ending March 31, says it makes money, and word on the Street is that it will file for a public offering this year."