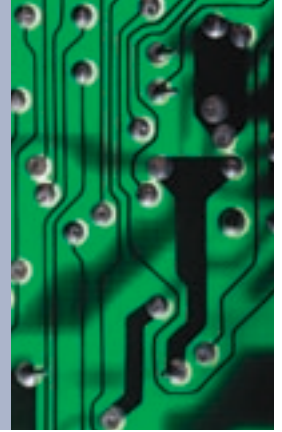


Public WiFi Services: The Search for a Proven Business Case

WIRELESS LAN — WLAN OR WIFI — BURST ONTO THE SCENE IN THE LATE NINETIES. COMPARED TO STANDARD TELECOMMUNICATIONS EQUIPMENT, WIFI PRODUCTS WERE INEXPENSIVE DUE TO SIMPLE AND ROBUST RF DESIGN. ENTERPRISES AND ORGANIZATIONS WERE THE FIRST TO EXPLORE WIFI'S POTENTIAL, FOLLOWED BY EARLY HOME ADAPTERS. THANKS TO ITS AVAILABILITY, LOW-COST TERMINALS, VOLUMES OF TERMINALS SHIPPED, HIGH-SPEED DATA AND WITH INEXPENSIVE 3G NETWORKS STILL YEARS AWAY, PUBLIC WIFI SERVICES BECAME THE NEW PET OF TELECOMMUNICATIONS INVESTORS, SPAWNING MANY START-UP OPERATORS AND SERVICE PROVIDERS (SPs). DESPITE THE INITIAL EXCITEMENT, OVER THREE YEARS LATER, SIGNS OF SUCCESS ARE HARD TO FIND BEYOND THE PURE EQUIPMENT MARKET.



European Market Update

More than 100 Public WiFi SPs are operating in Europe today. Over half or 53% are greenfield operators, 18% are mobile network operators (MNOs), and 11% are Internet service providers (ISPs). A growing number of MNOs continue to enter the market. For example, Swisscom has been trying to establish itself lately as a pan-European WiFi SP (Eurospot) by acquiring WLAN gmbH, Megabeam and Aervik.

On the start-up side, Inspired Broadcast Networks (IBN) in the UK is the most daring project this year. IBN focuses on providing entertainment equipment for bars and pubs and has announced a rollout of 3,000 hotspots in the UK by the end of 2003. IBN's objective is to act as a network operator, providing other SPs with access. First out as an SP is BT Openzone.

Despite all this activity, a proven business case for public WiFi SPs in Europe or the US remains elusive. TeliaSonera recently announced it is reconsidering its WiFi business, while Telenor revealed it is having trouble establishing a working business model for its WiFi services given the current state of the market.

Public WiFi Services: Unstable, Immature Market

WiFi terminals and access points ship in millions each year to a growing number of enterprises and homes. According to Gartner Dataquest, some 15 million devices were shipped in 2002. This large base of installed WiFi PC cards does not seem to be sufficient to trigger success in the public service market, which remains unstable and immature. The low barrier to entry has resulted in market overcrowding (100+ SPs in Europe alone). Another indication of market instability is the extreme pricing variations among European players:

- Price per hour: €2 to €20
- Price per 24-hr session: €10.5 to €34
- Price per month (flat rate): €53 to €163

Other indicators of instability and immaturity include:

- Lack of convergence among roaming and authentication solutions used
- Poor coverage and many missing "early sites" such as airports
- Public WiFi services not integrated into MNOs' existing service portfolio

In Northstream's opinion, making money with public WiFi services is a long shot. Such services should be viewed as a potential solution for reducing churn

within corporate segments, which would influence service implementation. Investment and risk must be minimized but not at the expense of existing brand equity. While most SPs put too little effort into their marketing strategies, Korea Telecom offers an example of an SP with a solid business model and marketing strategy.

Korea Telecom: A Success Story

Korea Telecom (KT) is often referred to as a successful public WiFi service provider. KT has over 8,500 hotspots with several hundreds of thousands of NESPOT service subscribers. While it provides WiFi service to few "traditional" public hotspots, KT does offer thousands of access points to homes and enterprises. It charges only slightly more to install its wireless broadband service (combination of wired and wireless) than its pure wired broadband service (KT Megapass). KT's NESPOT service also includes unlimited access to its NESPOT public hotspots.

KT has succeeded in selling and marketing a complete package, that is, service offer, installation, integration and customer service. A similar approach by Telia HomeRun during 2000 was unsuccessful, however, because the SP failed to back it with a solid marketing strategy.

Telenor, TeliaSonera and Swisscom Eurospot seem to have learned from KT as they are now offering to implement WLAN service at enterprise facilities. Companies are then provided capacity at a favorable rate. The SP can also offer service and capacity to the public at the same geographic site. While an improvement, these SPs are still a long way from KT's integrated NESPOT service.

By Gunnar Holmgren, Strategic Advisor, Northstream

About Northstream

Northstream provides operators, manufacturers and other players with independent and unbiased advice on opportunities presented by GPRS, 3G and Wireless including WLAN. In addition, Northstream offers recommendations on key technical and commercial issues in mobile data services as well as advises industry players on their strategic position and value proposition.

www.northstream.se

Upcoming Events

CTIA Wireless I.T. 2003
October 21-23, 2003
Las Vegas, Nevada
USA

3GSM World Congress 2004
February 23-26, 2004
Cannes, FRANCE

Argo Global Capital Annual Meeting
April 28-29, 2004
Boston, Massachusetts
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argoscorecard

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SAVE THE DATES!

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SAVE THE DATES! ARGO's Annual Meeting Set for April 28-29, 2004

Argo Global Capital has chosen historic Boston as the site of its 2004 Annual Meeting to be held on Thursday, April 29. The event will start with an informal dinner on Wednesday evening, April 28, for anyone arriving the day before the meeting. On Thursday, a full day of meetings will be followed by a dinner. Since we plan to begin early on Thursday morning, we encourage you to arrive the night before. The meetings will be held at The Langham Boston Hotel, formerly known as Le Meridien Boston, located at 250 Franklin Street, within walking distance of Quincy Market/Faneuil Hall and Boston's waterfront. A preliminary agenda will be sent out in early January 2004.

We look forward to seeing you there!



Portfolio Company Profile

CARRIER-CLASS IP TELEPHONY SOLUTIONS

Nuera Communications, Inc. is a leading provider of Voice-over-Internet Protocol (VoIP) infrastructure solutions for cable TV, broadband and telecommunications service providers. Nuera's ORCA® (Open Reliable Communications Architecture) product portfolio helps carriers worldwide migrate from legacy networks to next-generation VoIP networks.

Nuera focuses on the voice-over-broadband and the international long-distance markets. The company's ORCA VoIP gateways and softswitches enable service providers to add voice to their data networks in order to offer new services and generate more revenue over an efficient, converged network. Nuera's PacketCable™-based gateway allows cable operators to complete the "triple play" of integrated services—voice, video and data. International long-distance carriers deploy its gateways and softswitches to increase network efficiency and provide enhanced services.

ORCA gateways and softswitches optimize bandwidth utilization while maintaining the highest standards of quality for voice traffic. The ORCA's high systems availability, superior vocoder implementations, and advanced call processing capabilities help service providers deliver the same user experience as traditional voice networks. Nuera's standards-based systems interoperate with many third-party application providers that enable revenue-generating services.



William Ingram
CEO



During more than a decade of corporate growth and development, Nuera has installed over 400,000 DSP-based voice channels in more than 70 countries and 100 carrier networks worldwide. Nuera's global customer base includes the following leading service providers: Comcast, Cox Communications, Net2Phone, Sprint, Eastern Broadband Telecom and StarHub.

Nuera is a private company with headquarters in San Diego, California, and development and sales offices worldwide. The company's most recent round of financing was led by Argo Global Capital, Comcast Interactive Capital, Cox Communications and Sandler Capital Management. For more information, visit www.nuera.com or call +1 858 625 2400.

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UPDATE on Portfolio Companies



CAMBRIDGE POSITIONING SYSTEMS, LTD.

Cambridge Positioning Systems, Ltd. (CPS) announced new products to improve the performance of satellite-based, high-accuracy location technologies for GSM networks. Building on the company's standardized GSM solution Matrix, the new products will provide major performance improvements for A-GPS systems in terms of accuracy, coverage and time to fix a location.

HOTSIP AB

Hotsip AB announced an injection of €3 million by Bell Net Corporation, a Hotsip customer and a leading Japanese systems integrator and applications service provider. The investment comes as the Asian market embraces SIP (Session Initiation Protocol) as the firm standard for session control within IP-based communication systems. Hotsip enables broadband Internet providers to increase profitability through the delivery of SIP and Presence-based products for broadband networks. Hotsip is the world's only provider of SIP-enabled Presence communications services with two large-scale live deployments, the first in Finland with TeliaSonera and the second in Japan.

CEREBRUS SOLUTIONS, LTD.

Cerebrus Solutions, Ltd., a leading provider of revenue assurance solutions including fraud management and revenue leakage detection for the global telecom industry, announced that a major wireless operator in North Africa has selected its market leading fraud management solution CerebrusRE to protect its network against telecom fraud and other types of revenue leakage. Following an extensive selection process that included the evaluation of several competing solutions, CerebrusRE was chosen because of its unique use of leading-edge neural network-based subscriber profiling to provide an accurate picture of where fraud is being perpetrated within the operator's network.

KABIRA TECHNOLOGIES, INC.

Kabira Technologies, Inc. and Visa International announced that the two companies have entered into a two-year global strategic alliance. The alliance will facilitate new product development opportunities for Visa International utilizing Kabira's expertise in high-speed transactional switching software and solution frameworks built on the Kabira Infrastructure Switch. As part of the alliance, Visa and Kabira will explore opportunities to use Kabira's model-driven, high-speed transactional solutions to benefit Visa's member financial institutions, merchants and cardholders. The relationship calls for the companies to work closely together to identify Visa initiatives requiring high-speed network services and high-volume real-time transactions.

DIGITAL BRIDGES, LTD.

Digital Bridges, Ltd., a world leader in mobile entertainment solutions, announced it is developing a number of games for QUALCOMM's Binary Runtime Environment for Wireless™ (BREW) platform. Digital Bridges will be releasing three games from leading publisher SNK (King of Fighters, Samurai Showdown and Metal Slug), as well as Cartoon Network's Scooby-Doo Jeepers Creepers, based on the loveable hound and his companions' adventures.

PROQUENT SYSTEMS CORPORATION

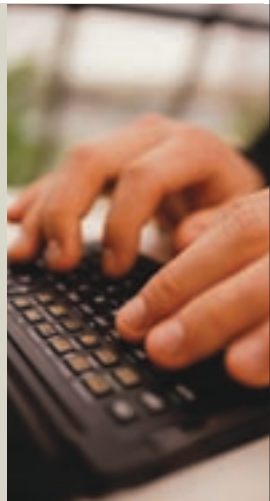
ProQuent Systems Corporation and eServGlobal Ltd. announced that the ProQuent Mobile Services Switching Point (MSSP™) will be integrated into the eServGlobal Universal Application Server (UAS), a proven platform for service control and real-time charging support, to provide converged billing and session control solutions for both voice and data services content. The companies' joint product offering is a complete and integrated prepaid solution for both GPRS and UMTS wireless packet data networks. The solution allows operators to implement service billing, based on any combination of event, transaction or byte volume and to build flexible business models that encourage profitable usage with unsurpassed levels of revenue assurance. The combined solution easily integrates with existing GPRS network equipment and provides a smooth evolution to UMTS networks.

WATCHMARK CORPORATION

WatchMark Corporation, a leading provider of service assurance solutions, announced WatchMark Prospect® MMS, the industry's first performance and service management solution uniquely designed to meet the needs of global service providers focused on the profitable delivery of quality multimedia messaging services (MMS). Prospect™ MMS offers the capability to effectively analyze, share, and publish performance, quality and use metrics pertaining to multimedia messaging services and individual handsets.

WEBRASKA MOBILE TECHNOLOGIES SA

Webraska Mobile Technologies, the pioneering provider of integrated wireless location-based services (LBS), telematics applications, navigation and mobile enterprise solutions, announced that the company's advanced LBS software solution is being used by Bell Mobility to deliver the carrier's existing MyFinder location-based services to Western Canada. Bell Mobility customers in Calgary, Edmonton, Victoria and Vancouver can now use MyFinder to receive location-specific information on their digital wireless handsets and eventually on their personal digital assistants.





ARGNOR INVESTMENT

AKUMIITTI LTD.

ArgNor Wireless Ventures announced its first investment in Finland! Founded in 1993, Akumiitti Ltd. is a leading supplier of entertainment software services and solutions, enabling operators to supply their end-customers with ringtones, icons, logos, java games and other similar value-added services.

www.akumiitti.com

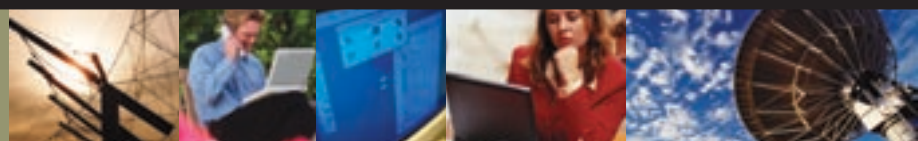
**new
investments**

NUERA COMMUNICATIONS, INC.

Argo Global Capital has invested in Nuera Communications, Inc., a leading provider of Voice-over-Internet Protocol (VoIP) infrastructure solutions for cable television, broadband and telecommunications service providers.

www.nuera.com

NewsFlash



GENERAL WIRELESS

General Wireless announced a global partner agreement with Microsoft. The mobile messaging solution provider's SMS Executive product, which allows users to send SMS messages from Microsoft Outlook, is being included in Microsoft Office Marketplace. Microsoft Office Marketplace is a Microsoft initiative linked to the launch of the new version of Microsoft Office. The initiative's objective is to add value for Microsoft Office end-users through partner company products.

MASKINA

Mobile service platform provider Viva Technologies and mobile application provider Maskina have merged to become Viva Nordic. Viva Nordic offers a wide range of mobile services, content and applications for more than 100 mobile service provider customers, including mobile operators, TV channels, print media, radio channels and consumer brands.

CEREBRUS SOLUTIONS, LTD.

Cerebrus Solutions, Ltd. opened a Customer Support Center in Amman, Jordan. The center's establishment is a clear sign of Cerebrus' dedication to its customers in the region, and a major enhancement of the services Cerebrus provides. Operated in cooperation with Cerebrus' local partner Moseco Jordan, the center offers technical support and implementation services to Cerebrus' growing customer base in the Middle East.

DIGITAL BRIDGES, LTD.

Digital Bridges, Ltd. signed Pac-Man™ and Galaxian™, arcade classics from Namco Europe Ltd. The development follows a Europe-wide agreement to distribute the games via retail packs announced between Digital Bridges, a world leader in mobile entertainment solutions, and Namco Europe, a subsidiary of the Japanese games company that created both Pac-Man and Galaxian.

LGC WIRELESS, INC.

LGC Wireless, Inc., the market leader for in-building wireless voice solutions, and WiFi USA, a nationwide provider of wireless network

design and project management services, have formed a partnership that enables WiFi USA to broaden its portfolio by offering in-building wireless systems from LGC Wireless. With more than 400 Authorized Service Dealers (ASDs), WiFi USA is now promoting LGC Wireless products for in-building wireless voice solutions.

NEURAL TECHNOLOGIES, LTD.

Neural Technologies (NT³) has won another major customer for Minotaur, its world-class anti-fraud system. Philippine telecom operator DIGITEL has chosen Minotaur for its Sun Cellular brand to safeguard subscribers and profits from the growing threat posed by fraud.

NORWOOD SYSTEMS, LTD.

Norwood Systems, Ltd., the market leader in mobility applications for short-range wireless-based voice and data networks for the office and remote teleworkers, has been selected as a trial platform for BT's Bluephone initiative. EnterpriseMobility will undergo trials at the BT Center, near St. Paul's in London, over the coming months, in advance of BT's launch of Project Bluephone service for domestic and corporate customers later this year.

VOLUBILL

Mobile operator Orange has selected VoluBill to provide a charging solution for its new generation prepaid data and messaging services. The selection of VoluBill's Prepaid Charging Node (PCN) at Orange Dominicana will support the introduction of new content-based services to Orange's prepaid subscriber base and allow the implementation of innovative customer-centric price plans.

WEBRASKA MOBILE TECHNOLOGIES SA

Webraska Mobile Technologies announced the runaway success of the "Apontador" mapping and directions Website, launched by its joint-venture partner in Brazil. Generating more than six million maps and directions per month, the service is powered by the Webraska SmartZone Geospatial Platform™.