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GPRS today

DESPITE THE LAUNCH OF SO-CALLED "COMMERCIAL" GPRS NETWORKS AROUND THE WORLD, THE MARKET STILL LACKS TRUE COMMERCIAL GPRS SERVICES AND PRODUCTS FOR NETWORKS AND TERMINALS. TO RESTORE OPERATORS' DWINDLING CONFIDENCE IN GPRS, THE INDUSTRY NEEDS TO REFOCUS ON THE IMPORTANCE OF THIS INTERMEDIATE TECHNOLOGY IN THE MIGRATION FROM 2ND GENERATION CIRCUIT-SWITCHED NETWORKS TO 3RD GENERATION WIRELESS IP ENVIRONMENTS.



ArgoScoreCard

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Volume 1, No. 1, September 2001

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KEY AREAS OF OPERATOR FOCUS

1. Services & Customer Segmentation

The importance of services cannot be overstated and is one of the key lessons to be learned from the tremendous success of NTT DoCoMo's i-mode service in Japan. Operators must create the perception of value by targeting the right services to the right user segments. On the technical side, an open architecture is necessary to promote the development of services by third parties.

2. Billing

Operators' legacy billing systems must evolve to meet the challenges presented by emerging GPRS services and products. Charging mechanisms must be developed to handle issues related to GPRS networking such as roaming and prepaid subscriptions.

3. Pricing Models & Strategies

Well-formulated mobile data service pricing strategies are essential to optimize revenues and minimize customer churn. A thorough review of current pricing models, usage and market trends, as well as GPRS roaming tariffs is necessary to maximize user uptake.

4. Terminals

Suitable terminals are critical to the successful uptake and ongoing development of mobile data services. Given the limitations of today's GPRS terminals, operators need to give thought to their current and future GPRS terminal requirements, the effect of outsourcing terminal manufacture to ODM/OEMs, and the impact of M-services initiatives.

5. Roaming

Operators also need to look at the need for GPRS roaming, its current status, as well as the status of the GRX QoS offering and other solutions.

6. Network Requirements & Challenges

GPRS services will have a major impact on network design. The introduction of GPRS may be a relatively small technology step for operators, but it is a major step towards IP-based services, with a number of technical challenges stemming from IP design and integration.

7. Other General Strategic Choices

Given the changing mobile environment, operators must give careful thought to branding, marketing, distribution and partnership strategies.

About Northstream:

Northstream provides operators with independent and unbiased advice on the opportunities presented by GPRS technology along with detailed recommendations on the key technical and commercial issues in mobile data services. In addition, Northstream assists operators with both their strategic positioning and value proposition in order to optimize their GPRS revenues.

Contact: **Jonas Twingler**
jonas.twingler@northstream.se

Welcome! to the First Edition of the ArgoScoreCard!



As its name implies, you can count on the ArgoScoreCard to provide you with regular updates on the progress of Argo Global Capital's Funds and Portfolio Companies. Our new quarterly will deliver up-to-the-minute news on investments, partnership agreements, strategic alliances and other key industry information and events. No frills, no superfluous data; just concise, pertinent, straightforward reports.

Thanks to the collaboration of Northstream, each quarterly newsletter will feature two important pieces: the Top Ten issues of Wireless CEOs and a Case Study, both bringing you the latest news in the global wireless industry.

Given today's rapidly changing and highly competitive environment, access to accurate, timely information and innovative market breakthroughs is a must. At Argo, we are involved with some of the world's most promising start-ups in the industry, which means we are often there when important news breaks. The ArgoScoreCard is our way of sharing this valuable information and expertise with you.

We hope the ArgoScoreCard will rank among your favorites!

Alain Denis
Carrier Relations Director

Top 10 Issues of Wireless CEOs

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- In light of the GPRS and 3G delays, greenfield operators are likely to enter the market at an even more mature stage than anticipated, increasing the likelihood of pricing as a competitive weapon. Incumbents must begin preparing contingency measures in terms of differentiated packaging and pricing strategies.
- Location-Based Services (LBS) are increasingly popular, and proven, effective LBS business models exist. Operators should consider various aspects when offering LBS, including network technology evolution, regulations, standardization, user acceptance and the development of attractive services and applications.
- Due to the turmoil in the telecom industry, major operators have decided to delay their consumer GPRS promotions. This opens up a golden opportunity for those players who still believe in their own capabilities and those of terminal manufacturers to deliver applications and services for consumers. A number of terminals will be out for Christmas, providing operators with the chance to entice consumers with attractive packages.
- Among the key issues facing operators and the industry are billing models and pre-paid strategies for mobile Internet-related services. Operators should view pre-paid as a payment method rather than a segment, and begin proactively pushing services towards this billing model.
- The need for operators to establish a solid GPRS service roadmap is becoming painfully clear as many network operators are now launching GPRS. Moreover, 3G operators will face similar problems unless 3G service visions are rapidly consolidated and transformed into firm technology requirements.
- With the success of i-mode in Japan, the GSM association is developing a similar mobile data services framework called M-services. The initiative focuses on outlining service frameworks but also includes recommendations for the human-machine interface in handsets. Several major operators and handset providers have expressed their support of the initiative.
- Good news! The standardization controversy on GPRS signaling channels was resolved at a recent 3GPP meeting. This will definitely speed up design, type approval, production and sales of GPRS devices, giving a much-needed boost to GPRS uptake.
- Nokia's recent confirmation of delivery of its first GPRS terminals does not solve the issue of missing drivers for fast GPRS take-up. The massive boost requires terminals with integrated applications as well as communication-enabled PDAs.
- Mobile video services (MVS) are a hot topic these days. MVS will significantly change the way mobile users share their experiences and emotions, access information and entertainment, and communicate with other people. While MVS technology is not available today, the wireless industry should definitely begin preparing for it.
- Rather than debating an "either/or" scenario for Public WLAN and 3G, the real issue is how to optimize and profit from their coexistence and integration. Properly positioned, these wireless technologies will together boost overall wireless traffic to everyone's benefit. To this end, suitable business models are required to stimulate the development of tailored services and applications around the coexistence of at least three complementary wireless concepts.

Upcoming Events

Unwired Universe Europe 2001

The New Wireless Business Cycle: GPRS with Mobile Services Initiative
Grimaldi Forum, Monaco
October 9-11, 2001

UMTS Congress and Expo 2001

The World's Largest 3G Exhibition
Barcelona, Spain
October 17-19, 2001

Argo Road Show

Prospectives 2002-Trends and Solutions
November 2001
Details to follow

GSM Americas

The Largest GSM Event in the Americas
Rio de Janeiro, Brazil
December 4-5, 2001

TELESYSTEM-ARGO
Telesystem-Argo Global Capital
Manager of the Argo Funds

Boston-Headquarters
Lynnfield Woods Office Park
210 Broadway, Suite 101
Lynnfield, Massachusetts 01940
USA
Phone: +1 781 592-5250
Fax: +1 781 592-5230

Montréal
1250, René-Lévesque Blvd. West
38th Floor
Montréal, Quebec H3B 4W8
Canada
Phone: +1 514 397-8444
Fax: +1 514 397-8445

London
Parkshot House
5 Kew Road
Richmond-Upon-Thames
Surrey TW9 2PR
UK
Phone: +44-20-8334-8002
Fax: +44-20-8334-8100

Hong Kong
2813 One International
Finance Centre
1 Harbour View Street
Central
Hong Kong
Phone: +852 2295 2209
Fax: +852 2295 3111



Industry Facts

SAFE, WIRELESS SERVICE IN AUTOMOBILES JUST AROUND THE CORNER!

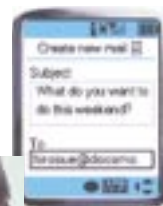
New York recently banned the use of wireless handheld phones while driving. The ban puts the spotlight on telematics and positions the sector for meteoric growth. Telematics provides intelligent information, personalized to a user's location and activity.

OnStar is a leader in telematics solutions. The General Motors subsidiary expects its telematics service to be available in about 4 million vehicles across the United States by the end of 2003. Users will be able to make and receive hands-free, voice-activated calls. OnStar's telematics service will also provide voice-based, personalized Internet access.

Source: Telephony, July 16, 2001

I-MODE SUBSCRIBERS ACCESS AN AVERAGE OF 11 SITES PER DAY!

DoCoMo, Japan's leading communications operator, offers instant access to tens of thousands of Internet sites with the simple touch of a cellular phone button. DoCoMo's i-mode solution provides users with online shopping, e-mail, news updates, ticket reservations and other useful information.



This user-friendly mobile Internet service enables customers to receive quick, easy-to-use information displayed on their handsets at a reasonable cost. i-mode customers are charged by the volume of data received, rather than by the time spent online, resulting in longer browsing and more frequent visits. i-mode users currently visit an average of 11 sites per day.

Source: The Economist, June 30, 2001

WIRELESS GAMES are quickly surpassing sports and e-mail in terms of mass-market popularity. According to research from Datamonitor, wireless gaming will generate approximately \$6 billion by 2005.

AVIAN COMMUNICATIONS

gets \$22 million in a second round of financing to fund ongoing product development through scheduled customer trials. Avian also gained a new member on its Board of Directors, Tom Wooters, Vice-President and Partner of Argo Global Capital. Avian Communications is building a new category of Mobile Data Infrastructure called the Mobile Services Switching Platform (MSSP).



new investments

ARGNOR INVESTMENTS

Argnor invests in **General Wireless** and provides both funding and a director for the company's Board. As a supplier of messaging software, General Wireless is quickly establishing itself as a leader in its field. The company's solutions allow mobile operators to increase revenues and improve customer service, through SMS.

ALICE SYSTEMS AB

receives funding and a Board member from Argnor. Alice provides mobile operators with the necessary tools to enhance their revenues by equipping GPRS users with simple Internet access. Alice Systems is positioned to become the leading supplier of innovative connectivity software solutions for mobile operators.

Nortel Networks Fraud Solutions (NNFS) is acquired by Argo II – The Wireless Fund – and renamed **Cerebrus Solutions Ltd.**

Cerebrus will maintain an OEM agreement with Nortel Networks and other industry-leading companies such as Agilent Technologies Inc. Cerebrus provides end-to-end revenue enhancement solutions to the telecom industry including advanced systems enabling the detection and abatement of fraud and revenue leakage. Its customers include leading fixed and mobile telecom service providers around the world.

Flash News

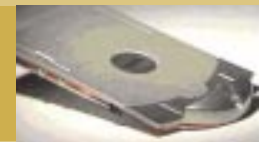
On May 21, 2001, **Colorado Microdisplay** became **Zight Corporation**.

LGC Wireless is now an Alcatel 'Preferred Supplier', making the LGCell accessible to Alcatel users. Testing showed it to be the market's best active distributed antenna system.

Digital Bridges has joined the Mobile Entertainment Forum (MEF), a consortium of companies and organizations working towards a dynamic and democratic medium of exchange for mobile entertainment creators and enablers.

Norwood Systems and **Business Systems** team up to deliver a new bluetooth-based wireless network.

REALVision expects to launch Guyver, the world's first universal PCMCIA card slot sled for PDAs, by the end of September.



Webraska establishes new offices in Germany.

Last minute update...**Webraska** and **AirFlash** merge to create worldwide location-based services leader.

UPDATE on Portfolio Companies

IPERIA receives \$9 million in financial support. This support will enable the company to develop additional subscriber services and strengthen its leadership in communications and messaging applications software.

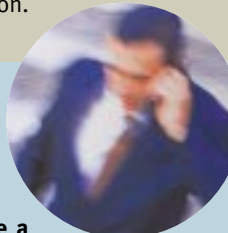


Mobile game sites generate 16% of the total traffic to one of Europe's major portals, with **Digital Bridges'** wireless games services accounting for 8% of this traffic. Digital Bridges was chosen as "one of the most innovative and exciting companies in wireless today" by Unstrung.com. The *Tornado Insider* picked DB as one of its "Tornado 100", a list of Europe's brightest, newest high-tech prospects for 2001.

Norwood Systems

scored big at **ComNet 2001**, taking home the "Most Innovative New Product" award for its EnterpriseMobility software suite. Norwood also won in the Wireless Category, once again for EnterpriseMobility. EnterpriseMobility is an office network for the wireless generation.

CMG Wireless Data Solutions, along with WEBRASKA and SignalSoft, introduce a ready-to-go Mobile Location Service. This innovative solution enables operators to market different types of location-sensitive services independent of access methods.



12snap,

a leading entertainment channel, and Genie, BT Wireless's mobile Internet portal, conclude an interactive partnership that will offer users a wider range of entertainment and shopping services channels. We should expect some joint marketing activities from both sides.

American giants McDonald's and American Express team up with **12snap** to create a one-year campaign targeting young consumers. The campaign will launch the new American Express youth-focused 'blue card'.

Nestlé in Germany launches its first mobile marketing strategy with **12snap**. The campaign targets today's youth through the most direct means—their mobile phones.



12snap enables its users to conduct mobile betting through a partnership with last-minute.com, an online provider that allows consumers to book flights, buy gifts, and place last minute bets in conjunction with Eurobet.

Vodafone and 20th Century Fox go ape for mobile marketing with **12snap**. Vodafone customers are invited via text and voice on their mobile phones to survive a variety of challenging scenarios based on the summer blockbuster Planet of the Apes.



uReach Technologies

has signed an agreement to provide customers of Verizon, a leading provider of wireline and wireless communications, with the ability to receive calls and messages using any communications device, anytime, from anywhere. uReach's Unified Communications service allows users to receive e-mail, voice mail, faxes, pages, calendar notification and instant messaging however they choose, using regular Web access, a wireline or wireless phone or a personal digital assistant.