Cautious Optimism at the 3GSM World Congress 2002

Focus Report

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Executive Summary

Overview of the Event

The 3GSM World Congress is the largest event in the GSM industry's calendar. The 2002 event was held in February, in Cannes, France. Between 20,000 and 30,000 people attended.

This event, which has long reflected the euphoria and unprecedented growth of the mobile industry, had a different tone this year. A mood of cautious optimism prevailed, as equipment manufacturers, mobile network operators and other companies associated with the sector reflected on the sharp downturn in business. As a result, they focused on more-realistic revenue-generating products.

Hundreds of smaller companies that have grown by virtue of readily available venture capital had a focus on securing "real" business. However, Gartner thinks it likely that many will not be at the event in coming years.

Services and Applications for SMS and GPRS

Key topics included services and applications for technologies such as Short Message Service (SMS) and general packet radio service (GPRS); mobile messaging, mobile entertainment, mobile Java applications and location-based services featured on the main players' stands.

Commercial 3G Products and Demonstrations

Third-generation (3G) wideband code division multiple access (W-CDMA) networks were a priority for the major manufacturers, despite current pessimism and the delays anticipated in deployment. The industry has struggled to justify the huge speculative investments of mobile-network operators in this new technology but, in contrast to previous years, there were live 3G demonstrations and commercial 3G products available for evaluation.

Chapter 2
Leading Manufacturers and Their Offerings

Highlights of the main manufacturers' exhibition stands at the 3GSM World Congress 2002 are listed and discussed below.

Alcatel: Interoperability and Cooperation on 3G

Alcatel promoted the interoperability of its equipment; also its willingness to work with other vendors to ensure that products work together correctly.

Alcatel accepts that it does not lead in the 3G W-CDMA market. Nevertheless, it thinks it has a significant commercial opportunity in 3G, and not merely as a second supplier of 3G radio access network (RAN) equipment.

Alcatel announced a three-year contract with Hutchison 3G to deliver Alcatel's Open Services Platform (OSP) that will host a range of value-added voice, data and multimedia services. OSP will be deployed first in the United Kingdom, and later in every country where the Hutchison Whampoa Group has 3G interests. Alcatel cited this as an example of its wider infrastructure capabilities and aspirations.

Alcatel worked with Orange (France Telecom) and Mitsubishi to demonstrate an end-to-end 3G W-CDMA network. It also demonstrated its GPRS technology. Mitsubishi and Alcatel have agreed to collaborate on 3G W-CDMA terminals with video capability. Alcatel has also begun an intensive program of interoperability testing with terminal manufacturers such as Samsung, Fujitsu and Sagem.

The key 3G application that Alcatel demonstrated was video over a 3G W-CDMA network. With Thomson Multimedia, it showed video using the MPEG-4 compression standard. Alcatel also linked up with Radio Televisione Italiana (the Italian public-broadcasting corporation) to enable visitors to view movie previews and video-on-demand services using 3G W-CDMA.

Gartner Dataquest Perspective

Alcatel takes a pragmatic view of the market opportunity for GSM and 3G W-CDMA. Although it is not a leader in the supply of 3G W-CDMA network equipment, it believes it can sustain a profitable business by working with the leading companies in this area.

Alcatel is also keen to drive down the cost of 3G W-CDMA network equipment, especially as the countries where it has a strong GSM position have yet to award 3G supply contracts.

Alcatel is skeptical about operators' true enthusiasm for deploying multimode (GSM, GPRS, Enhanced Data Rates for Global Evolution [EDGE] and 3G W-CDMA) equipment in a single base transceiver station (BTS) cabinet because of the potential disruption to their lucrative GSM networks when deploying and optimizing 3G W-CDMA networks.

Alcatel will be encouraged by its capture of the supply contract for Hutchison 3G, given Hutchison 3G's strong focus on applications. Furthermore, if the OSP is successful, this may help Alcatel secure other such contracts.

Ericsson: '3G Is Here'

The theme of the address by Ericsson's president and CEO Kurt Hellstrom was "3G is here." Ericsson bases this view on the commercial availability of W-CDMA in Japan and its commercial deployment by customers in Europe. Ericsson believes that the North American market's support for EDGE and the commercial availability of CDMA 1X RTT in Korea further supports this view.

Mr. Hellstrom emphasized his view that Ericsson is the leading manufacturer of mobile-network infrastructure — its many GSM, GPRS and 3G contracts being supported by strong R&D and participation in the standards bodies that define and develop these areas. To support this, Ericsson demonstrated commercial 3G W-CDMA equipment and applications, such as Multimedia Messaging Service (MMS), mobile instant messaging (IM) and billing products.

Ericsson also promoted EDGE technology. It believes EDGE can offer up to three times the capacity of GPRS and coverage complementary to W-CDMA.

Ericsson said that it intends to exploit further its considerable intellectual property in the mobile arena by licensing it to other vendors. This reflected the industry's focus on generating revenue from all parts of a business.

Ericsson did not announce any new mobile terminals, preferring to wait for the CeBIT event in March 2002. However, Sony Ericsson Mobile Communications (the joint-venture company created to deliver mobile terminals) gave an upbeat presentation on plans to launch its brand.

Gartner Dataquest Perspective

Apart from a 3G W-CDMA infrastructure supply contract with Sunrise in Switzerland, Ericsson made few announcements. Instead, it focused on its claim to lead the mobile infrastructure market. Interestingly, Nokia also claims to have a leadership position here; this reflects the different ways in which vendors measure success.

Gartner believes Ericsson has used its dominance of the GSM infrastructure market to secure many 3G contracts with existing GSM customers. It remains to be seen how successfully it can deliver 3G infrastructure to these customers and provide commercial end-user 3G services. Only then will it be possible to measure its true position in the market.

Ericsson's strong support for EDGE results partly, we believe, from pressure from some of its key North American customers, including Cingular Wireless. They want EDGE to be deployed outside North America, because wide availability of EDGE-compliant terminals can yield the economies of scale necessary to reduce the cost of delivering EDGE.

Ericsson's decision to further exploit its intellectual property assets accords with the approach it has already taken with its mobile-terminal business. Many new technology elements are needed for deployment of 3G W-CDMA, so good opportunities to profit from these assets may arise.

Ericsson wants to build on its success in securing a global supply agreement with Vodafone for MMS (discussed in Gartner's "Ericsson to Supply Vodafone With Multimedia Messaging Service Solution" [TELC-WW-DA-0062]). It hopes to do so by emphasizing its commitment to MMS and the synergies it has with Sony Ericsson Mobile Communications — synergies that enable it to deliver an end-to-end solution. Despite this, Gartner remains cautious about Ericsson's claim that MMS will have significant uptake in 2002; we believe 2003 is a more realistic time to expect widespread end-user adoption of MMS.

Lucent Technologies: Focused on Infrastructure

Lucent Technologies, being without a mobile-terminal vendor, concentrated on its infrastructure capabilities. It stressed its expertise in deploying CDMA networks and pointed out the difficulties of planning CDMA radio technology. Lucent thinks many of its competitors will have significant problems when they start to deploy 3G W-CDMA equipment on a commercial basis.

Lucent gave two key demonstrations. The first was of commercial 3G W-CDMA network elements such as BTSs and radio network controllers (RNCs); also of the ability to make voice calls over the air interface using a Qualcomm single-band 3G terminal.

The second focused on Lucent's service platform. This complies with the Open Services Architecture (OSA) standard, allowing open application programming interfaces (APIs) for developers to use for key platforms such as billing and location.

Lucent's major announcement was a deal with the PC Card manufacturer Option International. The deal is for the exclusive supply of a GSM/GPRS/3G W-CDMA wireless data card for use in a trial with Telefónica of Spain. Lucent will not support voice on this trial; instead, it believes the real value of 3G will come from data services, particularly corporate productivity tools.

Gartner Dataquest Perspective

Lucent has had limited impact on the GSM market, and so has always found this event challenging. However, its competency in CDMA seems to have given it renewed vigor to secure business. Although its exhibition stand was quiet, its private demonstration area had a steady stream of visitors to see its end-to-end 3G W-CDMA demonstration.

Whether Lucent will be able to secure any significant new 3G contracts remains to be seen, but the trial with Telefónica is an opportunity to show whether it can deliver.

Motorola: Focused on Services

Rather than announce any major core-infrastructure developments, Motorola focused on services by announcing the Mobile Services Café (Communication, Attitude, Fun and Entertainment). This is a mobile-service platform including servers for messaging, presence detection, gaming, Java 2 Micro Edition (J2ME) download, device capability management, synchronization, seamless mobility and personalization. It provides a set of applications for communication (MMS and mobile IM), entertainment, productivity and mobile commerce.

The Mobile Services Café builds on the considerable success Motorola has had working with operators across Europe, with services such as the "Who Wants to Be a Millionaire?" game from Codeonline. This game's success won it the Best Consumer Wireless Application or Service Award at the GSM Association Awards 2002. Other content partners, including Warner Brothers and UEFA, were also announced.

Motorola stressed its support for the recently launched Wireless Village initiative for mobile IM standardization and interoperability.

Building upon its strong position in GPRS networks, Motorola announced GPRS modeling and optimization tools to enhance the performance of operators' GPRS networks as well as their services and applications.

Motorola's semiconductor division announced the launch of the i300 (GSM / GPRS / W-CDMA) chipset. This product provides an integrated solution, with multimode baseband processor, radio frequency front-end components, applications processor and MPEG-4 coprocessors as options.

Motorola also showed its new range of mobile terminals (see Gartner's "Motorola Unveils Its 'Spring Collection' Phones: Fashion Meets Technology" [TELC-WW-DA-0072]). The A820 GSM / W-CDMA terminal attracted considerable attention as the first product of its kind.

Gartner Dataquest Perspective

Although Motorola did not announce any new W-CDMA infrastructure contracts, its focus on services and GPRS optimization plays to its strengths and seems to be starting to pay dividends. A good example of this is the recently announced trial with mmO$_2$, which is evaluating the Mobile Services Café for J2ME services.

The Mobile Services Café shows that Motorola is broadening its offerings to include mobile data services. However, it is still hard to differentiate this initiative from similar solutions provided by competitors such as Alcatel, Nokia, Openwave Systems and Siemens.

Motorola has committed itself to interoperability in mobile services. Alongside the other leading vendors, it is participating in mobile interoperability and standardization bodies for games (the Mobile Entertainment Forum), location-based services (the Location Interoperability Forum), mobile IM (Wireless Village), the open mobile architecture (OMA) initiative and others, such as those relating to MMS.

Gartner believes Motorola has an opportunity to use its success in GPRS and mobile applications to secure future 3G infrastructure contracts. The potential to be a second supplier in the RAN seems increasingly likely, as demonstrated by mmO$_2$'s decision to reevaluate its previously exclusive supply contract with Nortel Networks. In addition, we believe Motorola has decided to focus on fewer, more-targeted operators in a concerted effort to secure more contracts.

The strategy of providing a platform and chipset to other equipment manufacturers is being pursued by other semiconductor vendors to increase silicon sales, but often through third parties. Motorola's offering is comprehensive and more credible, because the baseband chipset was prototyped and developed to support the A820 GSM / W-CDMA terminal.

Nokia: Focused on Applications and Open Standards for Infrastructure

Nokia announced the Open IP Base Station Architecture initiative. This specifies the internal interfaces for key network elements, such as the linear transceiver module (LTX). By specifying open interfaces for network elements, Nokia hopes to sell infrastructure technology modules to its competitors.

Nokia will have a Technology Modules unit to develop module products and sell them on "equal terms to all mobile network equipment vendors including Nokia itself"; the first products will be available in mid-2002.

Nokia believes that open internal architectures for standard commercial components will increase efficiency throughout the industry and so lead to more-affordable mobile services.

Nokia announced its FlexiFamily range of FlexiServer and FlexiGateway products for all IP packet-based systems, including GPRS, EDGE and W-CDMA. Based on the Linux operating system, the FlexiServer provides core-network functionality and the FlexiGateway operates in the user domain of the packet network. This enables all IP networks to support both the A-interface for GSM and the Iu-interface for W-CDMA.

Nokia presented a range of commercial 3G W-CDMA infrastructure products, including macro-indoor and outdoor (12-transceiver) BTSs and a micro- (two-transceiver) BTS. Nokia also demonstrated a commercial, end-to-end 3G network that included RNCs and BTSs.

Nokia restated its commitment to the three technologies that it believes are key to application delivery: MMS, mobile Java and eXtensible HyperText Markup Language (XHTML; Wireless Application Protocol [WAP] 2.0). These standards are key components of the OMA initiative, of which Nokia is a founder member.

Nokia announced two new mobile-terminal products: the 8910 and the D211 wireless data card:

- The 8910 is a titanium-cased terminal with integrated slide mechanism. It is positioned at the very high end of Nokia's portfolio. Nokia indicated that the 8910 will be targeted at the Asian market and be priced at about 900 euros.
- The D211 is a Type II PC Card. It derives from an earlier product that supported high-speed circuit-switched data (HSCSD). Significantly, the D211 supports not only HSCSD and GPRS, but also wireless LAN (IEEE 802.11b WiFi-compliant) technology.

Gartner Dataquest Perspective

Although Nokia claims to have "already approached several mobile-network equipment vendors regarding potential module cooperation," it remains unclear why any direct competitor would want such a relationship. In defense of this strategy, Nokia cites as examples other markets, such as those for PCs, printers and servers, where core-component parts are sourced from third parties — for example, Hewlett-Packard (HP) buying key components for its printers from Canon.

Although some competitors are interested in more-open standards for infrastructure architecture, the prospect of working with a direct competitor may not be commercially viable. Furthermore, all the leading manufacturers of mobile infrastructure have already developed their own solutions and are close to, or are already, shipping commercial products.

Nokia indicated in its announcement that it is has already spoken to several vendors about the supply of infrastructure modules, but is as yet unable to divulge any information on potential contracts. Gartner doubts whether this strategy is commercially viable. However, given Nokia's size and momentum in this sector, it would be foolish to discount the strategy immediately.

The FlexiFamily range provides Nokia with its first Linux-based products since the announcement of the Carrier Grade Linux Working Group. With all-IP networks being a strong theme for other equipment suppliers, including those such as Cisco Systems that were traditionally outside the telecommunications market, competition in this area of network supply is set to increase. Also, the timing for deployment of all-IP networks remains contentious, especially for incumbent operators keen to maximize their investment in existing networks and technologies.

In an unusual move, Nokia chose to announce a new mobile terminal at this event, rather than wait for CeBIT in March 2002. It is hard to understand why Nokia felt the need to launch the 8910 — a premium product that lacks premium features such as a color screen and support for triband. Gartner was also surprised that Nokia chose to use a premium material such as titanium in its range, rather than exploit such an exclusive material in its new Vertu venture. Until Nokia launches its full product range at CeBIT, it is impossible to judge the 8910's true potential. However, with Nokia likely to announce a range of highly desirable products, the 8910's "window of opportunity" might be short.

The D211 wireless data card presents a more compelling proposition, and is clearly designed for corporate users; it offers wireless connectivity in both office and mobile environments. There is, however, a danger that those skeptical about the future of 3G could use this wireless LAN product to further undermine the validity of the 3G business case. This product is also a threat to companies such as Option International, Sierra Wireless and Wavecom that have similar products.

Nortel Networks: A Conservative Presence

Following the launch of GPRS earlier in the week by Bouygues Telecom in France, Nortel demonstrated live "Enhanced GPRS services." A range of applications running over GPRS, displayed using personal digital assistants (PDAs) with GPRS sleeves, supported these demonstrations.

Building upon one of the event's common themes — namely, open standards and interoperability — Nortel demonstrated its OSA platform. Nortel had location-based applications running over this platform, giving access to core-network-based information and service applications via open APIs. Nortel promoted its developer program to facilitate the introduction of end-user services using the OSA platform.

Nortel announced some new alliances: MapInfo and Webraska for location-based services; Mitsubishi, Motorola and Samsung for mobile terminals. These alliances are intended to help reduce an operator's time to market and generate more revenue.

Nortel announced two infrastructure contracts: a $100 million GSM "win" in Canada with Microcell Telecommunications, which includes EDGE-capable equipment; and a Letter of Intent with Cegetel for the provision of 3G network equipment and services in France.

Nortel demonstrated its 3G node-B BTS, using Qualcomm and Sanyo mobile terminals for voice and Samsung mobile terminals for packet data. In addition, Nortel presented its capabilities in planning business cases for 3G operators.

Gartner Dataquest Perspective

Nortel's stand seemed very quiet. Like its North American competitor Lucent, it suffered from a lack of the "wow factor" associated with mobile terminals. It must also have been affected by the decision by one of its first W-CDMA customers (mmO_2) to review its network suppliers. Despite this, Nortel still appeared to be building upon its early 3G wins by announcing the Letter of Intent with Cegetel for 3G equipment.

Qualcomm: Looking Beyond the Traditional CDMA Market

Qualcomm remained keen to promote its CDMA solutions — in particular CDMA 1X RTT, which it regards as a 3G technology. With a range of colorful terminals powered by the Qualcomm chipset, the demonstrations were impressive. In addition, Qualcomm seemed, for the first time, willing to embrace GSM and 3G W-CDMA standards; it demonstrated its single-band 3G W-CDMA mobile terminal (which Lucent also used).

Qualcomm showed a CDMA 1X terminal with support for a GSM Subscriber Identity Module (SIM) card. This product will allow GSM subscribers to "roam" onto a CDMA network but still have access to the GSM mobile application part. This means that all the services that a GSM user would expect, including SMS, are available when using a CDMA network.

Qualcomm promoted the MSM66xx family of chipsets. The MSM6200 covers 3G W-CDMA / GSM dual mode; the MSM6600 has true multimode capability, covering IS-95A / B, cdma2000 1X, 3G W-CDMA and GSM.

Qualcomm also promoted its Binary Runtime Environment for Wireless (BREW). This is a very thin, standardized platform that resides in mobile terminals — from inexpensive, mass-market phones through to high-end, multipurpose devices. It is being promoted as a means by which terminal manufacturers can improve both the human-machine interface and the application development environment.

Gartner Dataquest Perspective

Qualcomm has traditionally been very focused on its own "flavors" of mobile technology, to the exclusion of GSM and 3G W-CDMA. Consequently, it is refreshing to see it now proactively supporting these standards. However, it is no surprise, because these standards account for 80 percent of the world-wide market.

Qualcomm's most interesting demonstration was of the ability for GSM users to "roam" onto CDMA networks. This is particularly significant because the global operator Vodafone owns a significant stake in Verizon, a U.S. CDMA network. Given that Vodafone's mobile coverage elsewhere is almost exclusively GSM, its seems likely that Verizon will use this technology and that Vodafone will offer terminals that support it. This has the potential to resolve the long-standing issue of Verizon's choice of CDMA 1X technology for its migration path to 3G.

Qualcomm has been a leading supplier of CDMA chipsets since the inception of CDMA and holds many patents on the technology. It has now recognized the importance of appealing to the GSM world, and is developing multimode baseband chipsets to meet the needs of 3G W-CDMA and legacy GSM / GPRS terminals in Europe.

This development is essential for Qualcomm to appeal to terminal manufacturers that intend to sell to areas with predominantly GSM infrastructure. Working silicon that supports GSM and 3G W-CDMA is expected later in 2002, and may prove an attractive option for terminal manufacturers if Qualcomm can demonstrate good software support, comparable cost to, and lower power consumption than, its rivals.

Siemens: 3G W-CDMA Demonstration With Monaco Telecom

Siemens demonstrated its 3G W-CDMA infrastructure solution in conjunction with Monaco Telecom and using NEC mobile terminals. 3G capabilities were demonstrated on both land and water, with Siemens mooring a large ferryboat in the Cannes bay for exclusive presentations, and showing 3G network access both on its exhibition stand and in its container truck. The BTSs at these three venues were linked by leased line to the RNC and 3G switch in Monaco.

Siemens demonstrated its new EDGE products. It also showed time division-synchronous code division multiple access (TD-SCDMA) 3G technology, supported by three new models of BTS.

Gartner Dataquest Perspective

Siemens' demonstration of 3G W-CDMA using commercial equipment deployed with Monaco Telecom was impressive. Siemens is clearly capable of delivering 3G solutions to its customers.

The company's demonstration of, and commitment to, EDGE technology may well reflect its recent large contract with Cingular Wireless in the United States. Cingular is deploying this technology during 2002.

Siemens' support of TD-SCDMA indicates its aspirations to succeed in China, where this standard is likely to be a key 3G technology.

Chapter 3
Other Companies and Their Announcements

Other companies also made noteworthy announcements at the 3GSM World Congress 2002.

Microsoft: Committed to the Mobile Market

Microsoft continued to show its commitment to taking a significant share of the mobile market. The announcement that got most coverage was Microsoft's collaboration with Intel on reference designs for Microsoft Windows-powered Pocket PC 2002. In relation to this move, which was widely regarded as a natural extension of the close relationship between Intel and Microsoft in the PC market, Microsoft said that it hopes to reduce the amount of technological expertise required to enable PDAs for mobile communication.

Microsoft announced the availability of a Pocket PC 2002 Software Development Kit (SDK). In addition, it made the Smartphone 2002 beta SDK available to developers. The SDKs have a full emulation environment and allow code to be written and tested on a PC without the need for a mobile device.

In a separate announcement, Microsoft revealed that it has worked with Texas Instruments (TI) to deliver a reference design for a GPRS smart phone based on TI's Open Multimedia Application Platform (OMAP) processor and Microsoft's Windows-powered Smartphone 2002 software.

Microsoft showed a range of devices with mobile capability, such as the newly announced HP Jornada 928 Wireless Digital Assistant, the mmO$_2$ XDA, the Sendo Z100 and the Microsoft / TI Smartphone 2002 hardware reference design.

Gartner Dataquest Perspective

Microsoft is extremely keen to capture a part of the mobile market. Accordingly, it had a strong presence at the show.

Although the Intel announcement got the most attention from the media and visitors, Gartner remains skeptical about how easily or quickly this partnership will deliver products to market.

For Gartner, the announcement with TI was more interesting. TI has a very close relationship with Nokia, for whom this announcement will therefore be a blow. No sooner had TI and Microsoft published their press release than Nokia followed with one restating the commitment of Nokia and TI to work together, as well as TI's commitment to provide a reference design based on the Nokia Series 60 software platform.

Microsoft is keen to encourage its substantial development community to develop and port applications to its newly released "mobile" platforms; this will worry Symbian, which might find it harder to get the software development community to embrace its operating system.

Although it is easy to understand how Microsoft intends to leverage its position in the PDA market and add mobile capability to devices from manufacturers such as Compaq, HP and Toshiba, it is less clear how well its aspirations in the smart phone market are being fulfilled.

At the 2001 3GSM event, Microsoft was excited and optimistic about its smart phone platform; it announced the Sendo Z100 and two other partners (Samsung and Mitsubishi). One year later, however, the Z100 has still not been

launched, and Microsoft and Sendo are giving little indication of when it will be (Gartner estimates the end of April 2002), but said that the delay was partly because of difficulties in implementing GPRS, the challenges of a powering a color screen and the complexities of integrating PDA and mobile phone functionality. The other two partners have yet to deliver products and, without a major vendor partner, Microsoft faces considerable challenges in this market.

Microsoft has, however, made significant progress on the user interface and the integration of PDA and mobile phone functionality; the mmO_2 XDA looks to be a compelling product. It would be foolish to underestimate Microsoft's potential in this segment — it will continue to fund its entry into this area until it is successful.

IXI Mobile: Innovative 'Personal Mobile Gateway'

IXI Mobile presented an innovative GSM / GPRS product called the Personal Mobile Gateway (PMG). This combines cellular (GSM / GPRS) and Bluetooth connectivity, and includes a "micro-server" that supports a variety of small peripheral devices, such as headset, voice terminal, messaging terminal and voice recorder. The PMG separates the complex part of a mobile terminal from the user interface, so users can have a variety of lower-cost peripherals working through the same gateway.

IXI announced investment from TI. It also announced partnerships with companies that will provide peripheral devices for the PMG.

Gartner Dataquest Perspective

IXI has an interesting approach to mobile devices, one that divorces the communications engine from the user interface. It is unclear whether this approach will be popular with end users. Focus groups have found that "two-box" solutions can be frustrating for end users, because they have to remember to carry both parts of the product with them.

The PMG does, however, present some interesting possibilities for mobile network operators; they could emulate the set-top box market by leasing the PMG to customers and letting them buy new peripherals when needed. Moreover, the cost of replacing these peripherals is likely to be much less than the cost of buying a new mobile terminal.

Emblaze Systems: A Range of Mobile Video Products

Emblaze (formally GEO Interactive) showed an impressive array of mobile terminals featuring the Emblaze MPEG-4 Media Player that supports the leading operating systems for mobile devices. Examples of these operating systems are Microsoft's Pocket PC 2002 (Compaq iPAQ, mmO_2 XDA), Microsoft's Smartphone 2002 (Sendo Z100) and Symbian (Nokia 9210). Emblaze also claimed to support devices that run Qualcomm's BREW, Sun's J2ME and Linux.

Emblaze demonstrated its Mobile Media Platform. This allows mobile network operators or information providers such as portals or content owners to offer a wide range of visual-communication services (for example, MMS), location-based services and entertainment.

Gartner Dataquest Perspective

Although it operates in a competitive area, Emblaze has wide support for a range of mobile platforms and operating systems that can be integrated with a product's hardware or software.

Gartner believes that delivery of video clips of up to 100Kb is likely to become a reality on mobile devices during 2003 as the quality of service of GPRS improves and 3G networks are launched. This presents a significant opportunity for companies like Emblaze, particularly as content owners are keen to exploit mobile channels to deliver content. Early examples of such content include self-created MMS messages, sports clips and promotional material.

SoloMio: 'Smart Call Options'

An interesting new company appeared at the show in conjunction with Cap Gemini Ernst & Young: SoloMio. This startup company has an "enhanced voice service" called Smart Call Options; this utilizes data channels overlaid on the voice channel to give the recipient of a mobile call more options for handling it.

At present, if someone is in a meeting or finds it inconvenient to take a call, the only options are to answer the call or reject it and let it go to voice mail. SoloMio's Smart Call Options allows the recipient to receive the caller's phone number and select replies such as "Is it urgent?" or "May I text you later?" from a list displayed on the phone. An interactive voice response (IVR) system then reads the chosen reply to the caller. This exchange happens while the phone is ringing, so the caller is not delayed. This service is also attractive in a roaming environment, because the user can respond to a call without incurring high roaming charges.

In user tests, SoloMio found that cultural factors played a large part in determining the service's popularity. Italians and Spaniards liked to accept every personal call, even if it were inconvenient. By contrast, Germans and Swiss were very interested in the business uses; for example, if you responded that you would ring back in an hour, the operator could send you a text message as a reminder.

Smart Call Options is offered as a prepackaged product contingent upon certain intelligent network (IN) and IVR systems being in place, and as a bespoke solution that requires integration with the operator's IN and IVR infrastructure.

Smart Call Options has had a network trial with Ericsson, and other trials are underway.

Gartner Dataquest Perspective

Mobile operators are seeking value-added services that can use existing infrastructure, and provide differentiation and additional revenue. SoloMio's service appears to deliver on all three counts, and can be implemented over operators' current infrastructure relatively quickly.

Most enhanced voice services have focused on the idea of voice browsing, voice dialing or voice-activated virtual assistants. But, although these services had some novelty appeal, they have had only limited uptake.

Accordingly, SoloMio's service that uses data channels to enhance basic voice communication should be instantly appealing to users and operators. As the product is only in trial at present, it remains to be seen how it will operate in a commercial launch; but if it provides its promised functions it should be a compelling service, for which operators could charge on a subscription, bundled or per-use basis.

Spatial Wireless: Voice and Data as One

Spatial Wireless has developed innovative switching platforms called Spatial Portico and Spatial Atrium. Each can deliver both packet data and voice services. The proposed benefit of delivery via these single switching platforms is that operators will have less need to invest in separate circuit-switched and IP-based network nodes.

Spatial claims that it is one of only a few vendors that offer both voice and data solutions with a reduced footprint, lower cost and higher capacity. A number of operators are trialing Spatial Portico.

Gartner Dataquest Perspective

With the deployment date for all-IP networks yet to be determined, Spatial's products enable operators to start investing in IP-based solutions. Its announced trial with the operator Sunday (in Hong Kong) and associated integration with Nortel (also in Hong Kong) will be an interesting test bed for Spatial.

Spatial must ensure that its products will work with the larger infrastructure suppliers' network equipment — for example, for call and session control.

The challenge for Spatial and other smaller companies trying to compete against the larger, established suppliers will be to gain long-term credibility with the operators.

Amdocs: Billing That Includes Prepaid Accounts

Amdocs, the large, Tier 1, operational support systems supplier, demonstrated its main products, including its latest prepaid platform. This prepaid product showed how subscribers could manage multiple "purses" split between prepaid and postpaid accounts using common mediation and rating platforms, with priority assigned to prepaid transactions. Amdocs claimed that its prepaid solution will be enhanced by its intended use of the TimesTen in-memory database.

Amdocs also highlighted its customer relationship management (CRM) capabilities. The CRM module ClarifyCRM builds on its Amdocs Enabler billing solutions and Amdocs Mobile customer management products.

In a time of change between circuit- and packet-switched services, Amdocs claims to have solutions for three different migration paths: complete billing-system replacement; parallel implementation of a data-billing platform; and upgrade to existing Amdocs platforms.

Amdocs announced another 3G billing contract with Mobilkom Austria, the GSM operator that also owns a 3G W-CDMA license. Amdocs is building on its relationship with this operator.

Gartner Dataquest Perspective

Amdocs has a strong, established position in the billing and customer care arena. Gartner believes that Amdocs' move into prepaid products and CRM will strengthen its position.

The inclusion of a prepaid element in Amdocs' service portfolio will enhance the company's position as operators seek solutions to the challenges of packet-data-based prepaid accounts. By working with third-party suppliers such as Narus, Comverse and HP for noncore elements, Amdocs can focus on its areas of expertise rather than have to expand into noncore areas.

Amdocs has a solid base of large GSM mobile operators as customers, and claimed to be converting a very high percentage of these to packet-data billing solutions. With more-complicated billing models and the management of content partnership increasingly important, Amdocs is well positioned to maintain its strong position.

Texas Instruments: Strong Mobile Partnerships

TI is the largest supplier of baseband silicon in current mobile terminals. It promoted OMAP, its platform that offers a radio and baseband processing solution as well as an applications coprocessor. OMAP will be incorporated in both 2.5G and 3G handsets.

Gartner Dataquest Perspective

The emphasis on OMAP solutions for mobile terminals continues TI's 2001 strategy. However, it has since worked with partners and customers (including Nokia and Microsoft) to highlight OMAP's integration into a range of terminal platforms.

These partnerships suggest that TI is determined to keep its leading position as a baseband supplier. It will be interesting to see the response of other baseband players.

TSI Telecommunication Services: Strong Drive Into Europe

TSI, having recently parted from its parent company GTE, attended the event as a separate company. The global roaming, GPRS Roaming Exchange (GRX), fraud prevention and IN services company was keen to impress upon the mobile industry that it is serious about entering the European market. It supported this claim by demonstrating products, including the recently announced FraudX GSM fraud-prevention system that builds unique subscriber profiles so as to detect potentially fraudulent usage.

TSI further supported its GRX business by announcing a peering agreement with Sonera — a leading advocate of GPRS roaming that also uses the GRX Peering Amsterdam (AMS-IX) as a common peering point.

Gartner Dataquest Perspective

Separated from GTE, TSI is free to target operator markets aggressively, without customers worrying about a clash of interests. This brings with it the benefits of being able to respond quickly to specific customers' needs and to define its own destiny, but also the responsibility of managing its own finances. At a time when operators are managing costs very closely, TSI will also focus strongly on this.

GPRS roaming has yet to take off in Europe; TSI is one of the first entrants in this market. By building on its customer base in the United States, Canada and Asia/Pacific, the peering agreement with Sonera provides a good starting point. Given that the GRX market is overcrowded with players, a strong range of peering agreements may benefit TSI if the market starts to consolidate.

Chapter 4
Key Technologies and Initiatives

Certain technologies had a high profile at the 3GSM World Congress 2002, in particular MMS and J2ME. Interoperability initiatives such as OMA and the GSM Association's M-Services were also prominent.

Multimedia Messaging Service: Universal Industry Support

The most popular application demonstrated by leading vendors and more than 30 smaller application developers was MMS.

The leading telecommunications companies focused on MMS are CMG, Comverse, Ericsson, Logica, Motorola, Nokia, Siemens and Sony Ericsson Mobile Communications. They announced the foundation of an Interoperability (IOP) Group for MMS. This group's main objective is to smooth the introduction of MMS by means of tests to ensure that MMS platforms, mobile terminals and applications are compatible.

A wide range of MMS applications were on show, including content libraries, content creation tools and live demonstrations. Nokia had a team of students in and around Cannes sending MMS messages from the Nokia 7650 smart phone; these were displayed on a large screen on Nokia's stand.

Gartner Dataquest Perspective

The leading vendors are searching for an application that will "kick start" the mobile data market and drive data revenue and GPRS traffic. Given the success of SMS, they believe MMS may be this application.

Gartner, however, is not convinced that 2002 will bring significant MMS traffic. We think this market will take off in 2003 (see Gartner's "Mobile Messaging Evolution: Messaging Gets Richer (Executive Summary)" [TELC-WW-EX-0181]).

All the major vendors (with the notable exception of SchlumbergerSema) have recognized that without truly interoperable services, MMS would suffer a major setback — users would continue to use SMS instead, delaying widespread uptake of MMS by up to two years. Consequently, the announcement of the IOP Group for MMS is good news for both the mobile industry and users.

Mobile Java: Great Expectations, but Many Challenges

The use of Java on mobile devices was a major theme at the event. The major mobile terminal and services vendors highlighted their Java development and support work. They also discussed the platforms needed to manage the download and storage of Java applications.

Sun Microsystems showed its Java Card (for SIM services) and J2ME development toolkits (for mobile terminal services). Sun also highlighted the work it has done in Japan with mobile Java applications, and the work it is doing for Sprint to support the upcoming launch of mobile Java services in the United States.

All of the major terminal manufacturers are launching products that support J2ME. Qualcomm is continuing to back BREW alongside J2ME, although there was no evidence of other manufacturers embracing BREW.

Several companies that are developing games and other applications for Java-enabled devices showed their capabilities, although many are still in the very early stages of development.

NTT DoCoMo demonstrated Java running on the new Freedom Of Mobile multimedia Access (FOMA) terminals. It showed the potential that Java will have once similar terminals and support infrastructure are available in Europe.

Gartner Dataquest Perspective

The ability to run Java on mobile devices is an exciting development, but still faces many challenges. Although Sun is licensing the use of standard development environments and libraries, the interoperability of different Java code on different vendors' devices is unproven. But the possibilities for Java in both the consumer and the enterprise space are too compelling for the mobile industry not to do all it can to make Java-based applications successful and to ensure interoperability.

However, technical issues are only one part of the puzzle that must be solved to make mobile Java successful. Operators and distributors must implement many support systems to manage the download, storage, digital rights management and billing of these applications. It remains to be seen whether operators' business preparations are progressing as fast as the technical development of mobile Java.

Location-Based Services: Momentum Grows

Many location-based services companies exhibited at the show. The list included mobile-positioning infrastructure vendors such as Cambridge Position Systems (CPS) and CellPoint; and location application / services vendors such as AutoDesk, CT Motion, MapInfo and SignalSoft.

CPS announced deals for its location-based service solution with nine network operators around the world, the latest contract being with SingTel of Singapore. It also has contracts to support enhanced observed time difference (E-OTD) location technology in mobile terminals. CPS has opened an E-OTD software integration facility to allow its customers to integrate and test this technology while new models of mobile terminal are in development.

Nokia announced a new location server based on E-OTD algorithms, for 2.5G and 3G networks.

SignalSoft announced the release of its mobile emergency services E-112 software for the European GSM market. It complies with the European Union directive in this area and builds on the E-911 directive mandated in the United States and implemented by GSM operators such as VoiceStream. SignalSoft also has contracts to provide this product for three other major operators in the United States.

SignalSoft also demonstrated its FriendFinder service. This enables mobile communities to find each other and communicate if appropriate permissions are granted.

CellPoint and Unwiredfactory exhibited location-based mobile-entertainment services. These included Zonemaster, which Orange launched on 1 November 2001 in Denmark.

Gartner Dataquest Perspective

Location-based services became a priority for network operators in the United States because of the E-911 directive that required them to provide location information. As a result, various companies have launched value-added services exploiting location information.

Infrastructure vendors that have had to implement location-based services in the United States are using both this experience and their infrastructure's support for location-based services to deliver services to Europe. The E-112 directive should increase the momentum in this area.

CPS is emerging as a major player in the market for mobile location services. It has contracts with telecommunications operators in the United States and Asia / Pacific. It has also signed agreements with various players for E-OTD-based mobile-location services, including telecommunications operators, mobile terminal manufacturers and application developers.

Gartner predicts that more terminal manufacturers (such as Nokia) will announce support for E-OTD at the CeBIT show in March 2002. This is good news for CPS, because its location solution is based on this technology.

Interoperability Initiatives: Essential for Industry Success

In addition to the IOP Group for MMS, the leading mobile-industry vendors have expressed support for the industry's emerging industry OMA initiative. Since Nokia launched this initiative in December 2001, many telecommunications and IT vendors have joined it. New members announced at the event were Openwave, AU-System and Alcatel.

OMA aims to rectify the fragmentation of the mobile-service industry by enabling users to access interoperable services using different mobile devices and networks. OMA will define an open mobile-service architecture for interoperability across different products, such as client-side applications, network middleware and application servers. It includes a range of open-standard APIs.

The OMA participants have committed themselves to develop products and services based on OMA enablers such as WAP 2.0, XHTML, MMS and Java technology. They will do so by working closely with standards bodies such as the 3rd Generation Partnership Project (3GPP), the Wireless Application Protocol Forum and the Java Community Process (JCP).

In a related announcement, the GSM Association gave details of the next phase of its M-Services initiative to support the worldwide growth of GPRS services.

M-Services Phase II aims to build on its previous announcement, and includes the following key features:

- Greater ease of use for customers, including more emphasis on a similar "look and feel" across different types of mobile terminal.
- A clear evolution of messaging solutions and a road map to MMS.
- A requirement to use a common MMS presentation language.
- Adoption of a WAP 2.0-based browser as standard.
- Development of requirements to allow for a standardized way of downloading content and applications to a customer's mobile terminal.
- Definition of SIM application toolkit requirements.

- Use of open standards from standards bodies such as the 3GPP, the Internet Engineering Task Force (IETF) and the Wireless Application Protocol Forum.
- Identification of key technology areas, such as digital rights management and device-testing requirements.

Gartner Dataquest Perspective

The pressure over the past year for the mobile industry to deliver additional revenue from mobile data services has highlighted the need for interoperability and "co-opetition."

The OMA and M-Services initiatives are excellent first steps, but only time will tell whether all the vendors will continue to work toward open, interoperable solutions. Gartner has concerns that, if vendors come to regard such initiatives as detrimental to their competitive positions, they may choose to support only parts of them.

The real commitment of members must be proven by their actions. NTT DoCoMo is a good example of a company that may have doubts, despite considerable efforts to make OMA compatible with its i-mode service through the adoption of XHTML. OMA does not accord with NTT DoCoMo's traditional approach to the mobile service market; this company tends to impose its standards on others (manufacturers and application/content providers) rather than take a common approach.

Gartner believes Nokia has made considerable efforts to ensure that the OMA initiative is perceived as being more inclusive than before, but still has concerns about the company's commitment to M-Services. An example of Nokia's intransigence in this area is its continued support for its proprietary picture messaging standard (Smart Messaging), despite repeated calls from mobile network operators and other industry players for it to adopt the industry-standard Enhanced Messaging Service (EMS).

Gartner predicts that Nokia and other manufacturers that continue to flout interoperability standards will come under increasing pressure to comply. Further announcements in this area may be made at CeBIT in March 2002.

Chapter 5
Conclusions

Gartner makes the following conclusions:

- The key theme at the 3GSM World Congress 2002 was interoperability.
  - The industry has realized that without clear standards, services and mobile terminals that allow cross-vendor, cross-network transparency, the market for mobile data could come to an abrupt halt. The GSM Association's M-Services initiative and the OMA initiative are steps in the right direction, but it is too early to tell how committed manufacturers are to them.
- The key applications at the event focused on mobile data services.
  - Most mobile network operators have set themselves ambitious targets for mobile data revenue: up to 25 percent of average revenue per user. They are looking to the infrastructure vendors for systems to achieve this. Key technologies include MMS, GPRS, mobile Java (J2ME) and location-based services.
- 3G rollout may be harder than anticipated. This might present opportunities for players such as Alcatel, Lucent and Motorola. They may be able to build on their expertise in CDMA and GPRS and adopt aggressive pricing strategies to win 3G contracts.
- The price of 3G infrastructure will continue to fall, driven in part by some of the Tier 2 manufacturers.
- EDGE will be influential in the North American market and be marketed to end users before W-CDMA. In Europe and Asia/Pacific, new radio network equipment will be EDGE-ready, but will not reach end users before W-CDMA does.
- Flexible billing for data applications, services and content will be needed to drive uptake of services such as MMS and location-based applications that use GPRS networks. Operators need to have billing systems in place to share revenue with developers and content providers.
- Gartner predicts that all the major mobile terminal manufacturers will launch products with color screens in 2002. Initially, color will be limited to the high-end market, but will be introduced lower down the product ranges in 2002. By the end of 2003, color will be standard on most terminals. It will be a key driver of terminal replacements.
- The first 3G W-CDMA mobile terminals were shown at the event, with Motorola and Qualcomm positioning themselves as leaders in this area. It remains to be seen what challenges still need to be overcome, such as battery life and memory requirements. In addition, semiconductor vendors are being challenged to produce fully integrated GSM and 3G W-CDMA products rather than merely "glue" the two technologies together. Gartner expects further product announcements in this area at CeBIT in March 2002.
- It was clear from the 3GSM World Congress 2002 that the mobile industry is focused on short-term revenue generation. The challenge for the key players is to strike a balance between this approach and long-term vision.

Appendix A
Glossary of Terms

Table A-1 defines the acronyms used in this document.

Table A-1
Glossary of Terms

Acronym	Definition
3G	third generation
3GPP	3rd Generation Partnership Project
API	application programming interface
BREW	Binary Runtime Environment for Wireless
BTS	base transceiver station
CDMA	code division multiple access
CEO	chief executive officer
CPS	Cambridge Position Systems
CRM	customer relationship management
E-OTD	enhanced observed time difference
EDGE	Enhanced Data Rates for Global Evolution
EMS	Enhanced Messaging Service
FOMA	Freedom Of Mobile multimedia Access
GPRS	general packet radio service
GRX	GPRS Roaming Exchange
GSM	Global System for Mobile Communications
HP	Hewlett-Packard
HSCSD	high-speed circuit-switched data
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IM	instant messaging
IN	intelligent network
IP	Internet Protocol
IVR	interactive voice response
J2ME	Java 2 Micro Edition
JCP	Java Community Process
LAN	local-area network
LTX	linear transceiver module
MMS	Multimedia Messaging Service
OMA	open mobile architecture
OMAP	Open Multimedia Application Platform
OSA	Open Services Architecture
OSP	Open Services Platform
PDA	personal digital assistant
PMG	Personal Mobile Gateway
RAN	radio access network
RNC	radio network controller
SDK	Software Development Kit
SIM	Subscriber Identity Module
SMS	Short Message Service
TD-SCDMA	time division-synchronous code division multiple access
TI	Texas Instruments
WAP	Wireless Application Protocol
W-CDMA	wideband code division multiple access
XHTML	eXtensible HyperText Markup Language

Source: Gartner Dataquest (March 2002)

