

GSM, 3G and Regulation in Latin America

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Abstract

Global System for Mobile communications (GSM) is the most popular mobile service in the world, with 612 million subscribers at the end of October 2001. Beginning in Europe, GSM was subsequently embraced by Australia, most Asian countries, China, Africa, the Middle East, plus North and South America. There are over 2.7 million GSM users in South America, with the numbers estimated to rise rapidly over the next 12 months, reaching 8.4 million by December 2002. Today, there are 13 South American countries on air with GSM networks.

The GSM service has been phenomenally successful throughout the world. In Europe, penetration averages over 70 per cent of the total population, and over 80 per cent in some countries. It is a similar story in Asia; today the world's largest GSM network is in China. The fundamental reasons for GSM's success are that it is based on:

- o open standards;
- o multiple suppliers of infrastructure, handsets, and solutions;
- o global economies of scale;
- o competing networks in most markets; typically 3, 4 or 5 operators in most countries, which has accelerated coverage and service innovation;
- o automatic international roaming service (a user from, say, Singapore or Germany is able to make and receive calls using his GSM phone in over 170 countries of the world, securely, and with a single bill from his home network);
- o excellent voice quality;
- o prepaid services, bringing GSM to new market segments including the credit-challenged, the youth market, and anyone wishing to control their expenditure;
- o messaging, initially with Short Message Service (SMS), extending to Enhanced Messaging Service, and evolving to Multimedia Messaging Service;
- o clear migration to future 3G (third-generation) multimedia services.

The worldwide monthly growth of GSM versus other technologies can be seen in the Figure (facing page). The benefits of GSM are now available in several countries in Latin America and are likely to rapidly increase. There are two reasons for this: o Regulators are encouraging more competition and, with it, freedom for investors/operators to choose the technology for their business. GSM is the technology of choice for most operators worldwide. o More radio spectrum is being allocated for mobile services, which in turn supports new market entrants, and provides more capacity to support a mass market.

The arrival of GSM services

The arrival of GSM services provides tangible ancillary benefits. Since Anatel's decision to allow the introduction of GSM in Brazil, and with GSM services due to be launched in the major population areas in Spring 2002, we have seen the establishment in Brazil of GSM equipment manufacturing facilities by several of the world's leading vendors. The Americas mobile services market for digital services is

fragmented.

There also continues to be a widespread analogue customer base. We don't have this in Europe today, where most analogue services have been phased out and replaced by the single digital service-GSM throughout, with multiple competing operators offering 99 per cent population coverage in most countries. In the Americas, there are also a number of digital options and legacy systems. ANSI IS-136, otherwise known as Digital-Advanced Mobile Phone System (D-AMPS) or Time Division Multiple Access (TDMA), has been a very successful digital mobile standard- serving nearly 80 million subscribers in the region and over 81.3 million TDMA subscribers worldwide.

Choices

Operators of AMPS and TDMA networks have a choice of 3G evolution strategies that ultimately result in the deployment of different 3G technologies. While some may consider CDMA 2000, by far the majority of operators worldwide are choosing to migrate to 3G through the GSM platform, which is evolving to General Packet Radio Service (GPRS), Enhanced Data rates for Global Evolution (EDGE) and Wideband CDMA (WCDMA, being standardised by 3GPP-the 3G Partnership Program).

The choice to be made by AMPS/TDMA operators is not one that can be based simply on technology issues, since the wider commercial issues need to be taken into consideration as well. The first step in this evolution strategy is migrating from AMPS and TDMA to GSM.

The 3G Evolution Path

The 3G evolution of GSM that is based on WCDMA radio technology is already set to become the most widely accepted world system standard for 3G mobile communications. An estimated 90 per cent of operators have already chosen this path-including current CDMA IS-95 operators in Japan and Korea, where GSM has had no presence in the past. It is estimated that by 2005, there will be 1.2 billion GSM/WCDMA subscribers, compared to 0.4 billion for all other standards combined.

It is clear, therefore, that GSM/WCDMA subscribers will have the most globally accepted standard for international roaming. Subscriber roaming is a significant revenue generation opportunity for operators, and this will be an important revenue stream for Latin American operators. In a study produced by Strategis Group for the Universal Wireless Communications Consortium, it was found that in just eight countries (US, Argentina, Brazil, Chile, Colombia, Mexico, Venezuela and Hong Kong) potential revenues from business and leisure international travel in 2000 could have reached US\$482 million. This figure is expected to grow to over US\$930 million in 2003. .

A global community of this extent results in massive economies of scale, from infrastructure through applications to handsets. Likewise, due to the size of the market, there are many major vendors and developers supplying GSM-based products. So, by choosing the GSM technology family, TDMA operators benefit from the widest choice of handsets and applications, and the largest, most active development community.

GSM's economies of scale also deliver lower infrastructure, terminal prices and operating costs. Additionally, most leading GSM vendors, including Ericsson, Lucent, Motorola, Nokia, and Siemens,

have announced GSM products that will also operate in the 850 MHz band, which is most widely used for current TDMA (and analogue AMPS) mobile services. GSM is already available in the 900 MHz, 1800, and 1900 MHz bands and thus covers all the world's cellular bands.

AMPS/TDMA operators who have access to spectrum in the 850 MHz and 1900 MHz bands will be able to deploy GSM in the 1900 band straight away, while continuing to serve TDMA subscribers in the 850 MHz band, where GSM can be migrated at the operator's own pace according to their business case and market demand. Dual-band, dual-mode GAIT (GSM ANSI 136 Interoperability Team) mobile phones with service translation will provide roaming between TDMA and GSM, allowing subscribers to access services regardless of which network they are on.

It is exactly these commercial considerations that have already convinced several leading TDMA operators to choose the GSM technology family for 3G communications. TDMA operators are also recognising the benefits of deploying EDGE, to provide a three- to fourfold capacity increase quickly and cheaply in existing frequency bands including 850 MHz. This will enable operators to reap the revenues from full 3G services, fast, with an evolved GSM/GPRS/EDGE network.

The GSM evolution path, therefore, allows TDMA operators to deliver commercial Mobile Internet services in a timely manner with a low investment, while maintaining necessary quality of service for end-users throughout the evolutionary process.

Subscribers Demand Services, not Technologies

GSM is evolving to enable higher data rates and increased capacity. But it is services, applications and value that drive the number of mobile subscribers and level of usage. Innovation, functionality, smart packaging and competitive pricing-not raw data rates-will win and retain subscribers, and increase average revenue per user (ARPU).

Subscribers already value GSM's service capabilities in areas such as global roaming and Subscriber Identity Module (SIM) card-based portability, and user-friendly services based on SMS text messaging.

The service potential for GSM is set to expand exponentially, with the arrival of high-speed, packet data-based 'always on' Mobile Internet connectivity offered by GPRS; mobile portals; secure mobile transactions; multimedia messaging and seamless synchronisation with Personal Information Management (PIM) tools. Since GSM has the largest global share of subscribers, the application developer community is aggressively and rapidly producing innovative Mobile Internet services in areas such as mobile commerce; infotainment-for example games, music and video, news; location-based services, and messaging and business services including the mobile intranet.

All leading GSM vendors have established cross-industry partnerships and third-party application development programmes that have already attracted many thousands of developers into the Mobile Internet arena. The inclusion of today's AMPS/TDMA operators and vendors in this global application and service development community adds considerable new resources and energy.

The first step is now with GPRS

GPRS represents a major technology shift to improve support for the Mobile Internet. It enables users to be 'always on' to send and receive messages and content from the Mobile Internet in an instant, with access speeds typically four or five times faster than previously possible. This will open up a plethora of new services in areas of infotainment, personal information management, m-commerce, gambling, multimedia messaging including digital postcards with audio or video clip attachments etc., and generate new revenues to take over from voice, which has become somewhat of a commodity product.

GSM deployments in Latin America will incorporate GPRS. Throughout the world, there are hundreds of GSM networks trialing or offering GPRS-based services today. GPRS roaming will be possible from 2002.

EDGE delivers a 3-4 times capacity boost for minimal cost in an operator's existing spectrum for delivery of '3G' services. Adding EDGE to a GSM/GPRS network is straightforward, requires little investment and carries little risk. EDGE uses the same frame structure, logic channel and 200 kHz carrier bandwidth as today's GSM networks, so that, in most cases, existing base-station equipment, carrier bandwidth and timeslot structure can be re-used.

WCDMA is a new standardised radio access technology, using new spectrum, to deliver yet more speed and capacity supporting the full variety of 3G services and applications to the mass market. EDGE deployed in parallel with WCDMA gives operators increased capacity and early 3G market access. It is estimated that operators could save up to 50 per cent of capital expenditure with a combined EDGE/WCDMA roll-out (Source: Northstream report).

Choice of Mobile Devices

In all consumer-driven markets, choice is an increasingly important factor in winning and retaining business. In mobile communications, that means offering a choice of mobile devices. In parallel, mobile subscribers are changing their phones more frequently as choice increases and the development cycle shortens. The availability of terminals is also crucial to the success of mobile communications technology.

Building the Market - Challenges for Regulators

Public mobile services are ultimately enabled by regulatory policies that directly impact the business in a number of areas, the most important of which are:

- o competition policy;
- o licensing policy, especially concerning interconnection, distribution, and the use of third-party infrastructures, with some flexibility towards new entrants;
- o availability and allocation of appropriate amounts of spectrum, and its cost;
- o availability and allocation of appropriate numbering space;
- o dependencies on specific technologies;
- o convergence of fixed and mobile systems.

In much of Latin America telecommunications services have been liberalised, and independent regulatory bodies established to ensure policy is delivered efficiently, fairly and quickly. This focus is

helping to bring the necessary regulatory environment to each market, in a coherent and speedy manner.

Conclusions

In the Mobile Internet future, revenue will be driven by the value of services, applications and content, not by pure technology advantage alone. The mass-market take-up of the Mobile Internet is dependent on end-users being able to access value-creating content quickly, easily and cheaply.

GSM is the only mobile standard with the evolution path, worldwide footprint, economies of scale, choice of user devices and large-scale independent application development community to make 3G-enabled Mobile Internet services a truly global success.

Regulation needs to focus on ensuring that competition is introduced and is sustainable, and that the conditions for investment are sufficiently attractive. Stability of policy is an important additional element. Policy makers should not be deterred, for the benefits are enormous.