

Telecommunications Market Evolution

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Introduction

In the 1980s there was a great period of expansion among satellite operators, with private companies entering a market dominated by government-owned entities, and governments reaching out to assert themselves by launching national programs. Despite their differences, these companies were all built on telecommunications service company roots and by telecommunications services operators - whether traditional national telecommunication companies or broadcasting entrepreneurs.

Ten years later many of these companies found themselves being acquired by manufacturing giants by way of vertical integration as means of "owning the customer." Lockheed Martin, Loral, Hughes, Boeing and Motorola all pushed this process, which, at its apex, was driven by the Internet and telecommunications boom.

But as the boom ended, shrinking user demand meant canceled contracts - first for satellite services, and then for new satellites and launchers. That resulted in a limited customer base with less money to spend and the need to cut costs at all levels. At the same time the financial community has become more demanding, having been badly burned by the missteps of new technologies without markets.

Reaching a new low, satellite operators that remained in the industry saw the period of downturns be converted to high growth in revenues between the years of 2004 and 2005. Satellite orders increased quite significantly pulling with them the revenues for the satellite industry as a whole.

This paper will address in further details the consequences of the technology rupture in the satellite industry. It will try to analyze how those consequences aided the satellite industry to overcome its problems and significantly increase its revenues. It was also intent of this report to create a literature review for future projects.

The Satellite Operators Industry

As part of the telecommunication industry, the satellite operation business also faced a boom which started in the early 80's enjoying significant growth in both revenues and transponder demand. The - then - emerging television broadcasting services lead the satellite services business into an era of extreme development. This guided the big companies (such as Boeing, Loral and Lockheed Martin) to seek for vertical integration tactics, also know as "owing the customer", reducing the amount of firms in the market. For instance, in the American Direct Broadcast Services scenario the amount of competitive companies reduced from six to two.

However, the technology burst in the late 90's had a serious impact in the telecommunications market reducing demand, decreasing the number of contracts and cutting down affordability. Due to all those factors, revenues drastically decreased causing a cut in expenditures within companies. In the meantime, investors had become more cautious and worried with regards to investments in new technologies in trying to avoid further financial losses

Beginning in 2000, financial/equity investors began entering the satellite industry through buy-outs and acquisitions. According to a survey performed by the Futron Corporation, 88% of the 450 respondents believed that the increase in financial investor involvement was beneficial to the industry. This suggests that the industry was ready and in need of this change. The entrance of financial investors demanded a reconfiguration of the industry structure which took place through three periods in the shareholding organization of the satellite operators (Villain 2005).

- Privatization of the Inter-governmental Organization (IGO), which refers to the introduction of private capital into the company;
- Leveraged buyout acquisition (LBO);
- Initial public stock offerings (IPOs), which refers to the acquisition of capital from the stock market.

Figure 1 shows graphically the reconfiguration process proposed by Rachel Villain on the lifetime of the main satellite operators. Table 1 complements that figure in the sense that it lists the major acquisitions/mergers in the satellite operators industry that took place in the last decade.

1997	<p>Loral acquires 100% of AT&T Skynet PanAmSat merges with Hughes Galaxy GE Americon acquires 28.7% of Nahuelsat</p>
1998	<p>Loral acquires 75% of SatMex Loral acquires 100% of Orion Network Systems Intelsat spun off New Skies Satellites which went public in 2000</p>
1999	<p>SES Astra acquires 34.1% of Aslasat</p>
2000	<p>SES Astra acquires 20% of Star One SES Astra acquires 50% of NSAB GE Americon acquires Columbia Com.</p>
2001	<p>SES Astra and GE Americon merger in USD 4.3 million Eutelsat acquires 27.69% of Hispasat Singtel acquires C&W Optus Both Intelsat and Eutelsat completed their privatization in July 2001 and proceeding future IPO</p>
2002	<p>Eutelsat acquires 100% of Stellat and initiates the process of IPO Gilat, Alcatel and SES Global compete formation of Satlynx</p>
2003	<p>Inmarsat confirms completion of the acquisition of the company by funds advised by Apax Partners and Permira on 17/12/2003</p>
2004	<p>New Skies Satellites is buyers of the company Intelsat withdrew IPO in May and is exploring alternatives with private equity PanAMSat to be acquired by KKR in a USD 4.3 billion transaction Intelsat acquires Loral Skynet's North American Satellites in a USD 961 million transaction in March 2004</p>
2005	<p>Inmarsat IPO on June 17, 2005 Intelsat acquires 100% of PanAmSat for USD 3.2billion on August 29, 2005 Eutelsat IPO on December 2, 2005 SES Global acquires 100% of New Skies Satellites for USD 760 million on December 14, 2005</p>
2006	<p>Eutelsat and SES Global announce joint-venture to provide distribution platform for mobile media operators in October, 2006</p>
2007	<p>Satellite Radio Operators, XM and Sirius, announce their merger in February, 2007</p>

Table 1: Consolidation Milestones since 1997 (based upon Hu 2006)

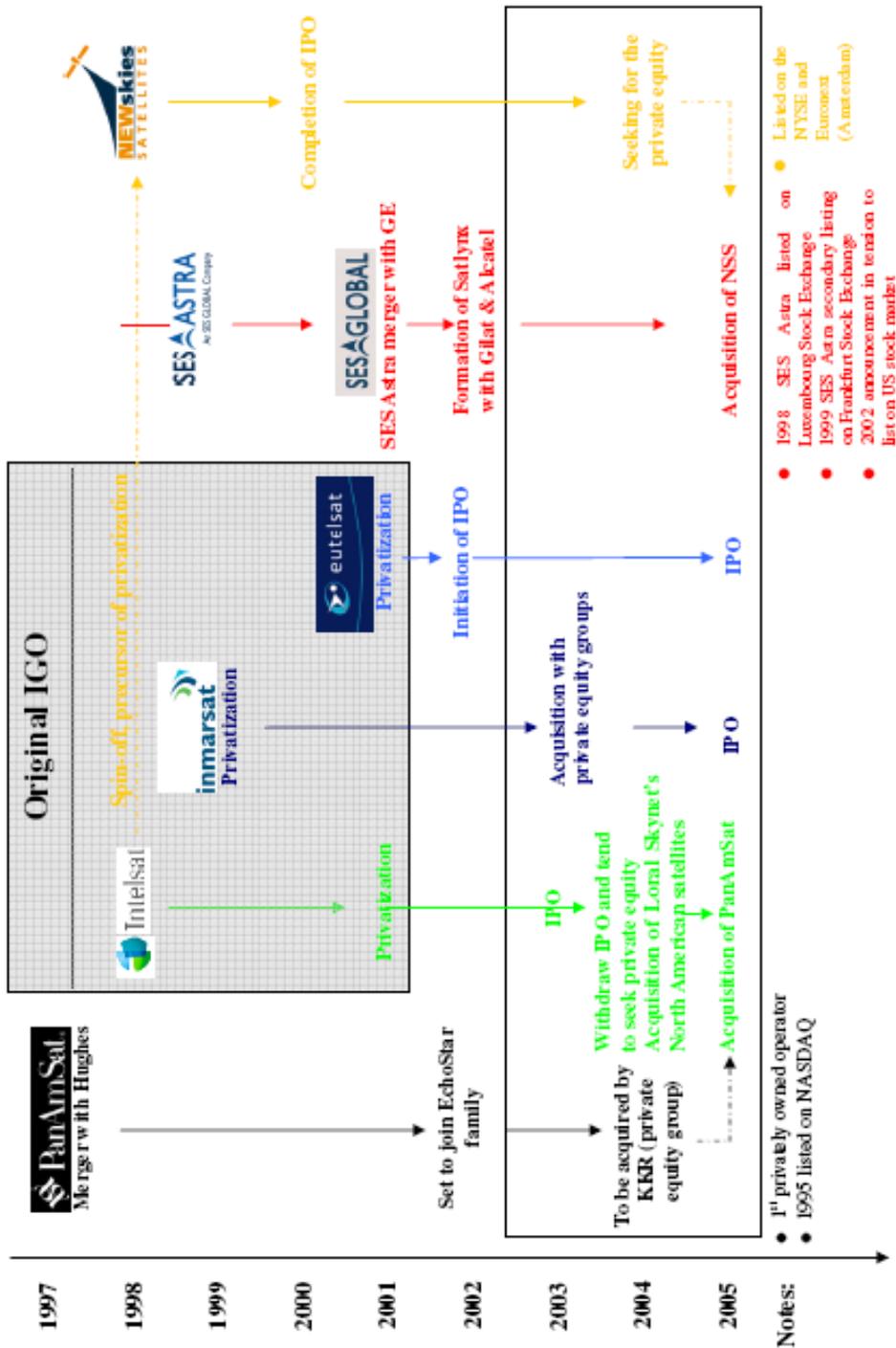


Figure 1: Restructuring of Satellite Operators Industry (based upon Qifan 2004)

Current Status of the Satellite Operators Industry

The Main Players

The key consequence of the acquisitions and mergers (from here on referred to as the *restructuring process*) previously explained was the reduction in the number of operators in the industry. Currently there are a total of three main satellite operators that combined control up to 60% of the total Fixed Satellite Services (FSS) market and Inmarsat which is an innovative leader in the Mobile Satellite Services (MSS) market. Following is a brief summary, based upon Hu's report, of each of those four main satellite telecommunication companies.

Intelsat



In 1964, Intelsat established the first commercial global satellite communications system. Intelsat successfully completed their privatization in 2001 and in 2005 they effectively merged with PanAmSat. At the moment, Intelsat operates a fleet of 51 satellites (28 which are fully owned) and generated total revenue of US\$ 1.073 billion in 2005.

Eutelsat



Eutelsat started operations 20 years ago with the launch of its first satellite in 1983. In 2001, it completed its privatization and at the moment it owns a fleet of 23 satellites mainly focused on dominating the fixed satellite services in Europe. In October 2006, Eutelsat and SES Global announced a joint investment in the first European satellite infrastructure for broadcasting video, radio and data to mobile devices and vehicle receivers.

SES Global



SES Global was formed as the merge of SES Astra and SES Americon. In 2005, it successfully acquired New Skies Satellites and now, it has the capability to offer coverage to 99% of the world's population. SES Global mainly operates through SES Astra in Europe, SES Americon in North America and SES New Skies in Africa, South America, Middle East and parts of Asia.

Inmarsat



Inmarsat – a leader in the mobile satellite services market – came into being as an IGO in 1979 to provide global safety and other communications for the maritime community until in 1999 it became the first IGO to be transformed into a private company. In June 2005, Inmarsat conducted an IPO of stock in London. Now, its fleet composed of 10 satellites can support links for phone, fax and data communications to more than 287,000 ship, vehicle, aircraft and other mobile users.

Results of the Restructuring Process

The restructuring process seemed to have had a positive impact in the industry since its revenues have been increasingly higher as shown in Figure 2. The total industry growth between 2004 and 2005 was 7.4% higher than the average growth from 2000 to 2005. It also shows that the satellite operator industry (expressed as 'Satellite Services') has become increasingly important since the industry's segment share has grown to comprise over half of the total revenues, increasing from 45% of the total in 2000 to 53.6% in 2003 to nearly 60% in 2005.

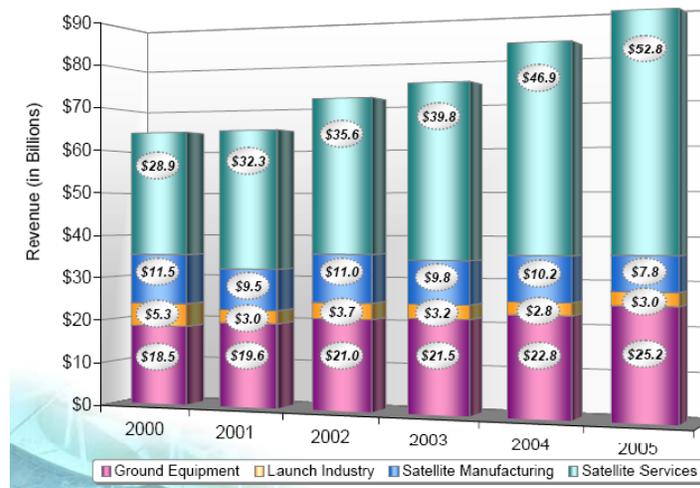
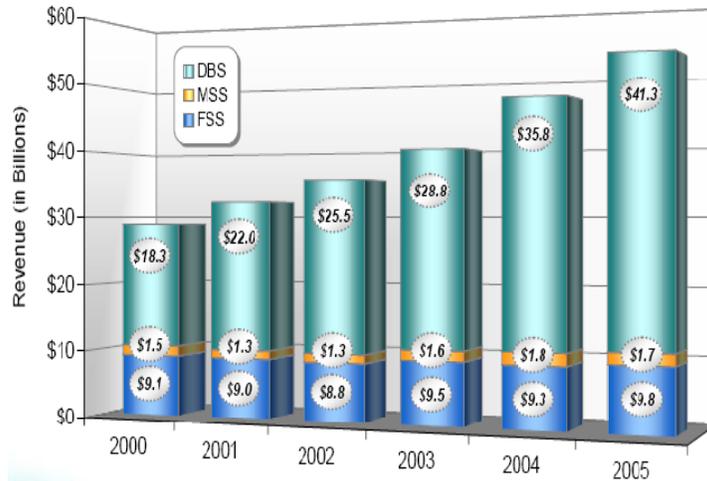


Figure 2: Space World Revenues by Sector (Futron Corporation [3])

Aside from the impact on revenues, the restructuring also had a major influence on the amount of services provided. According to the Satellite Industry Association (SIA) [3], in 2005 the satellite services had the greatest growth of all industry segments with a 13% growth rate. Within that, Direct to Home (DTH) Television services increased 14% and subscribers worldwide had a growth of 11.7% – both compared with levels of 2004. DTH TV can be considered the largest contributor to the overall satellite services growth.

An interesting happening that surprised industry occurred in the ambit of satellite radio services. In 2004, a survey was conducted by the Futron Corporation [1] with professionals in the satellite industry to determine trends and short term outlooks. According to that, only 5% of the respondents (a total of 5 out of 450 professionals) answered that satellite radio would have the best growth prospects. However, satellite radio services experienced an increase in revenues of 165% in 2005. Earlier this year, two major satellite radio providers, XM and Sirius, announced a merger between both companies. Despite the rapid growth in subscribers and strong revenues, both companies have continuously lost money in their operational years. This factor could be seen as the main cause for the merger and the market behavior

in this segment is yet to be determined. Figure 3 shows graphically the behavior described for the satellite services revenue.



	2000	2001	2002	2003	2004	2005	
FSS	\$9.1	\$9.0	\$8.8	\$9.5	\$9.3	\$9.8	FSS=VSAT services, remote sensing, and transponder agreements
DBS	\$18.3	\$22.0	\$25.5	\$28.8	\$35.8	\$41.3	DBS/DARS=DTH TV, DARS, and Broadband
MSS	\$1.5	\$1.3	\$1.3	\$1.6	\$1.8	\$1.7	MSS=Mobile telephone and mobile data
Total	\$28.9	\$32.3	\$35.6	\$39.8	\$46.9	\$52.8	

Figure 3: World Satellite Services Revenue (Futron Corporation)

Capacity Analysis

The restructuring in the satellite services industry has greatly changed the overall capacity panorama. It can be seen that the previously discussed consolidations produced two dominant FSS operators at the global level (refer to Figure 4); however, the large number of “independent” operators sustains a competitive environment especially in some regional markets (refer to Figure 5).

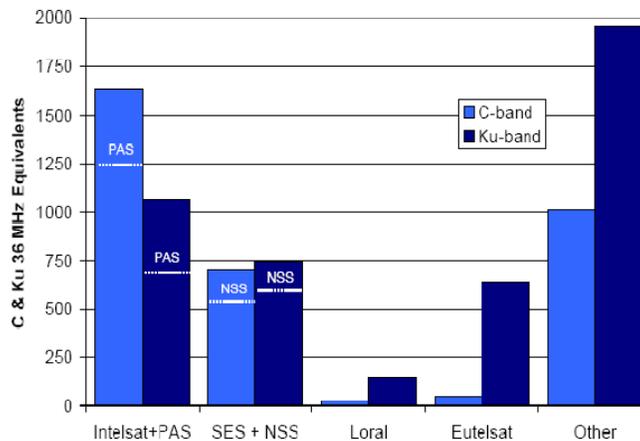


Figure 4: Global FSS Capacity by Operator (Futron Corporation[2])

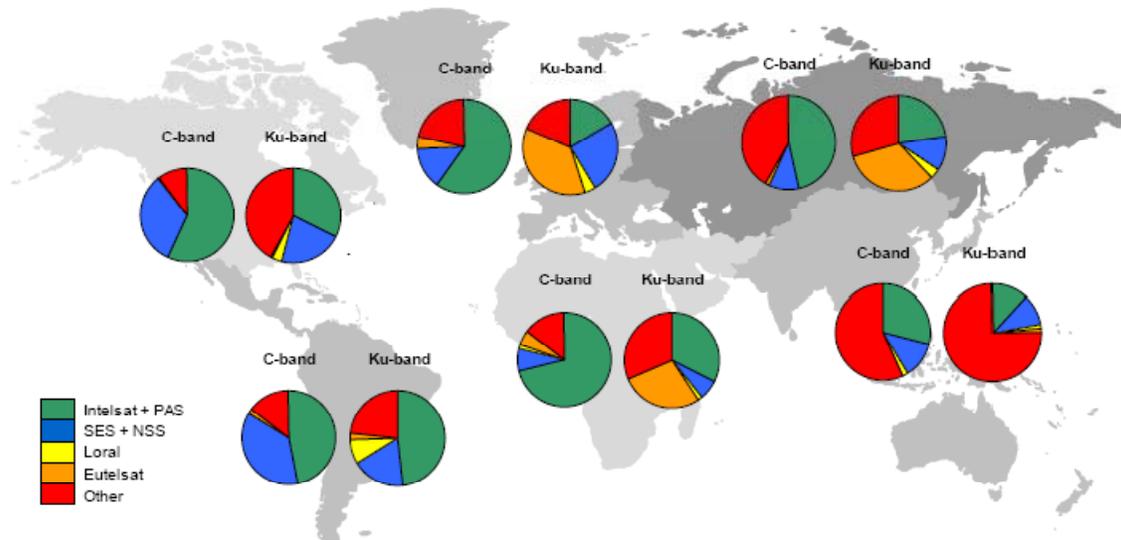


Figure 5: Satellite Capacity on Orbit by Region, Frequency Band, and Operator (Futron Corporation[2])

Forecast on Satellite Services Demand [4]

Ten or fifteen years ago there were concerns that the satellite industry would die out as fiber-optic and terrestrial wireless technologies spread around the globe; however, the industry has continued to find new technologies that add value to customers and expand their demand for satellite capacity. For instance, the emergence of Digital Auto Radio Service (DARS) and satellite radio as a viable business, more agile and more compact equipment operating on the move with Ku-Band capacity for military and other applications, and the implementation of hybrid solutions that combine satellite and terrestrial capabilities, often in partnership with the telecom companies, these are all examples of the expansion in demand for satellite services.

With that perspective in mind, one can conclude that the demand for satellite services continues to be strong and growing. Futron Corporation [4] expects that the demand for increases in satellite capacity should be more than five percent per year in the next ten years following a projection showed in Figure 6. It is also anticipated that broadcasting technologies will strengthen their role as ‘the bread and butter’ of the satellite industry with robust growth, despite the drop-off analog channels and the rapid improvements expected in compression technology. As for the data services, it is expected that its demand will continue on a steady growth mainly due to the expansion of private network services into new applications and customer bases, including a wide range of government markets.

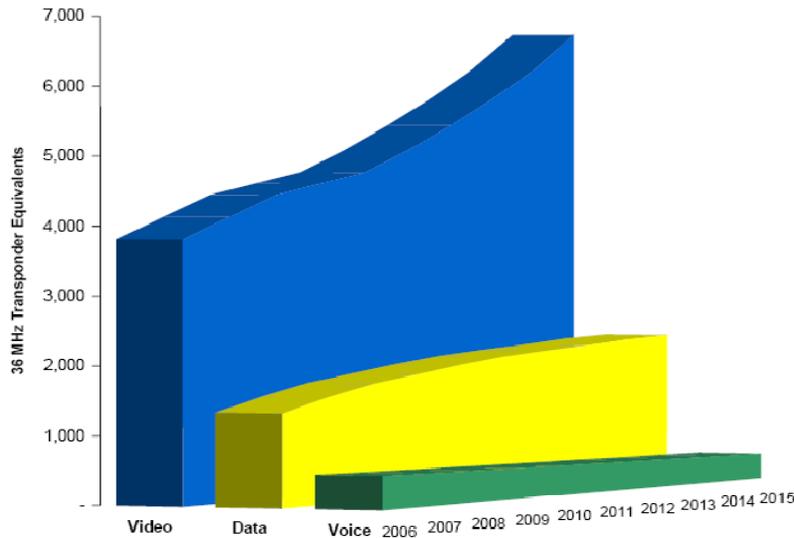


Figure 6: Global GEO Commercial Satellite Demand, 2006 – 2015 (Futron Corporation [4])

Key Market Drivers Influencing Video Demand

The reduction in analog channels and the unremitting improvements in compression technology are expected to dampen the demand for video services in the near term, while the proportion of video services demand increases toward the end of the forecast period. The carriage of analog channels, which require up to ten times more bandwidth than their digital counterparts, will decline rapidly from 8 to 1 percent of all channels carried over satellite globally between 2006 and 2015, as shown in Figure 7. However, overall channel growth, enabled by the reduced cost of carriage, and the increased proportion of high definition channels (which require approximately four times more bandwidth than standard digital channels) drive demand for capacity.

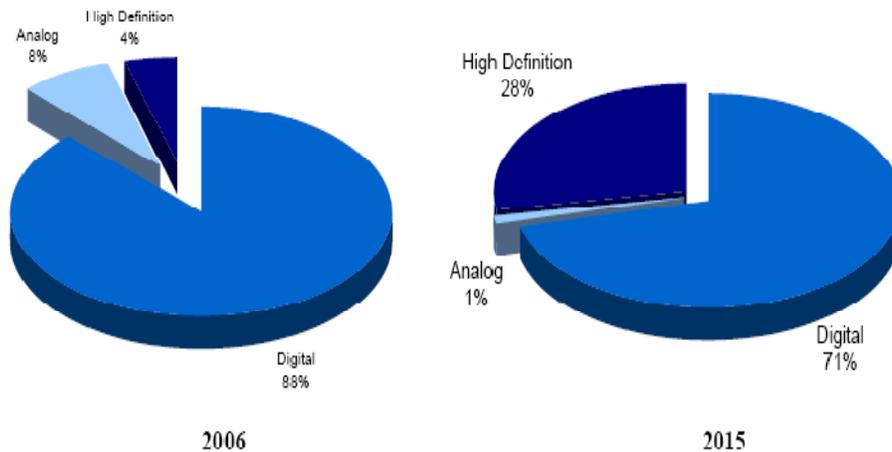


Figure 7: Global Analog, Digital and HD Channels, 2006 and 2015 (Futron Corporation [4])

While the capacity boom in the U.S. DTH market to carry local HD channels to all 220 video markets is well underway, the opening of Asian markets will drive demand

further into the forecast period. The recent opening of the Indian DTH market has quickly attracted a handful of operators to begin service. Lifting restrictions in the Chinese market, where DTH service is currently illegal (with an active black market), would likely attract even more. It is projected that the subscriber growth in Asia to boom over the forecast period, in comparison to the more mature markets of North America and Western Europe, as shown in Figure 8. Regulation is a strong factor driving this demand, in particular in the U.S. where “must carry” legislation obligates DTH providers to offer a wide range of channels in each market, thus increasing the satellite capacity required.

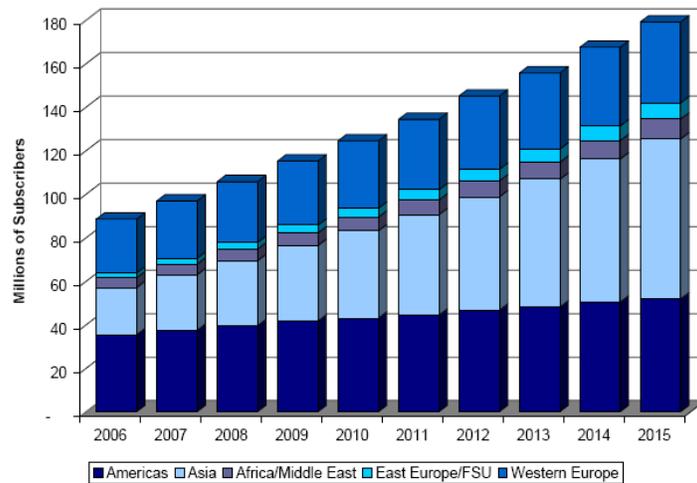


Figure 8: DTH Subscribers by Region (Futron Corporation [4])

Focal Market Drivers Influencing Data Demand

The data markets are more complex than the voice and video ones, as Internet Protocol (IP) based platforms are introduced for virtually all types of services from voice to video. This introduction modifies the structure of many data markets. The overlap of data and voice markets continues to grow, with Very Small Aperture Terminal (VSAT) networks increasingly being installed by cellular and other companies offering primarily telephony services. At the same time, some VSAT customers are migrating to low cost IP based terrestrial telephone networks that provide a full range of digital services.

These trends are unfolding differently in every geographic market, limiting the value of broad generalizations. However, one thing is clear, the highest overall growth in demand for data services comes from across the Middle East, key parts of Africa, Asia and Latin America.

On the other hand, last-mile broadband has a more complex demand trend, varying both geographic and customer sub-markets. Within the Americas, residential broadband demand rises and falls over time, responding to both the introduction of satellite capacity and services in different countries at attractive prices and to the

competing introduction of terrestrial alternatives at even more attractive prices. Over the same period, the much smaller demand for satellite capacity from last-mile enterprise customers rises in the early years but drops off over time as terrestrial competitors initiate service throughout major and minor markets.

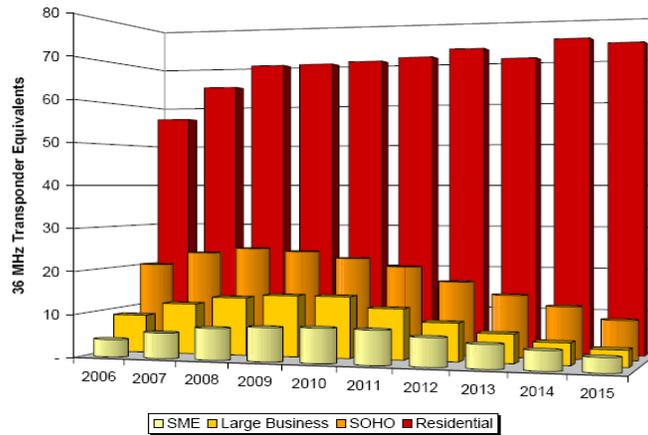


Figure 9: Americas Last mile Broadband Demand by Customer Type (Futron Corporation [4])

Crucial Drivers Influencing the Voice Market

As mentioned previously, the introduction of IP telephony was a key factor in reducing demand for bandwidth for voice services globally, as it has enabled more efficient carriage. At the same time, while demand for fixed telephony services such as village phone booths continues to grow strongly in most of the world, such rural networks are no longer being built for voice only services, and are frequently implemented using a VSAT network model.

The only regions with significant growth in demand for satellite capacity for telephony services are in sub-Saharan Africa outside of South Africa. As shown in Figure 10, the demand in Africa overall starts out at virtually the same level as that in the Middle East, but by the middle of the forecast period, the different market forces in these areas, including expansion of terrestrial facilities for domestic and international trunking, causes Middle Eastern demand to decline slightly, while demand in Africa continues to rise.

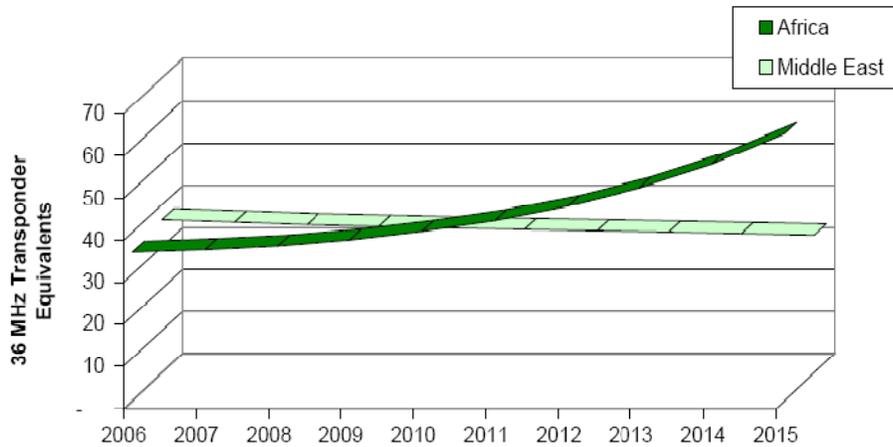


Figure 10: Demand for Voice Services in the Middle East and Africa, 2006 – 2015 (Furton Corporation [4])

Author's Perspective

Satellite Operators Industry

Deregulation of the telecommunication market incentivized each country to operate its own satellite through governmental companies which were then privatized. The introduction of private capital into those companies and the unsustainable growth in the telecommunication technologies are thought to have caused the creation of faulty business plans and flawed strategies. The results of such mistakes can still be seen today in the excess of supply of satellite capacity.

As mentioned before, the restructuring process is believed to have helped stabilize the industry after its collapse. The decrease in the number of satellite operators – resultant from the restructuring process – made the market more competitive in the sense that the operators with global access compete among themselves and also with operators that have only local access. In order to survive in the market, the operators with local access try to add more value to their services hence, providing better product to the end user. The operators with global access rely on their comprehensive coverage to attract customers.

Consolidations to come in the near future will happen in the format of partial acquisition or even mergers instead of full buy-outs. For instance, it was mentioned by Valignon that Eutelsat has ambitions on the sphere of geographical expansion. In fulfilling its intention, Eutelsat maybe partially acquire other local operators enlarging its coverage. The strategy to be followed is deemed to be very similar to the one adopted by SES Global when it acquired 20% of Star One in Brazil. Another example of this “new” consolidation strategy is SES Global and Eutelsat that have joined forces in a joint venture to provide broadcast distribution platform for mobile operators. This allows both companies to benefit from each other's infrastructure to supply the demand existent in the market. The integration processes could take a further step and join satellite operators with terrestrial service providers.

Also, in analyzing Figure 4, the author concludes that further expansion will be sought by Loral in order to become more competitive in the global scenario.

Satellite Services Demand

Evaluating the forecasts presented for satellite services, the existence of two competitive scenarios can be derived – the first being between satellite operators themselves and the second between technologies such as satellite versus fiber optics – which created the need for satellite operators to continuously add value to their services and products. The services offered are of extreme importance to industries in the sense that such industries would not be able to function as they do if those services did not exist. Hence, it is concluded that the demand for satellite services will persist in the future.

Video transmission is agreed to be the main service ordered to satellite operators. It is understood that, in video demand, mature markets (such as the US and Europe) are expected to further grow due to the already well established broadcasting companies and the intense regulatory body existent in those regions. The previously mentioned opening of the Indian DTH market attracts attention of operators and the same is expected to occur in China, however, the author believes that this process may be very lengthy due to many economical restrictions existing in that country. As for the Latin American market it is believed that the constant political and economic crises have dispersed the interest of the operators which see in the Asian market a better region for investment at the moment.

Data services are expected to grow in demand in regions such as Asia, Africa and Latin America. However, when considering data services provided by satellites, such growth will be small since terrestrial networks may offer the same service at more competitive prices. Further growth could be obtained if satellite operators and terrestrial networks joined forces as proposed in the previous section.

Mini Case Study: The Brazilian Telecommunication Market

General Background

Brazil is the fifth largest country in the world with a population of about 173.8 million, a Growth Domestic Product (GDP) of approximately USD 508.5 billion and a GDP per capita of USD 2,959. Until the end of 2001, Brazil was the largest Latin American economy and eighth largest economy in the world. In 2002, Brazil became Latin America's second-largest economy after Mexico, and its ranking in the world economy fell to eleventh place. Nonetheless, having the largest population of Latin America and the second-largest population in the western hemisphere, Brazil is one of the most important emerging markets in the world. (Camacho 2006)

Telecommunications Background

Since 1998, as a result of privatization and the introduction of competition, Brazil's telecommunications market has grown at a rapid pace. The fixed telephony teledensity rate increased from 10.66 in 1997 to 30.32 in 2006. Likewise, mobile telephony subscribers increased from 4,550,000 in 1997 to 40,881,000 in 2006 (Camacho 2006). This outstanding performance came as a result of the new Telecommunications Law of 1997 and the auction of monopoly incumbent operator Telebras in 1998, which generated USD 19 billion of investment from foreign and local investors.

Until 2002, Brazil was divided into a series of operating regions. By the means of the General Concessions Plan of April 1998, Brazil was divided into three different local fixed line regions, one area for long distance services and eight regions for mobile services. In the case of fixed line services, there was one "public" operator, the privatized former incumbent operator or public switched telecommunications network (PSTN) operator, and a "mirror" private operator in each of the three regions. Operators were allowed to provide services only within their respective authorization or concession area. Competition has now increased since the Agência Nacional de Telecomunicações (ANATEL), Brazil's regulatory agency, subsequently authorized local telephony operators to provide new telecommunications services other than those indicated in their concession contracts. These additional services include international long distance, local telephony service throughout the country, and wireless telephone services.

Brazil's licensing regime uses a series of service categories to authorize the provision of communications services. The main three service categories are fixed line telephony, including PSTN, wireless and Pay TV. In addition, Brazil initially established about 15 other service categories, mainly value-added services, when the nation's telecommunications sector was first liberalized. In 2001, these 15 disparate service categories were united into a single category for licensing, SCM (Serviços de Comunicação Multimídia). SCM used to provide a variety of multimedia communications services, primarily to private corporate networks or the customers of Internet Service Providers.

Market Overview

Despite the results of currency instability, Brazil remains the largest telecommunications market in Latin America, accounting for almost 35% of the region's revenues. Net revenue for telecommunications equipment and services in 2006 was approximately US\$ 35.6 billion, a 23% increase as compared to 2005 (US\$ 27 billion of net revenue). Total revenues for the sector can be divided as follows: fixed carriers 41.2%; mobile carriers 25.3%; manufactured products 19.5% and services 14.0%. (US Commercial Service 2006)

Market Trends

According to Anatel, in December 2006 Brazil had approximately 100 million cellular telephones in service. This represents a 41% growth over the same period in 2005. About 81% of the mobile phones operating in the country are prepaid and 19% are post paid. There are an estimated 42.8 telephones per 100 inhabitants, a 38% growth over the prior year. (US Commercial Service)

Vivo (CDMA/TDMA) is the largest mobile operator with 39.2% of the total market, followed by TIM (TDMA/GSM) with 21.4%, Claro (TDMA/GSM) 20.7%, Oi (GSM) with 10.5% and other companies such as Telemig/Amazonia and Brasil Telecom (TDMA/GSM) with 8.0%. Brazil's GSM and CDMA client bases are growing at an average monthly rate of 9.8% and 2.4% respectively. (Camacho 2006)

While some technology neutrality has been preserved, the Brazilian Government has appeared to favor the European approach of investing in a single standard in order to speed up adoption and ease roaming. The results of this strategy have, in recent years, put over USD 1 billion in wireless investments at risk in Brazil (US Commerce Service 2006).

Many multinational players such as Motorola, Nokia, Nortel, and Cisco established manufacturing plants in this country to provide products and services to major operators that set up new businesses. As a result, the country today has a telecommunications infrastructure that matches top standards in Latin America.

Broadband is heating up but the total penetration in country is still only 8%. In July, fixed line operator Telefonica announced investments of US\$ 21 million to promote its broadband service, which is marketed under the Speedy brand. One salient feature of the Brazilian market that may be hampering faster broadband growth is the lack of actual competition in the sector. Currently, the three incumbents - Telefonica, Telemar and Brasil Telecom – control 80% of the market, and only one mirror operator, GVT, has been able to establish a meaningful broadband presence. The incumbents use the near-monopoly control of local access, in their respective regions, to the detriment of their competitors.

Phenomenal growth in Internet based services, along with the desire among the corporate market and consumers to cut telecommunications costs, is leading to vast expansion in the market for Voice over Internet Protocol (VoIP) services in Brazil. This expansion, coupled in technology upgrades in the industry, in turn, will lead to a surge in demand for newer VoIP equipment.

Market Access

Before entering the Brazilian market, a foreign company would have to observe and address issues including: law and policy changes, forced technology transfer, and certification of products. There is a federal tax on industrial products (IPI), with an average of 4%, and an average State Sales Tax (ICM) of 18%.

Certification of Products: ANATEL has a list of accredited laboratories that perform tests required for the assessment of telecommunications products and services. Renewal of current and prior certificates will be granted only after testing by accredited laboratories to make sure they comply with ANATEL rules. Usually the certification processes are considered extremely lengthy to American and European standards.

Technology Transfer: Less dependence on telecommunications imports has been a longstanding goal of the Brazilian Government. Brazil's initiatives in international cooperation are all aimed at developing its own national industries and reducing imports where possible.

Operational Costs: All products and services in Brazil are subject to a number of taxes and fees, which are usually considered high when compared to other countries like the US, Germany and India. The main taxes that account for the bulk of service providing costs are:

1. Merchandise Circulation Tax (ICMS): is a state government value-added tax, applicable to both imported and domestic products and services. The ICMS rate varies among states. In the state of São Paulo it is 18%, but in most states it is 12%.
2. PIS and Cofins: these fees were implemented in April 2004 and are applicable to both products and services. They are calculated cumulatively and in an extremely complex way. In general, the total effect of these fees sums up to approximately 12.63%

Satellite Operator

Star One



Star One was born in the year 2000 from a partnership between EMBRATEL (holding 80% of the shares) and SES GLOBAL (holding 20% of the shares) and it is at the moment the only satellite operator in Brazil. The fleet of 5 satellites (soon to be 6 satellites with the launch of Star One C1 scheduled to the end of 2008) is focused on supplying the demand from not only the Brazilian territory but also from other countries in the Mercosur area (area including Brazil, Argentina, Paraguay, Uruguay, Bolivia and Chile). The satellites are integrated in the SES Global satellite network which intends to extend its presence in all continents according to Romain Bausch – president and CEO of SES Global (statement at Star One's website).

As part of its strategy and future plans, the company's growth includes geographical expansion in South America; the North-South connection (United States - South America); expansion of the offer of C, Ku and Ka Bands capacity; strategic partnerships and continual focus on client needs.

Looking forward to the growth opportunities presented to satellite applications in the Latin American market due to the geographical characteristics and in the use of this technology to complement the region's land-based infrastructure, the company started construction of the Star One C1 satellite. It is a hybrid satellite (C and Ku bands) that will assure the continuity of the services at the 70° W position. The plans also call for the launch of the Star One C2 satellite, another hybrid already being contracted to replace Brasilsat B2 at the 65° W position.

Observations on Brazil

Brazil is an exciting country for investments, especially in the ambit of telecommunications. It holds the world's eleventh most profitable economy in the world and the largest telecom market in Latin America with an increasing fixed and mobile teledensity.

The author considers that Brazil has to undergo many developments on the realm of HDTV. Just recently Brazil has adopted the broadcasting platform and so far no tests have been made in broadcasting HD signals. Instead of adopting broadcasting platforms that have been long used and tested (like the European and the American ones) Brazil adopted the Japanese platform. The author disagrees with the choice made by the government and believes that faster achievements would have been done if another platform was chosen.

The author believes that the strongest sector for investment is the mobile services one. This country has not yet placed an auction for 3G frequencies but the minister of communications, Hélio Costa, has stated that preference will be given to companies intending to provide services in a universal sense – meaning to the Brazilian people as a whole. Satellite services have an intrinsic characteristic to provide services to remote areas. So, the author sees that satellite operators could profit from integrating their services with terrestrial ones – on the form of joint ventures – to have access to the 3G technology in the mobile communications market in Brazil.

As previously mentioned, there are three main companies responsible for the broadband services in Brazil which together hold up to 80% of the national market. Since those companies do not share the same network infrastructure, which can jeopardize possible expansion plans from those companies. A well established satellite operator could be favored by this setback.

Final Remarks

The current state of the satellite industry leads one to conclude that it is still paying hefty prices for its excessive investments during the technology boom.

The restructuring in the satellite services industry has greatly changed the overall capacity panorama. Acquisitions and mergers have produced two dominant FSS

operators at the global level; however, the large number of “independent” operators sustains a competitive environment especially in some regional markets. This competitive environment is prone to further consolidation which may occur in many forms: acquisitions, mergers or integrations.

Out of the three main categories of services provided by operators (video, voice and data), video is the most expressing one. Revenues have essentially been driven by broadcasters and pay TV platforms and it is expected that broadcasting technologies will strengthen their role as the ‘bread and butter’ of the satellite industry. As for the data services, it is expected that its demand will continue on a steady growth mainly due to the expansion of private network services into new applications and customer bases, including a wide range of government markets.

Brazil has a promising market for telecommunication activities. Despite the results of currency instability, Brazil remains the largest telecommunications market in Latin America. Areas of investment to focus in Brazil are the mobile and broadband services market. Before approaching this market, telecommunication companies should be aware of the restrictions imposed by high taxes environment and extended certification processes.

References

Camacho, J., *Brazil Licensing Service Category*, International Telecommunications Union, 2003

Futron Corporation, *Survey of Satellite Industry Professionals*, June 2004

Retrieved from:

http://futron.com/pdf/resource_center/reports/2004_ISCe_Survey_results.pdf

Last accessed on:

March 20th, 2007

Futron Corporation, *Satellite Consolidation – The Next Shoe Drops*, 2005

Retrieved from:

http://www.futron.com/pdf/resource_center/white_papers/SatelliteConsolidationPart2.pdf

Last accessed on:

March 20th, 2007

Futron Corporation, *State of the Satellite Industry*, June 2006

Retrieved from:

http://www.futron.com/pdf/resource_center/reports/SIA_2005_Indicators.pdf

Last accessed on:

March 20th, 2007

Futron Corporation, *Satellite Services Demand – The Future in High Definition*, June 2006

Retrieved from:

http://www.futron.com/pdf/resource_center/white_papers/2006_Forecast_Whitepaper.pdf

Last accessed on:

March 20th, 2007

Holzemer, B., *The Telecom Bubble Has Burst, Now What?*, Telecom Asset Management LLC, 2002

Hu, Z., *Evolution of Telecom Market*, International Space University, March 2006

Maleter, A., *Satellite Industry Consolidation: Why, When and Where?*, Space News Commentary, June 2003

Retrieved from:

http://www.futron.com/pdf/resource_center/articles/SpNws_IndCons.pdf

Last accessed on:

March 20th, 2007

Mathurin, J., *Private Investment Funds and the Satellite Industry: Form, Substance and Recent Acquisition*, International Space University, February 2005

Nystedt, D., *Brazil should not further delay auction on 3G frequencies*, IDG Now, March 2007

Retrieved from:

<http://idgnow.uol.com.br/telecom/2007/03/09/idgnoticia.2007-03-09.0871957239>

Last accessed on:

March 20th, 2007

Pappalardo, D., *Study: Telecom is over the hump*, Networkworld, February, 2006

Retrieved from:

<http://www.networkworld.com/news/2006/021606-telecom.html>

Last accessed on:

March 20th, 2007

Qifan, W., *Competitiveness Analysis of The major Telecom Operators*, International Space University, July 2004

Star One, *Who Are We*

Contains Statement from Romain Bausch

Retrieved from:

http://www.starone.com.br/english/starone/quem_somos/embratel.php

Last accessed on:

March 21st, 2007

US Commercial Service, *Brazil: Telecommunications Market Analysis*, September 2006

Retrieved from:

http://www.buyusainfo.net/adsearch.cfm?search_type=int&loadnav=no

Last accessed on:

March 20th, 2007

Vallignon, L., *Key Elements on Satellite Communications*, Lecture given at the International Space University, January 2007

Villain, R., *Key Trends for the Satellite Industry*, Space News Business, September 2007

Retrieved from:

http://www.space.com/spacenews/archive05/VillainOpEd_090605.html

Last accessed on:

March 20th, 2007