



A Look Inside...

The Fixed Satellite Services (FSS) Industry

includes:

Industry Characteristics
Top 10 Operators
Global / Regional Supply and Demand Trends
Transponder Pricing
and other topics...

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Key Takeaways:

1. We expect 2005-2010 global FSS growth of 3.5% CAGR.
2. Video broadcasting will continue to be the majority of total FSS demand (54%).
3. New applications like HDTV and Satellite Broadband are key growth drivers for FSS.
4. Global transponder utilization rates will increase to 75% by 2010.
5. Intelsat/PanAmSat will drive up transponder prices and capacity utilization mostly in North America region and have minimal effect in Asia region.
6. Increased economies of scale enjoyed by Intelsat/PanAmSat and SES/New Skies mergers will encourage additional consolidation.
7. FSS operators will continue to offer more value enhanced services like IP based managed services to capture more customer share and charge higher prices.

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 <p>HorseTV Media Group, Inc.</p> <p>Private Placement of seed equity</p> <p>The Near Earth Investment Club financed a portion of the round</p>	 <p>SES AMERICOM</p> <p>Valuation of orbital slot</p> <p>Near Earth LLC valued assets for expert witness testimony</p>	 <p>Intelsat, Ltd.</p> <p>Private sale of minority block of shares</p> <p>Near Earth LLC acted as advisor to investor group</p>
 <p>Madison Dearborn Partners</p> <p>Bid to acquire \$450 million minority stake in Inmarsat</p> <p>Near Earth LLC acted as financial advisor to the bidder</p>	 <p>XM Satellite Radio, Inc.</p> <p>Creation of Canadian joint venture</p> <p>Near Earth LLC acted as financial advisor to both parties</p>	 <p>XM Satellite Radio, Inc.</p> <p>\$435 million private placement</p> <p>Near Earth LLC acted as financial advisor to the issuer</p>

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Executive Summary

The \$9.8 billion¹ Fixed Satellite Services (FSS) industry has a business model characterized by high EBITDA margins, recurring revenues and cash flow, and high returns on invested capital. Consolidation and value enhanced services have been an important theme and is expected to continue. Top line industry growth should come primarily from TV & video broadcasting applications. Telecommunications applications like broadband satellite services can provide higher growth rates.

The FSS industry is like the real estate business

The FSS industry is much like the real estate business. It involves building and launching a satellite and then leasing the capacity on the satellite to customers on a long-term basis. It typically costs \$225 million to build and launch a satellite and takes three to four years to lease it out. The leases are often the length of the satellite life of 12-15 years with high-credit-quality customers. After full lease-up, a satellite generally has EBITDA margins above 80%. As in the real estate industry, the key drivers for returns in the FSS industry are the rate of lease-up and the lease prices.

We project organic industry growth of 3.5% over five years

TV and video transponder demand for broadcasting applications is about 54% of the overall demand and we expect this to increase to about 57% in 2010. Real areas for growth will be the lease of Ku- band capacity for video distribution for HDTV and emerging satellite broadband services. Consumer broadband access applications will grow at 18.5% annually from 2006-2010.

Industry consolidation will improve pricing and capacity utilization

Recent M&A activity between Intelsat/Panamsat, SES Global/New Skies and others should improve global pricing and capacity utilization. Regions like North America and Latin America will benefit the most while Europe to a certain extent will see more disciplined pricing. Asia will continue to suffer due to the fragmented structure of its regional operators. We expect more acquisitions that will allow operators to gain economies of scale, expand geographically and develop more value added services.

We expect FSS operators to expand down the value chain and capture more of the customer share

FSS operators will continue to expand their product offerings to include services that will allow them to charge premium prices. These should include IP-based managed services, teleport services, and other hybrid satellite and terrestrial services. We expect these new hybrid services to slightly lower profit margins because of the added expense for leasing terrestrial fiber capacity.

¹ Futron Corporation; State of the Satellite Industry Report, June 2006

Fixed Satellite Services (FSS)

FSS Industry Characteristics

The FSS industry has developed a business model characterized by high EBITDA margins, recurring revenues and cash flow, and high returns on invested capital. Consolidation has been an important theme and is expected to continue for the foreseeable future. Several key attributes help explain both the industry's competitive positioning and the attractive underlying financial performance.

High Revenue Visibility

Contracts can run as long as 12-15 years FSS operators typically enter into long-term leasing contracts with large, creditworthy content and telecommunications companies, thereby providing high visibility on revenue prospects. Contracts can run as long as the life of the satellite (12–15 years).

Low Cost of Capital

Due to the high visibility of revenues, lenders view FSS operators as high quality credits, and are willing to lend at relatively low cost and tolerate relatively high debt levels. This enables these operators to use substantial leverage to enhance equity returns at reasonable cost.

High-Margin Business Model

EBITDA margins on fully leased up satellites can exceed 80%. FSS operators have developed an attractive business model that generates high margins with minimal customer churn. EBITDA margins on fully leased up satellites exceed 80%. Satellite transmission contracts involve long-term contracts with content providers as well as voice telephony and Internet Service Providers (ISPs). Churn is minimal, and maintenance capex is very low.

Barriers to Entry Are High

Large number of ground stations pointed at a satellite creates a "neighborhood" effect A geostationary satellite typically costs approximately \$225 million and requires more than two years to build. Moreover, an operator often spends years acquiring the legal rights to utilize specific orbital positions, the most desirable of which are already "occupied." In the case of video services, there is substantial advantage for individual customers to obtain bandwidth on satellites that already have large numbers of ground stations pointed at them. This "neighborhood effect" raises the value of satellites that acquire a critical mass of video customers. These factors

create significant barriers to entry for new competitors. As the industry matures, we expect that only the largest operators will have the economies of scale to be competitive, further increasing barriers to entry.

Inexpensive Point to Multi-Point Distribution

Satellites are generally the lowest-cost method of transmitting data or video to multiple recipients. Although it costs more to transmit a bit of information through a satellite than through fiber, the satellite bit can be received by an infinite number of sources with no additional transmission cost. This makes it the lowest-cost medium for broadcast applications, such as television, that have many recipients.

Consolidation Should Drive Economics to Larger Operators

Significant consolidation has occurred within the industry over the past year, and we expect more consolidation in the foreseeable future. This consolidation will likely allow the larger operators to achieve economies of scale in both operating the satellite and in marketing. The cost to operate 40 satellites is not proportionately higher than the cost of operating 20 satellites. Furthermore, a global firm with 20 satellites will likely need as many salespeople and officers as a firm with 40 satellites. Consolidation is also a good tool to address excess transponder capacity, which still exists in some markets.

Value-Enhanced Services

FSS operators are moving towards more value-enhanced services

Finally, FSS operators augment their revenues and business models with value-enhanced services including uplink services, teleports, private networks (VSATs), and data multicasting and ultimately, integrated offerings in conjunction with fiber companies. FSS operators have either partnered with or purchased ground stations around the globe to offer managed services to their customers. Instead of just selling transponder capacity, FSS operators are selling end-to-end solutions that they will manage for their customers. For example, IP based services like IP trunking and broadband can be managed by these FSS operators. This will require a fundamental change for these FSS organizations as they shift from an engineering mentality to a customer service orientation.

FSS Industry Overview

The \$9.8-billion Fixed Satellite Service (FSS) industry² includes companies that own and operate fleets of geostationary satellites and lease out transponder capacity on these satellites to organizations including content providers, telecommunications companies, and developing-world ISPs. There are typically three major types of competitors:

- 1. Global FSS Operators** — These companies, such as Intelsat/PanAmSat, SES Global/New Skies, Eutelsat, and Loral Skynet, provide seamless coverage throughout the world for international telecom service providers and broadcasters.
- 2. Regional FSS Operators** — These operators cover selected regions of the world and include ArabSat, JSAT Corp., Nordic Satellite, Satmex, Shin Satellite, Star One and Telesat, to name just a few. In Asia, certain domestic satellite operators are positioning themselves as regional operators.
- 3. National Satellite Operators** — These companies dominate the provision of domestic telecommunications backbone and broadcast services in their respective countries. These satellites are usually owned by the incumbent PTTs, or government agencies. Notable operators include Russian Satellite Communications Company, RSCC and China Telecommunications Broadcast Satellite, Chinasat.

The top ten operators based on yearly revenue can be seen in figure 1. Intelsat / PanAmSat, SES Global / New Skies, and Eutelsat are the largest FSS operators and collectively account for 50% of industry revenues. These three global FSS operators exhibit the key attributes that we believe to be critical for long-term success: 1) a global footprint of satellites; 2) stable, profitable business models with high cash-flow generation; and 3) the capital and managerial resources to develop new value-added services. Intelsat / PanAmSat is owned by a consortium of private equity firms (Apax, Apollo, MDP, and Permira). SES Global / New Skies and Eutelsat are publicly traded companies.

Loral Skynet, a division of Loral Space & Communication, is the smallest of the four global FSS operator. The rest of the companies in the top 10 are regional FSS operators.

² 2005 Satellite Industry Statistics Report, June 2005; Futron Corporation

Figure 1: Top 10 FSS Operators

Ten Largest FSS Operators by Revenue*					
Rank	Company	Country	Satellites (1)	LTM Revenue (\$M, USD)	% of Rev.
1)	Intelsat / PanAmSat	United States	51	\$2,019	21%
2)	SES Global / New Skies	Luxembourg	43	\$1,890	19%
3)	Eutelsat	France	23	\$989	10%
4)	Telesat Canada	Canada	6	\$429	4%
5)	JSAT	Japan	9	\$381	4%
6)	Shin Satellite	Thailand	5	\$200	2%
7)	Space Communications Corp.	Japan	4	\$157	2%
8)	Star One	Brazil	4	\$153	2%
9)	Loral Skynet	United States	4	\$147	2%
10)	Arabsat	Saudi Arabia	4	\$140	1%
	Other		62	\$3,294	34%
	<i>Top Ten</i>		<i>153</i>	<i>\$6,506</i>	<i>66%</i>
	<i>Total</i>		<i>215</i>	<i>\$9,800</i>	<i>100%</i>

* DBS companies, DIRECTV and EchoStar, omitted from Top 10 list. They are viewed as indirect competitors.
 (1) Leased capacity included
 Companies in **BOLD** have a global footprint

Source: Near Earth LLC Analysis

Economics of a GEO Satellite

FSS industry has developed an attractive business model with high returns on invested capital.

The FSS industry has developed an attractive business model characterized by high EBITDA margins, recurring revenues and cash flow, and high returns on invested capital. The primary value of an FSS operator is its satellite fleet and its orbital slots. As a reality check on industry valuations, we perform a Discounted Cash Flow Valuation on a satellite, as illustrated in figure 3. For our analysis, we use a 64 transponder geostationary satellite with a 15-year service life. We do not use a terminal value in our analysis because it is unlikely that the satellite will have any residual commercial value at the end of its service life. By our analysis, such a satellite is worth between \$280 million and \$450 million, depending on transponder pricing and utilization rates, as illustrated in figure 2. Unlevered IRRs on geostationary satellites are typically between 15% and 20%.

Figure 2: PV of FCF for a typical GEO Satellite
Transponder Utilization Rates

WACC	65%	85%	95%
10.0%	\$ 321.8	\$ 338.7	\$ 447.9
11.0%	299.4	314.9	414.7
12.0%	279.1	293.2	384.7
Unlevered IRR	15.2%	16.0%	19.9%

Source: Near Earth LLC Analysis

Transponder utilization rates on newly launched satellites are normally under 25%. Mature satellites in desirable locations typically have utilization rates of approximately 85%–95%, but don't always fill up. (See full model in figure 3)

Operating Costs

Operating costs are minimal and highly leveragable.

Once a satellite is successfully placed into orbit, there is minimal cost associated with operating it. The main ongoing operating expenses include cost of operations (personnel, insurance cost, and ground control), selling, general & administrative expenses; and depreciation. Total cash operating costs average approximately \$15 million per satellite per year depending on the operator. They do not, however, include depreciation on the \$225 million satellite, usually spread over 12–15 years. Major operating costs include the following:

1. tracking, telemetry, control (TTC) and payload management operations for satellites;
2. fiber-optic and teleport services associated with the provision of bundled services;
3. market access fees; and
4. in-orbit insurance for satellites and the costs associated with the operations and engineering infrastructure.

TTC and marketing expenses are largely independent of the number of satellites, so the higher the number of satellites the lower the cost/satellite. These costs savings should continue to encourage consolidation in the FSS industry, in our view. Corporate expenses include selling, general & administrative expenses. As the satellite leases up, cash flow margin increases as the fixed costs of maintaining and operating a satellite are spread across a larger revenue base. Also, in-orbit insurance premiums typically decline after several years given the lower book value of the asset. EBITDA margins on mature satellites can reach 70%–85%. In our FSS economic model, we assume that a newly launched satellite initially has a 25% transponder utilization rate. Thereafter, we assume a 2000-basis-point increase in utilization rates per year and reach a maximum utilization rate of 85% by the fifth year.

Capital Costs

Satellite Procurement

FSS operators face large upfront costs to procure and launch satellites — insurance is important to reduce launch and in-orbit risks.

The cost to build, insure and launch a satellite is approximately \$225 million and satellites generally have service lives of between 12–15 years. It typically takes a manufacturer between 18–30 months to deliver a satellite, which is considerably less than the three-year-plus manufacturing cycle time in the past. FSS operators usually pay the majority of the purchase price for each satellite during the period of the satellite's construction. The remainder of the contract price is in the form of an incentive payment based on orbital performance of the satellite. Contracts also provide for small payment reductions to the manufacturer in the event of late delivery or mechanical faults and usually carry a limited warranty.

Insurance

Given the significant risks involved in launching and operating satellites, FSS operators carry satellite insurance coverage to cover the book value of the satellite. This insurance is often required by debt holders as well. There are two major types of insurance: 1) launch insurance and 2) in-orbit insurance. Insurance is provided through syndicates of the world's largest insurance companies such as Axa.

FSS operators have reacted by only insuring specific satellites and relying more on in-orbit back ups

Launch insurance is typically based on the unamortized construction, launch, and launch insurance costs for the satellite when the policy is initiated. In the past, insurance premiums were as low as 11% and 13% of the cost of the satellite and launch cost. Post 9-11, insurance premiums have increased to a range of 15%-30% based on the risk. Depending on the perceived reliability of the satellite and launch vehicle used, coverage usually includes both catastrophic loss of a satellite during launch and also the failure of a satellite to achieve its proper intended orbit in proper working order. Terms also generally provide for payment of the full insured amount if 50% or more of a satellite's communications capability is lost during the policy period and partial payments for losses of less than 50%. FSS operators also typically secure in-orbit insurance, the amount of which typically is equal to the unamortized construction, launch, and insurance costs for each satellite. This amount decreases over time as the book value of the satellite declines. In-orbit insurance is about 2%–3% of the insured value per year. Recently, insurance companies have been demanding exclusions for a wider range of items, sharply reducing in-orbit insurance coverage. Given that insurance is typically the second highest cost item, the satellite

operators have fought back. Satellite operators have reacted by only insuring the most expensive projects and relying on in-orbit back ups.

Free Cash Flow

The combination of high margins on mature satellites, high forward visibility given long-term contracts, and minimal maintenance capex generates strong cash flow, especially in the later years. The major cash-flow drag occurs in the year when the satellite is launched. Once in space, satellites are monitored from a centralized location, and there is very little in the way of maintenance of the satellite. We therefore assume approximately \$500,000 in maintenance capex per satellite, primarily for upgrading TT&C facilities.

Figure 3: DCF Model of a Typical GEO Satellite

Assumptions: (US\$ in millions)

Revenue/transponder (annual)	\$1,600
Capital Cost	\$225.0
Rent escalator	3%
Op exp/Maint. escalator	3%
Operating expenses/satellite (annual)	\$10
SG&A	\$5
Maint. capex/satellite (annual)	\$0.5
Depreciation	\$15
Depreciation Years	15
Tax Rate	38%
Number of Transponders	64
Annual Increase in Utilization	20.0%
Terminal Increase in Utilization	10.0%
Pre-launch Utilization Rate	20.0%
Discount rates	10.0%
	11.0%
	12.0%

11% WACC, 85% Utilization	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Transponders		64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Transponder Utilization Rate		20%	40%	60%	80%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Average Utilization Rate		10%	30%	50%	70%	83%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Average rent		\$1.6	\$1.6	\$1.7	\$1.7	\$1.8	\$1.9	\$1.9	\$2.0	\$2.0	\$2.1	\$2.2	\$2.2	\$2.3	\$2.3	\$2.4
Revenues	\$	10.2	\$ 31.6	\$ 54.3	\$ 78.3	\$ 95.1	\$ 100.9	\$ 103.9	\$ 107.0	\$ 110.3	\$ 113.6	\$ 117.0	\$ 120.5	\$ 124.1	\$ 127.8	\$ 131.7
Operating expenses		10.0	10.3	10.6	10.9	11.3	11.6	11.9	12.3	12.7	13.0	13.4	13.8	14.3	14.7	15.1
Gross Income		0.2	21.3	43.7	67.4	83.8	89.3	92.0	94.7	97.6	100.5	103.5	106.6	109.8	113.1	116.5
<i>Gross Margin</i>		2%	67%	80%	86%	88%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
SG&A		5.0	5.2	5.3	5.5	5.6	5.8	6.0	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.6
EBITDA		(4.8)	16.2	38.4	61.9	78.2	83.5	86.0	88.6	91.3	94.0	96.8	99.7	102.7	105.8	109.0
<i>EBITDA Margin</i>		-46%	51%	71%	79%	82%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Depreciation		15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
EBIT		(19.8)	1.2	23.4	46.9	63.2	68.5	71.0	73.6	76.3	79.0	81.8	84.7	87.7	90.8	109.0
+ Depreciation		15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
- Taxes		7.5	(0.5)	(8.9)	(17.8)	(24.0)	(26.0)	(27.0)	(28.0)	(29.0)	(30.0)	(31.1)	(32.2)	(33.3)	(34.5)	(41.4)
- Capex		(225.0)	(0.5)	(0.5)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.6)	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)	(0.8)
Free cash flow		(225.0)	2.2	15.2	29.0	43.6	53.6	56.9	58.4	60.0	61.6	63.3	65.1	66.8	68.7	70.6
PV of FCF		314.9														
NPV		89.9														
Unlevered IRR		16.0%														

Source: Near Earth LLC Analysis



FSS Applications

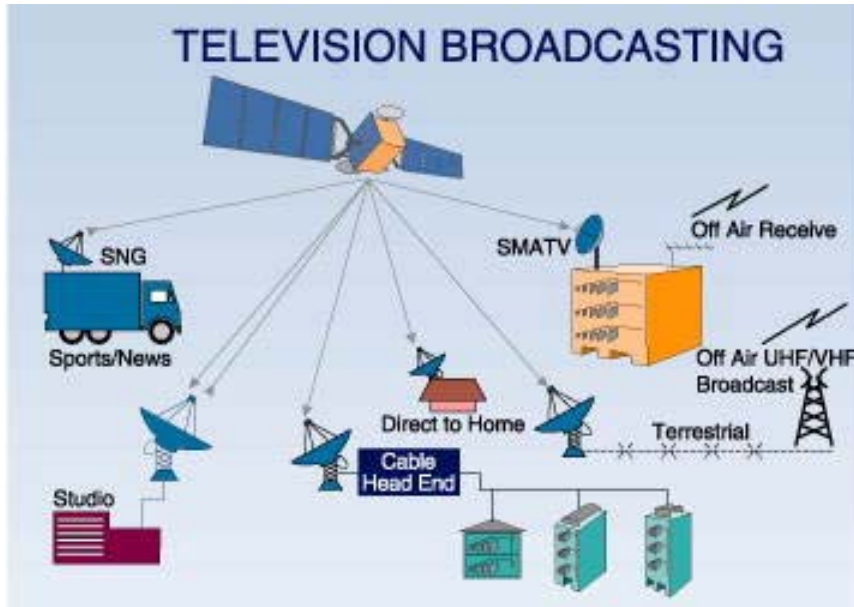
Fixed Satellite Services (FSS) refer to satellite services which use fixed terrestrial terminals. In other words, FSS is any satellite service where the ground station does not move locations frequently. The FSS industry has two types of applications: 1) Broadcasting and 2) Telecommunication. In the following section, we will outline the different products and services offered for each application.

Broadcasting Applications

61% of transponder utilization comes from broadcasting applications

Content providers and broadcasters accounted for more than 61% of total transponder utilization on FSS satellites in 2005³. Primary applications in the U.S. include the distribution of television and radio broadcasting content to cable head-ends. Outside the U.S., pay-TV companies use FSS satellites for DTH (Direct-to-Home) transmissions and digital broadcasting services. Satellites can also be used to relay breaking news or special events as they occur from a vehicle equipped with a satellite news gathering system to a studio for immediate editing and broadcast. We summarize these major applications in figure 4.

Figure 4: Uses of FSS in Television Broadcasting



Source: AsiaSat website

³ Northern Sky Research 2005

TV & Video

Content and cable service providers such as Disney, Time Warner, and Viacom use geostationary satellites to deliver entertainment, news, and sports content from their studios to television providers all over the world. This content is then transmitted to the consumer by cable and DBS operators, over the air television and, more recently, telecommunication companies.

Cable & DBS Dominate Worldwide

Increase in DBS demand will mostly impact non-U.S. FSS operators In the U.S., the major Direct Broadcast Satellite (DBS) providers, DIRECTV and EchoStar, operate their own fleet of satellites, which contrasts markedly from other parts of the world where DBS companies outsource satellite responsibilities to FSS operators. The major DBS operators in Europe, BskyB (UK), Canal Plus / TPS (France), Sky Italia (Italy) and Premiere (Germany), all lease transponder capacity from FSS companies implying that FSS-related demand for additional DBS-transmission will come predominantly from outside of North America. Operators in Asia can also see a boost in FSS demand from DBS providers like SkyPerfect (Japan) and SkyLife (Korea).

Cable and DBS (both of which use satellites at some point to get signal to house/headend) dominate the multichannel television market and should continue to do so moving forward. A recent JD Power and Associates report estimated that DBS providers capture 27% of the US market, up from 19% in 2004 and 12% in 2000. Cable providers have a 60% household penetration rate in the U.S., down from 62% in 2004 and 66% in 2000. Cable penetration rates are higher in the U.S. than in Europe while DBS and terrestrial penetration rates are lower. However, DBS will continue to outpace cable in Europe. PricewaterhouseCoopers (PwC) reports that by 2008, there will be more than 53 million cable households in Western Europe compared to nearly 44 million for DBS. In 2003, the gap between cable and satellite was close to 15 million.

Digital cable increases channel capacity which simulates demand for FSS capacity Digital broadcasting has affected the FSS operators in numerous ways. For example, broadcasters can condense more channels onto the same amount of bandwidth because digital compression has increased the efficiency of existing transponders. This reduces the demand for FSS capacity. However, digital cable is also a source of demand for the FSS industry. Digital cable expands channel capacity and increases the demand for additional content, which in turn, stimulates incremental demand for FSS transponder capacity. Furthermore, many secondary and derivative channels are enabled by compression. In other words, a fledgling channel with little viewership becomes marginally attractive when the incremental cost of distribution is very low. Compression also allows news overflow and other *ad hoc* demand to go over compressed signals.

HDTV

HDTV requires 4x-6x the capacity as standard definition

HDTV is a subset of digital broadcasting. Content providers can deliver HDTV through satellite to the cable headends or directly to the consumer in the case of DTH. An HDTV broadcast requires about 4x - 6x the capacity as standard definition digital TV. As the number of HDTV channels increase, transponder utilization will also increase. Research firm Jupiter says that HDTV will be in about 63% of U.S. homes by 2010. The major drivers for this penetration will be falling equipment prices and increased availability of HD content. We also expect HDTV in Asia to be a high growth area for satellite operators. According to DisplaySearch, a leader in display market research, the share of TVs sold with HDTV resolution in Japan exceeded the North American share for the first time in Q2 '05.

Digital Terrestrial Television (DTT)

Although, traditional terrestrial, over-the-air analog television is declining throughout the world, digital terrestrial television penetration rates have been increasing. In Europe, countries like the UK, Italy and Germany have seen successes in the deployment of DTT. In the U.S., the digital conversion date has been proposed for 2009. As countries around the world convert their television signals from analog to digital, DBS and cable providers will be under pressure to offer more channels and better service.

Internet Protocol Television (IPTV)

Some telecommunication companies are starting to offer video services to their customers through IPTV to counteract its declining voice business and as a defensive strategy against the cable companies' triple play offerings (voice, video, Internet). We believe FSS companies will play a similar role as they do for cable and DBS companies. The FSS companies will distribute video content to telecommunication companies, particularly to the smaller telecommunication companies and even rural cable companies that are trying to offer IPTV services.

Network Content to Affiliates

Television and radio networks also use satellites (though to a lesser extent) to transmit content from their studios to affiliated stations and nearly 1,000–1,200 broadcast towers throughout the United States. There are approximately 1,200 commercial television stations and 13,000 radio stations in the United States, by our estimates. The number is static, having grown by only 1% annually over the past five years. We do not expect this market to increase FSS demand significantly.

Remote News Gathering

Finally, broadcasters use satellites for remote news gathering and coverage of breaking events. We estimate that remote news gathering takes up approximately

5% of FSS demand globally. News and filmed content is gathered at a mobile news truck and is uplinked to a geostationary satellite and then downlinked to a company's studio. As equipment gets cheaper, we expect more small and mid-sized news organizations to invest in satellite news-gathering technology.

Telecommunications Applications

Growth will come from Broadband Satellite Services

Telecommunication-related applications provide another critical component of FSS demand, and accounted for approximately 39% of transponder utilization in 2005. Point-to-point, long-distance voice communication are a declining business for FSS operators, given increased competition from fiber networks, a trend we expect to continue moving forward. We feel that satellite's role in point-to-point voice and data applications will diminish in the long term. However, it is our view that FSS operators are well positioned for near- and intermediate-term growth in VSATs, broadband access, and satellite multicasting.

Long-Distance Voice Trunking

Point to point voice and data applications will diminish

Telecommunication companies throughout the world use geostationary satellites for point-to-point public switched telephone services. Connectivity via satellite can be established independent of distance and can be particularly effective in supplementing domestic telephone networks, particularly where terrestrial telephone lines and terrestrial fiber and transoceanic fiber are less developed. Satellite signals experience greater latency (time delay) due to the 22,300 mile distance the signal must travel to reach the satellite. This delay is about 1/4 second each way, and make a phone call that is routed by satellite somewhat inferior in quality to a one carried by fiber.

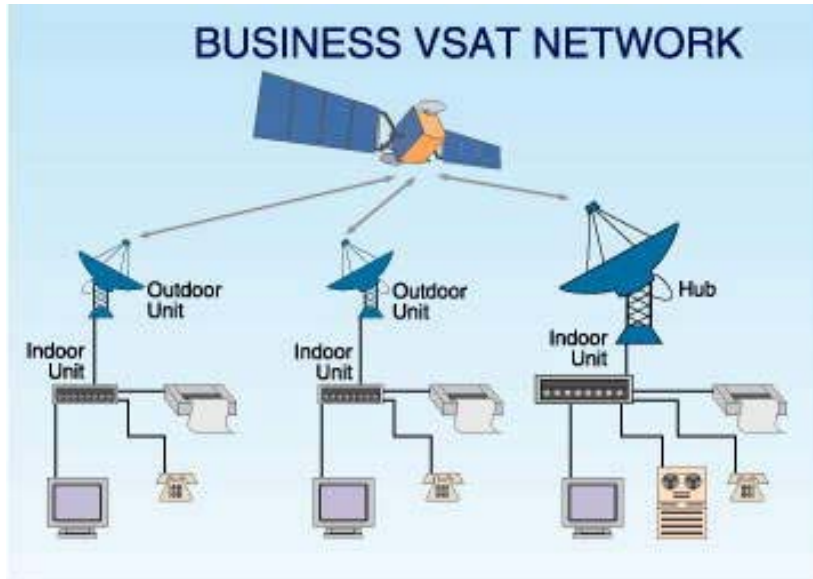
Our view is that satellites will continue to experience significant competition in the point-to-point voice market in developed markets. However, we believe point-to-point voice communications in less-developed countries and rural regions (where competition from fiber is less) will remain an attractive niche for FSS operators for the foreseeable future. VoIP solutions can provide another niche for FSS operators. They can provide VoIP capabilities to regional telecommunication carriers and ISPs in less-developed countries and rural regions.

Private Networks ("VSATs")

VSAT networks provide corporations with the ability to create private global data networks and are well suited for transmissions to multiple locations over vast distances. VSATs are inherently optimized for broadcast applications, exploiting the point-to-multipoint advantages offered by satellite communications. VSATs also are popular for point-to-point applications that are not bandwidth intensive, such as credit card authorizations. VSATs are typically cost effective for networks of more than 200

sites, as the cost of the space segment is shared by a large number of sites. Major advantages are 1) as a “last-mile” solution used for their end-to-end service capability; 2) cost insensitivity to distance and user density and 3) technology consistency in that one set of protocols and hardware can be used globally with one service provider. Deregulation, falling equipment costs, and a growing need for networking and Internet-related communications drive demand for VSAT equipment and services. Please see figure 5 for a typical VSAT network design.

Figure 5: VSAT Network Topology



Source: AsiaSat website

Broadband Trunking

Access to the U.S. & European Internet backbone by foreign ISPs (a.k.a. “broadband trunking”) provides incremental opportunity for FSS operators. This application involves broadband trunking to regional hubs that extend spokes out to ISPs and extension links for ISPs seeking new territory. Satellites currently transmit a significant amount of IP volume, especially in markets where fiber is not built-out. Satellites can be a cost-effective solution where terrestrial connectivity is unavailable or serve as a supplement to existing terrestrial IP capacity. Direct links between an ISP point of presence and a major Internet backbone network can typically be achieved at data rates between 64 Kbps up to 45 Mbps, expanding on the amount of satellite capacity the ISP leases.

We expect broadband trunking to be a growth area for satellites as people in increasingly remote areas of the world begin to access the Internet. However, one difficulty with broadband trunking is the relatively small size of some of the customers, particularly foreign ISPs. Many of these companies cannot be relied on

to commit to long-term contracts given that fiber alternatives may soon be available to some of them. To a certain extent, many of these customers must continuously be replaced by new customers who are in increasingly remote areas. Moreover, many contract for relatively small amounts of bandwidth, often fractions of a transponder.

Satellite Broadband

Broadband connectivity via satellite-based consumer services has made significant headway in the last few years. Solutions like Wildblue (U.S.), Direcway/Spaceway from HNS (U.S.), Starband (U.S.), and IPStar (S.E. Asia) provide 2 way broadband access direct to consumers.

Developing countries offer greatest growth potential in the long run

In the short term, rural areas in developed countries will provide some consumer demand. But we expect that this demand will not be sufficient to fully utilize the transponder supply. Therefore, these operators will have to reposition some of their spot beams for different uses like VSAT, point to point and IP trunking. Over the long term, developing markets offer greater growth potential due to their large geographical areas and underdeveloped telecommunications infrastructure. Strong demand exists in regions where terrestrial networks are inadequate and per-capita incomes do not justify infrastructure investment. We believe the largest hurdle to mass consumer acceptance of satellite broadband remains the cost of the customer equipment. Wildblue requires consumer expenditures of about \$300 for their equipment.

Satellite Multicasting

Multicasting allows ISPs, content providers, and corporations to use satellites to avoid popular terrestrial bottlenecks. Content is uplinked to satellites via earth stations and then multicast out to ISPs, cable and DSL points of presence at the periphery of the local loop. One of the benefits of this delivery mechanism is that it bypasses bottlenecks in the fiber backbone because the content is distributed closer to the end user. Also, since content is broadcasted to multiple pops, it is more economical than each user's individually requesting the content and paying fiber backhaul fees. The economics are particularly compelling for bandwidth intensive applications such as video.

Although multicasting systems such as Akamai, Cidera, and Net/36 did not live up to their early promises in the 1990's, interest in multicasting is slowly reemerging. Multicasting will continue to be a small segment, and it will not create significant demand.

Military Use of Commercial Satellite Capacity

According to the Northern Sky Research 2005 Report, the U.S. Government is a growing market for commercial satellite communications. This growth is driven by a more than 40% increase in telecommunications spending by the Department of Homeland Security and the Department of Defense. Recently, U.S. government and military groups have been using a substantial amount of commercial satellite capacity due to the conflict in Iraq. But the eventual end of this conflict and the arrival of substantial dedicated capacity from the Wideband Gapfiller and Advanced EHF military satellites in the near future will hamper any more significant growth for the commercial FSS operators.

Global Demand Trends

FSS will grow at 3.5% CAGR

We expect overall demand for FSS services globally to grow by approximately 3.5% annually from 2005 to 2010. Figure 6 is a table of our demand estimates for 2005-2010. TV and Video transponder demand for broadcasting applications is about 54% of the overall demand and we expect this to increase to about 57% by 2010. TV & Video demand will grow by 4.5% annually from 2005 -2010. TV & Video demand is affected by the following market forces:

- migration from analog to digital is reducing demand,
- migration from MPEG2 to MPEG4 drives 50% reduction in bandwidth needs,
- migration from SD to HD is increasing demand, since HD channels require 4-6 times the bandwidth,
- Proliferation of programming (i.e. niche channels) is driving increase in capacity demand.

Consumer broadband access will grow at 18.5% CAGR

The voice and data segments continue to come under pressure from fiber. This market will continue to erode, but there are areas for growth. Consumer broadband access applications will grow at 18.5% annually from 2005-2010. Broadband access is likely to migrate to Ka band due to much lower per bit costs, freeing up tight Ku capacity over North America. Thin Data Segment (i.e. VSATs) is under pressure from the proliferation of DSL, cable modems, broadband wireless, etc. but has a defensible niche in rural areas and distributed geographies. Incremental demand for broadband trunking should continue to be a growth area. Based on Euroconsult forecasts, overall transponder demand for telecom services will grow at a CAGR of 2.5% over the next ten years.

Total number of transponder demand should exceed 4,950 by 2010

A recent report by Northern Sky Research mirrors our projections. They found that demand for commercial C- and Ku-band capacity is growing at an average annual rate of 3.1%, and the total number of demanded transponders should exceed 4,950 in 2010, up from 4,125 as of the end of 2004. NSR found that demand for C-band capacity is flat to declining in half of the regions, and the real areas for growth will be the lease of Ku band capacity for video distribution, Direct-to-Home (DTH) and emerging satellite broadband services. An important finding from the NSR report is that 61% of all leased capacity was for video services which in line with industry consensus; illustrate the importance of the video segment to the world's satellite operators.

Figure 6: Global Demand Estimates and Growth Rates

Global Transponder Demand							
36 MHz Equivalent	2005E	2006E	2007E	2008E	2009E	2010E	CAGR
TV & Video	2350	2400	2525	2650	2800	2900	4.3%
Voice & Data	1200	1027	875	746	660	600	-12.9%
Broadband Access	450	600	750	850	950	1050	18.5%
Broadband Trunking	300	350	400	450	500	550	12.9%
Total	4300	4377	4550	4696	4910	5100	3.5%
Growth Rate	2005E	2006E	2007E	2008E	2009E	2010E	
TV & Video	6.8%	2.1%	5.2%	5.0%	5.7%	3.6%	
Voice & Data	-11.1%	-14.4%	-14.8%	-14.7%	-11.5%	-9.1%	
Broadband Access	50.0%	33.3%	25.0%	13.3%	11.8%	10.5%	
Broadband Trunking	9.1%	16.7%	14.3%	12.5%	11.1%	10.0%	
Total	4.2%	1.8%	4.0%	3.2%	4.6%	3.9%	

Source: Near Earth LLC Analysis

Broadcast demand has the lowest demand elasticity

Given the near-term global economic outlook, it is useful to examine the relative demand elasticity for various FSS applications. Our view is that FSS-related demand from consumer services, such as DTH/DBS, and Broadband Access, exhibits the highest degree of demand elasticity and tracks most closely with general economic conditions. VSAT and local access in remote locations are less tied to the general economy than the consumer businesses, but remain exposed to general corporate spending levels in the economy. Broadcast content distribution and point-to-point voice and data (in which fiber is not available) have the lowest demand elasticity, in our view. This inelasticity is a direct result of the substantial cost advantage that satellite enjoys in this application. As a consequence, the only real competition is between the respective satellite firms. Even this competition is muted due to the effect that “neighborhoods” have on demand, and the relatively inconsequential nature of transmission costs as compared to content costs in these applications.

Global Supply Trends

There are approximately 215 geostationary satellites and 7500 transponders in commercial use throughout the world. As noted in the NSR report, there will be a shift to more Ku band transponders, and we expect Ku- band to exceed C- band supply in 2007.

Global transponder supply will decrease,

Utilization rate will increase to 70%

More importantly, due to consolidation within the FSS industry, and more financial discipline, we expect a reduction in capacity as redundant on-orbit systems are rationalized. Therefore, we expect supply of C- and Ku- band to decrease by 2.0% annually and the supply of C-, Ku-, and Ka- band to decrease by 0.6% annually from 2005 to 2010. This will improve global capacity utilization from 57% in 2005 to 70% in 2010. Figure 7 is a table of our supply estimates for 2005-2010. The excess supply of transponders will decline by 7.4% annually to about 2200 excess transponders. Figure 8 shows the decrease in the excess supply of transponders.

Figure 7: Global Supply Estimates and Growth Rates

Global Transponder Supply							
36 MHz Equivalent	2005E	2006E	2007E	2008E	2009E	2010E	CAGR
C Band	3800	3850	3800	3600	3400	3100	-4.0%
Ku Band	3500	3700	3800	3700	3600	3500	0.0%
Ka Band	250	350	500	600	700	700	22.9%
Total (C & Ku)	7300	7550	7600	7300	7000	6600	-2.0%
Total (C, Ku & Ka)	7550	7900	8100	7900	7700	7300	-0.7%
Utilization Rate	57%	55%	56%	59%	64%	70%	
Growth Rate	2005E	2006E	2007E	2008E	2009E	2010E	
C Band	6.7%	1.3%	-1.3%	-5.3%	-5.6%	-8.8%	
Ku Band	0.0%	5.7%	2.7%	-2.6%	-2.7%	-2.8%	
Ka Band	25.0%	40.0%	42.9%	20.0%	16.7%	0.0%	
Total (C & Ku)	3.4%	3.4%	0.7%	-3.9%	-4.1%	-5.7%	
Total (C, Ku & Ka)	4.0%	4.6%	2.5%	-2.5%	-2.5%	-5.2%	

Source: Near Earth LLC Analysis

Figure 8: Excess Supply of Transponders

Global Excess Supply							
36 MHz Equivalent	2005E	2006E	2007E	2008E	2009E	2010E	CAGR
Total	3250	3523	3550	3204	2790	2200	-7.5%
Growth Rate	2005E	2006E	2007E	2008E	2009E	2010E	
Total	-8.8%	8.4%	0.8%	-9.7%	-12.9%	-21.1%	

Source: Near Earth LLC Analysis

Supply Considerations

Supply of FSS transponder capacity is influenced by three principal factors: 1) new satellites entering commercial service, 2) orbital slot location and satellite co-location, and 3) the role of technology (both through digital compression and spot beam technology).

Desirable Orbital Slots Are Scarce

There are a finite number of orbital slots throughout the world, some of which are more valuable than others. Historically, industry regulatory bodies have required a minimum spatial separation of 2 degrees (approximately 900 miles) to avoid interference from nearby satellites, implying a total of 180 orbital slots available for commercial use in each frequency band throughout the world. Some applications (e.g. DBS, which uses 9 degrees) use different spacing. The use of new frequencies, such as Ka band has opened up additional capacity that will likely relieve capacity constraints in crowded regions. It should be noted that incumbent equipment is often not compatible with these new frequencies.

Co-Location Within Orbital Slots Expands Capacity of Slots

Some FSS operators maximize the value of their most precious, assigned orbital slots by co-locating multiple satellites in the same slot. This has been especially apparent in Europe. SES Global, for example, co-locates seven satellites in the 19.2 degrees East longitude slot and four satellites in the 28.2 degree East longitude slot, and Eutelsat co-locates five satellites at 13 degrees East longitude. Co-location allows a single fixed antenna on the ground to receive hundreds of channels without having to shift alignment, and in so doing encourages the creation of more attractive satellite neighborhoods. Our view is that a maximum of eight satellites can be effectively co-located within the same orbital slot. Continuing advances in satellite design (spot beam technology, in particular) are likely to reduce the need for collocation in the future.

Digital Compression Expands Capacity of Satellites

Compression increases the efficiency of supply and is the primary reason that demand from content providers will likely remain moderate. One 36-megahertz (MHz) analog transponder can handle one typical video channel (of 40–45 mbps). Once signals are digitized and compressed, that same transponder can handle about 6–10 standard-resolution video channels. Digitizing signals provides an efficient way to increase throughput without increasing the cost of space segment capacity. Video on demand, interactive TV, and increased ethnic and specialty programming should pick up some of the excess capacity created through digital compression. We expect

less than 10% of video traffic is still analog, and the issue of digital compression may only apply to areas where there is more analog signals.

Upcoming Spot Beam Capacity Could Also Increase Capacity

Spot beam technology, especially for the Ka-band broadband offerings, is critical to the future of FSS supply. A typical Ku-band satellite costs about \$225 million and carries 48 transponders, each with the capacity to handle 40–45 Mbps for a total of between 1.9 and 2.2 Gbps of capacity. In comparison, a Ka-band satellite costs an estimated \$325 million, but handles about 8–10 Gbps, implying that cost per bit of capacity is set to drop dramatically. However, spot beam technology might not be suitable for many broadcast applications as the beam sizes will generally be small. A single spot beam would cover only a small portion of a continent. Companies that have launched significant Ka band supply have primarily focused on Internet broadband to rural areas (i.e. Wildblue). Our concern is that these Ka-band services carry significant capacity that could be used for other FSS applications such as point to point, VSAT and Internet trunking, thus increasing supply. However, this may be a positive for areas where there is a need for capacity. For example, WildBlue is likely to steal share from Starband and HNS, freeing up Ku transponders or at least alleviate crowding in North America. HNS uses 60 (yes, 60!) Ku transponders for Direcway.

New Capacity Comes on in a Step-Like Fashion

New satellites launch with approximately 25% utilization rates A significant amount of capacity is added when a satellite enters into commercial service, given that new satellites are typically launched with approximately 25% utilization rates. This can create the appearance of a significant imbalance between supply and demand in the near term, especially in years with heavy launch schedules.

Cost per Transponder

Over the years, operators have seen a decrease in cost per transponder. Large GEO satellite prices have stayed the same, but the number of transponders has increased. Also, smaller satellites with just as much transponder capacity as the older satellite models have caused the cost per transponder to decrease.

Intelsat/PanAmSat Merger

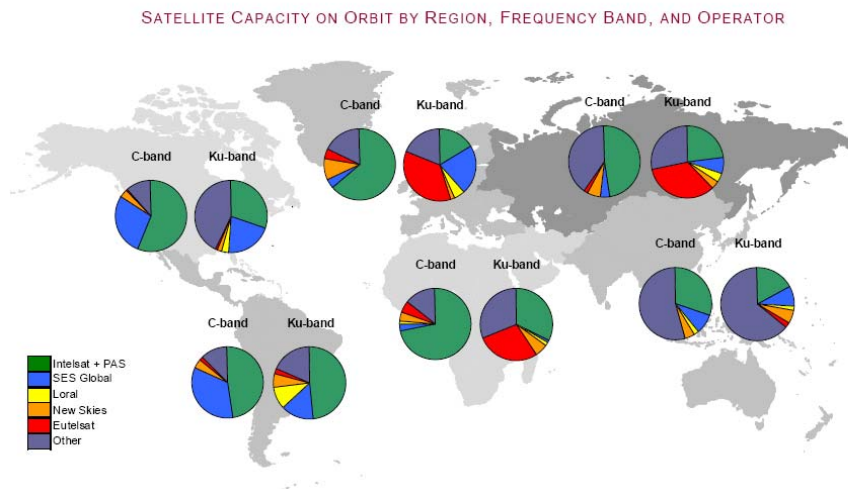
North America will receive the largest benefit with increased pricing and utilization rates

The Intelsat and PanAmSat merger creates the largest FSS operator. The combined entity will have over 50 satellites and 2500 transponders covering the globe. Figure 9 shows the satellite capacity of the combined operator in the different regions for both C- and Ku- band. They completed the merger without having to divest any of their North American satellites. The FCC did not think the concentration within the satellite industry to be a major concern for the overall U.S. telecommunication industry. We expect Intelsat / PanAmSat to rationalize their fleet in overlapping areas over the next five years. They will launch fewer satellites and manage the transponder supply in key regions. We expect transponder pricing and capacity utilization to increase in specific regions. The regions most likely to be affected will be in North America, South America, and to a lesser extent Europe. The regions that will be less affected are the fragmented South Asia & Asia-Pacific and Russia & Central Asia regions. There are too many national and regional operators. Therefore, over-capacity and price wars are most likely to continue in these regions. Figure 9 is a map of the regions where Intelsat/PanAmSat will have the greatest share of C-, Ku- band transponders.

SES Global/New Skies Merger

Amongst the major operators, speculation was rife that New Skies is for sale. At 5 satellites, it did not have the economies of scale to compete effectively with the other global operators. The New Skies acquisition gives SES access to high growth government business and strengthens their position in the Latin America and the Africa & Middle East regions. Although this merger is not nearly as large as the Intelsat/PanAmSat merger, it will have similar effects. We believe this is a positive step towards further consolidation which will lead to improved global transponder pricing and capacity utilization.

Figure 9: FSS operators' Satellite Capacity based on Region



Source: Futron

Regional Supply and Demand Trends

In general, the FSS industry is divided up into six distinct regions of the World: North America, Latin America, Europe, Africa & the Middle East, Russia & Central Asia, South Asia & Asia-Pacific. Europe and North America continue to be the largest markets for video transponders globally followed by the South Asia & Asia-Pacific region. Although the largest in size, we expect the developed markets of North America and Europe to have the slowest growth rate in video transponder usage moving forward. The smallest market, Africa & the Middle East, accounted for only 9% of total transponders, but they have the highest growth rates.

North America

North America demand will increase by 3.5% CAGR

We expect transponder demand to increase by 3.5% annually from 2005 to 2010. The North American demand is primarily driven by video distribution which is approximately 80% of the demand. We expect demand for video distribution to be stable. The voice and data segments continue to come under pressure from fiber. Incremental demand coming for VSATs and consumer broadband applications should provide areas for growth.

We expect transponder supply to decrease by 5.7% annually from 2005 to 2010. The Intelsat/PanAmSat merger will have the greatest impact in this region. We expect satellite supply to decrease as the new company will look to rationalize unused capacity. This will have a positive impact in this region, and pricing will stabilize and capacity utilization will increase to healthier levels. Estimated capacity utilization rate will be over 80% by 2010.

Figure 10: North America Transponder Demand and Supply

North America Transponder Demand							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total N.A. Demand	1010	1030	1060	1080	1150	1200	3.5%
Growth Rate	2005	2006	2007	2008	2009	2010	
Total N.A. Demand	1.0%	2.0%	2.9%	1.9%	6.5%	4.3%	
North America Transponder Supply							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total (C, Ku & Ka)	1894	2025	2000	1800	1650	1480	-4.8%
Utilization Rate	2005	2006	2007	2008	2009	2010	
	53%	51%	53%	60%	70%	81%	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total (C, Ku & Ka)	0.9%	6.9%	-1.2%	-10.0%	-8.3%	-10.3%	

Source: Near Earth LLC Analysis

DTH market in Europe will provide growth opportunities for FSS

Europe

Like the North America region, demand in Europe (including Western, Central and Eastern Europe) is primarily driven by video distribution. Voice and data will continue to decline which is consistent with other regions in the world. The DTH market is a growth area for FSS providers in Europe because the DTH market in Europe is quite different from the U.S. In the U.S., Echostar and DirecTV have built separate fleets to provide DTH services to consumers. In Europe, companies like BskyB have leased satellite capacity from FSS providers. Therefore, an increase in demand for DTH services will increase demand for this regions FSS operators.

We expect transponder supply to decrease by 3.8% annually from 2005 to 2010. We expect transponder demand to increase by 3.4% annually from 2005 to 2010. The Intelsat/PanAmSat merger will also have an impact in this region. We expect satellite supply to decrease and capacity utilization to increase to 71% by 2010.

Figure 11: Europe Transponder Demand and Supply

Europe Transponder Demand							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total	930	945	1019	1080	1085	1099	3.4%
Growth Rate	2005	2006	2007	2008	2009	2010	
Total	3.3%	1.6%	7.8%	6.0%	0.5%	1.3%	
Europe Transponder Supply							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total (C, Ku & Ka)	1880	1907	1969	1800	1675	1505	-4.4%
Utilization Rate	49%	50%	52%	60%	65%	73%	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total (C, Ku & Ka)	4.4%	1.4%	3.3%	-8.6%	-6.9%	-10.1%	

Source: Near Earth LLC Analysis

Latin America

Latin American governments have put telecom access in their top priority list

The Latin American economic recovery identified in 2003 has been more than confirmed in 2004 with a recorded 5.5% GDP growth. Telephony and Internet subscriber numbers are rising and related telecom industries are now rapidly recovering with record subscriber growth rates in the second half of 2004. Most, if not all Latin American governments have put telecom access in their top priority list as the reduction of the "Digital Divide" has been identified as one of the key elements for economic development. Satellite is, in fact, the most cost efficient technology to serve Latin America's rural areas. Satellite based Internet access together with

VSAT corporate networks are seen as major growth drivers for the satellite business in Latin America.

We expect transponder supply to increase by 2.0% annually from 2005 to 2010. We expect transponder demand to increase by 3.0% annually from 2005 to 2010. The average capacity utilization rate for the same time period is 63%.

Figure 12: Latin America Transponder Demand and Supply

Latin America Transponder Demand							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total	450	467	486	496	512	521	3.0%
Growth Rate	2005	2006	2007	2008	2009	2010	
Total	0.0%	3.8%	4.1%	2.1%	3.2%	1.8%	
Latin America Transponder Supply							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total (C, Ku & Ka)	749	749	749	773	800	790	1.1%
Utilization Rate	60%	62%	65%	64%	64%	66%	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total (C, Ku & Ka)	3.3%	0.0%	0.0%	3.2%	3.5%	-1.3%	

Source: Near Earth LLC Analysis

Africa and the Middle East

Four players (Arabsat, Eutelsat, Intelsat, and New Skies) control 75% of the transponders in this region. There are three regional players: Turksat, Amos, and Nilesat.

Commercial sector demand should reach equivalent levels with the government sector

Africa and the Middle East region have a high demand for satellite bandwidth in order to provide a wide variety of military and commercial services. Companies that want to do business in this region will have many barriers, but the opportunities can be well worth it. The market for military satellite communications in the Middle East is strong and looks to remain so for the near term, but the commercial market could provide major opportunity for the industry going forward. According to Arrowhead Space and Telecommunications, a government service provider, there will be a balancing act in this region where the commercial sector should grow at a healthy pace over the three to five years to reach equivalent levels with the government sector. Opportunities in video broadcasting, DTH, broadband Internet, telephony and mobile satellite services are numerous because few countries have adequate terrestrial connectivity to meet the growing demand for these services.

There are several reasons for this demand. First, the most prominent use for commercial transponder capacity in the region is video broadcasting in the fast growing Middle Eastern TV market. Video broadcasting is forecasted to grow at a rate of 5.4% per year through 2010, with growth in other services expected to increase the number of transponders leased over the region to 743 by 2011. Second, the oil industry in Africa and the Middle East will provide steady demand for communication infrastructure especially in areas of oil exploration. Third, the Iraq rebuilding activities will create excellent commercial opportunities. Finally, telemedicine and distance learning applications in Africa are gaining momentum. A group of Indian officials from ISRO have been pitching the African Union to provide African countries access to distance learning capabilities developed in Indian universities and the country's own telemedicine services.

We expect transponder supply to increase by 4.2% annually from 2005 to 2010. We expect transponder demand to increase by 4.7% annually from 2005 to 2010. The average capacity utilization rate for the same time period is 73%.

Figure 13: Africa & the Middle East Transponder Demand and Supply

Africa & Middle East Transponder Demand (including Sub Saharan Africa)							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total	540	550	560	575	635	680	4.7%
Growth Rate	2005	2006	2007	2008	2009	2010	
Total	2.9%	1.9%	1.8%	2.7%	10.4%	7.1%	
Africa & Middle East Transponder Supply							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total (C, Ku & Ka)	712	760	796	832	875	875	4.2%
Utilization Rate	76%	72%	70%	69%	73%	78%	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total (C, Ku & Ka)	1.7%	6.7%	4.7%	4.5%	5.2%	0.0%	

Source: Near Earth LLC Analysis

Russia and Central Asia

The state owned operator, Russian Satellite Communications Company, RSCC dominates about 80% of Russia's satellite market. Their primary services are:

- digitization of federal broadcasting,
- commercial and regional broadcasting,
- departmental networks and networks for federal authorities and
- VSAT networks.

Kazakstan to launch new fleet

RSCC has launched 5 Express satellites since 2003, and they are planning 2 more Express 33 & 44 in the next two years. RSCC will dominate this market into the foreseeable future due to the protected nature of the Russian space and satellite market, but other governments in the region have started to order new satellites. In Central Asia, Kazakhstan is planning to form its own fleet of satellites. The first satellite in the fleet, Kazsat, was recently launched and will offer services across Kazakstan, Central Asia, the South Caucasus and part of Russia. Of its 12 transponders, eight are to be used for communications and four for television broadcasting. Kazsat will be made in Russia, and we expect operators in this region will continue to order satellites from Russia. These nations are unlikely to pay global market rates for satellite capacity, and currency rates between countries are a major driver when they are looking at 18-30 months before delivery of the satellite.

We expect transponder supply to increase by 5.6% annually from 2005 to 2010. We expect transponder demand to increase by 10.8% annually from 2005 to 2010. The average capacity utilization rate for the same time period is 38%.

Figure 14: Russia & Central Asia Transponder Demand and Supply

Russia & Central Asia Transponder Demand							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total	120	135	150	165	180	200	10.8%
Growth Rate	2005	2006	2007	2008	2009	2010	
Total	4.3%	12.5%	11.1%	10.0%	9.1%	11.1%	
Russia & Central Asia Transponder Supply							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total (C, Ku & Ka)	342	400	400	425	450	450	5.6%
Utilization Rate	35%	34%	38%	39%	40%	44%	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total (C, Ku & Ka)	14.0%	17.0%	0.0%	6.3%	5.9%	0.0%	

Source: Near Earth LLC Analysis

Southern Asia & Asia Pacific

Regional Operator model has led to poor transponder supply management

The Asian region is still the largest potential market with a demand of about 1400 transponders (36 MHz equiv.) by 2010. But this region still faces too much capacity with too many region-specific operators. China, Japan and Korea comprise a relatively stable regional sector, but within the footprint of each country are large satellite markets that are completely isolated from adjacent ones. Any sharing of satellite assets and bandwidth across borders, such as the case with MBSAT, a JV involving companies in Korea and Japan, represent an exception rather than the rule. India seems to be following the same regional model with the Indian Space Research Organization operating the INSAT fleet of satellites. This model has led to poor transponder supply management in the entire region. For example, the utilization rates for APT Satellite Holdings, an Asian satellite operator, fell to 53.9% in 2004 from 60.7% in 2003. A significant merger between these regional players that could lead to an actual reduction in capacity within this region does not appear to be happening, therefore, we do not expect to see a substantial increase in capacity utilization during 2005 – 2010.

This region will continue to see pockets of demand increases for specific applications, technology and/or orbital slots. According to the Northern Sky Research, transponder demand for broadband along with narrowband VSAT will more than double throughout the next five years across all of East Asia including China, while the dominant video services sector, which surpasses all others combined, including telephony and carrier services in the region, will expand by 40%. China launched its first HDTV channel in Jan. 2006, and they plan to broadcast the 2008 Beijing Olympic Games with digital technology.

India's DTH market is ready to boom with the launch of INSAT 4A. INSAT 4A, launched in Dec. 2005, is expected to provide 12 Ku transponders for T-Sky, Tata's-Star groups JV to provide DTH services to Indian consumers.

IPSTAR is the newest satellite broadband service to be launched

Finally, the most aggressive operator in the Asian region is Shin Satellite. They recently launched their IPSTAR satellite with 84 Ku and 18 Ka band transponders. Many industry insiders are looking at IPStar to see if they can make broadband satellite affordable to consumers in that region.

Although most of these operators are thinking carefully about their strategy and are reconsidering replacement strategies, we expect transponder supply to increase by 2.2% annually from 2005 to 2010. We expect transponder demand to increase by 2.3% annually from 2005 to 2010. The average capacity utilization rate for the same time period is 61%.

Figure 15: South Asia & Asia Pacific Transponder Demand and Supply

South Asia & Asia Pacific Transponder Demand							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total	1250	1250	1275	1300	1348	1400	2.3%
	50	0	25	25	48	52	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total	4.2%	0.0%	2.0%	2.0%	3.7%	3.9%	
South Asia & Asia Pacific Transponder Supply							
36 MHz Equivalent	2005	2006	2007	2008	2009	2010	CAGR
Total (C, Ku & Ka)	1973	2059	2186	2270	2250	2200	2.2%
Utilization Rate	63%	61%	58%	57%	60%	64%	
Growth Rate	2005	2006	2007	2008	2009	2010	
Total (C, Ku & Ka)	5.8%	4.4%	6.2%	3.9%	-0.9%	-2.2%	

Transponder Pricing and Revenues

Transponder pricing ranges from \$600k – \$1.2 million for C-band and \$1.1 – \$1.7 million for Ku-band.

Revenues per transponder and transponder utilization rates are the most important drivers of top-line results for FSS operators. Transponder pricing data are hard to get because capacity is negotiated individually with each customer and contract information is rarely made public. Globally, we estimate that C-band capacity on currently negotiated contracts averages about \$600k – \$1.2 million a year and Ku-band \$1.1–\$1.7 million. Ka-band pricing is still in the early stages. In North America, recently negotiated Ku-band transponder lease rates on satellites average approximately \$1.6 million per year. Ku-band transponder lease rates in Europe are higher and can approach \$3.0 million per year. Annual lease rates in 2004 for APT Satellite Holdings, an Asian satellite operator, were \$1.1 - \$1.2 million, but pricing in Asia has been quoted as low as \$600k. Moreover, transponder lease rates vary considerably depending on a number of factors both on the side of the operator and the customer:

Operator Considerations Affecting Transponder Pricing

Satellite Footprint — This refers to the satellite’s coverage area or areas reached by its beams. A satellite is considered a “hotbird” if many satellite dishes are pointed at it. This can be particularly desirable for video broadcasters whose primary goal is to reach the maximum number of television viewing audiences.

Frequency Band — Lower-power C-band transponders are less-expensive than higher power Ku-band transponders. Ku-band transponders are more powerful and require a smaller dish for reception, and therefore have wider applications such as DTH TV and use less rooftop real estate.

Transponder Power — Called Equivalent Isotropic Radiation Power (EIRP), and measured in dBW, this is a measure of a satellite’s transponder power. A satellite’s EIRP weakens near the edge of its footprint. Typical EIRPs for DTH range from 33 to 40 dBW for C-band transponders and approximately 40 to 53 dBW for Ku-band transponders.

Larger Fleets – Operators with large fleets can withstand lower transponder pricing due to economies of scale in operating and marketing activities.

Customer Factors Affect Pricing

However, contracts are individually negotiated and vary considerably.

Desirability of customer – Many satellite operators seek solid “anchor tenants” that will attract additional customers, and they give these tenants a lower rate much in the same way a new shopping mall will do for a major national retailer. If a customer will be using the satellite to transmit highly popular content, such as HBO, this will cause most cable head-ends to point to this satellite. The satellite will then be very desirable for minor programmers since cable headends will be able to receive their content without having to dedicate another dish to it and are thus more likely to do so. This is a very important dynamic in the video broadcasting industry.

Number of transponders committed – A customer committing to a large number of transponder will essentially get a “bulk discount.”

Length of commitment period – Obviously, the longer the commitment period the lower the rate because a long period reduces the operator’s risk level.

Pre-emptability / backup needs – Often, customers whose needs are not critical will agree to a lower rate if they can be moved off or “preempted” if another satellite fails and customers on that satellite with critical needs can be given their capacity until a longer-term solution is in place. Alternatively, some customers with critical needs will pay a premium if they can be guaranteed a spot on another satellite if the one they are on fails.

Service Contracts Also Affect Pricing

Lease terms also determine transponder pricing. Leases typically run for three to seven years, and the longer leases have greater discounts. However, operators can also offer capacity on-demand for special events, such as major sporting events. Given that these types of leases enjoy premium pricing, some FSS operators typically like to leave a percentage of transponder capacity available on stand-by for such events. Finally, certain operators also incorporate escalation clauses into their leases of between 3% and 5%. FSS operators typically enter into three major types of service contracts for satellite transponders:

1. ***Operating Lease*** — This is the most common form of contract. Operating lease revenues are generally recognized on a straight-line basis over the lease term (unless collectibility is doubtful). Differences between operating lease payments received and revenues recognized are deferred or amortized from operating lease receivables.
2. ***Sales-Type*** — FSS operators recognize revenues as the net present value of the future minimum lease payments. The cost basis of the transponder is removed and charged to cost of outright sale. During the life of the lease, the company recognizes as revenues in each period that portion of each periodic lease payment deemed attributable to interest income.

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3. **Outright Sale** — All rights and title to a transponder may be purchased under which the FSS operator recognizes the sale amount as revenues and the cost basis of the transponder is removed and charged to cost of outright sales and sales type lease.

Conclusion

The FSS industry is an attractive industry especially for the large global operators. Over the next five years, we expect the consolidations of Intelsat/PanAmSat, SES/New Skies and others to improve the average levels of transponder pricing in most regions and lead to increased capacity utilization. They will benefit from an industry characterized by high EBITDA margins, recurring cash flow, high returns on invested capital and high barriers to entry.

Broadcasting applications such as HDTV and, to a lesser extent, IPTV will drive the global demand for video services. Telecommunication applications such as VSATs and satellite broadband will develop varying pockets of demand from region to region. We expect rural areas in developed countries and regions with inadequate terrestrial networks to offer the greater growth potential for FSS operators.

In the next five years, we believe the FSS industry can provide new opportunities for both investors and companies. Near Earth LLC professionals have a unique combination of top tier investment banking experience, industry knowledge and first hand highly ranked research expertise that is unmatched on Wall Street. This allows us to think strategically about the industry and its trends and dynamics and offer more proactive and creative ideas to our clients. Please visit our website, www.nearearthllc.com, to learn more about our professionals and our capabilities.

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