

Navigating the Obstacles to Satellite Servicing: Insurance, Policy, Finance and Legal Considerations

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Executive Summary

- The long-term need and strategic importance of in-orbit satellite servicing is too compelling to ignore.
- The future of the global satellite services market will in all likelihood include extensive in-orbit satellite servicing.
- The military, commercial and government satellite sectors would benefit from such a capability.
- The United States should seek to establish and take a leadership position in the new satellite servicing market:
 - Scientific, commercial and strategic reasons
 - Other nations will otherwise potentially fill the void
- So how do we make such a future become a reality?

Executive Summary (cont'd)

- Sufficient funds need to be raised to make the vision a reality.
- Institutional investors avoid projects with material business, technical and/or political risk.
- Let's take a look at what it would take to attract institutional capital to fund this program alongside strategic and government support.
- In so doing, we will answer the following questions:
 1. What is the sentiment of the capital markets toward such projects?
 2. What are the program's business, technical and political risks and how can those risks be mitigated?
 3. What are potential deal structures that can make the program attractive to investors?

State of the Market: A Tale of Two Markets

Satellite Industry: 2011 Capital Raised

Both prime financing sources had a stellar performances

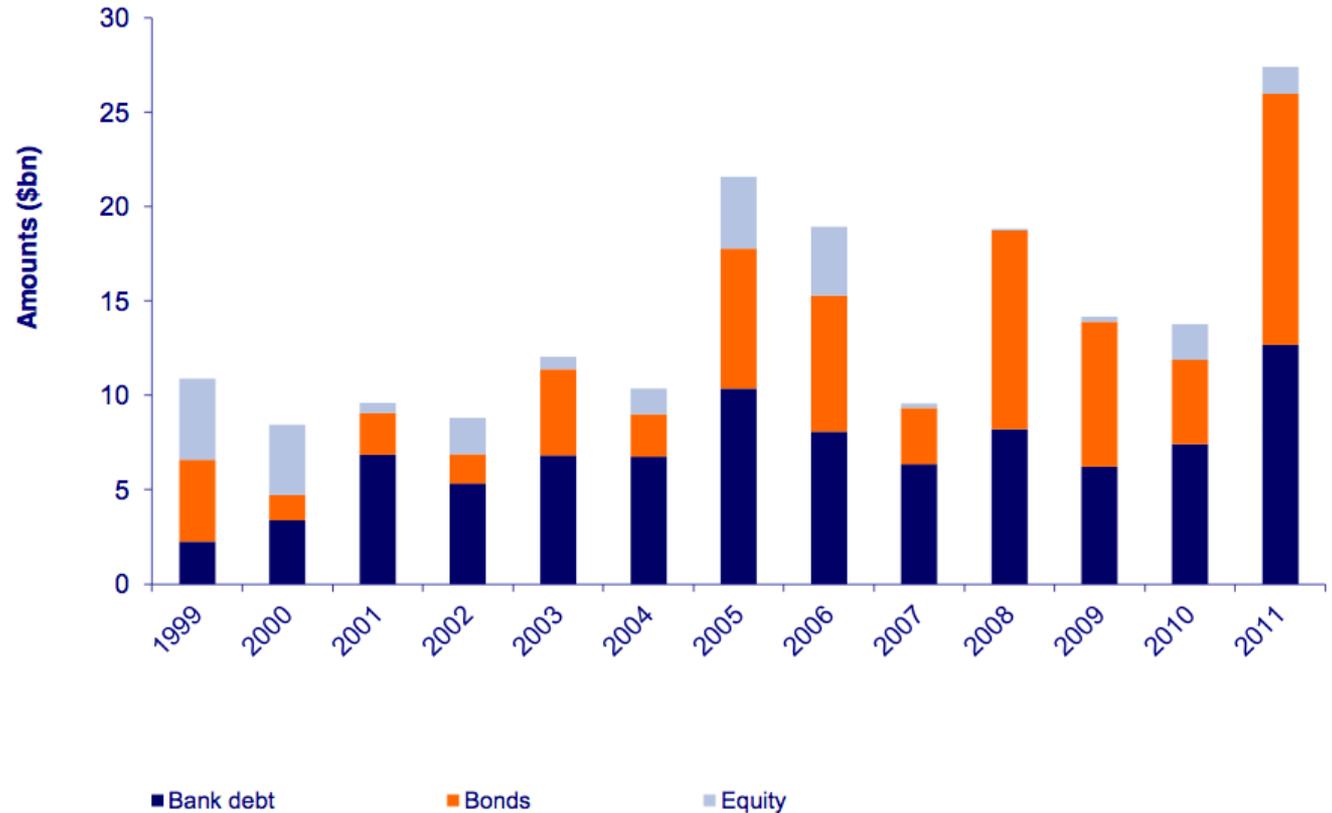
Largely driven by re-financing activity

Supported by a vibrant North American institutional market for both bank debt and bond financings

New bank financings supported by Export Credit Agencies



Yet, no IPO's priced in 2011!



Source: ING,

Satellite Debt Financings – 2011

Project	Structure	Amount	Date
Shaw Communications	senior unsecured notes (Moody's Baa3/ S&P BBB-)	C\$400M (30 year, 6.75%)	Feb. 14, 2011
SES	Eurobond (Moody's Baa2/ S&P BBB)	€650M (10 year, 4.75%)	Mar. 2, 2011
DIRECTV Holdings	senior unsecured notes	\$4B (\$.5B 5 year, 3.5%; \$1.5B 10 year, 5%; \$1B 30 year, 6.375%)	Mar. 7, 2011
Intelsat Jackson	senior unsecured notes	\$2.65B (\$1.5B 8 year, 7.25%; \$1.15B 10 year, 7.5%)	Mar. 21, 2011
Satmex	senior secured notes (Moody's B3/ S&P B)	\$325M (6 year, 9.5%)	2-May-11
DISH DBS Corp.	senior notes (Moody's Ba3/ S&P BB-)	\$2B (10 year, 6.75%)	2-May-11
Xplornet Communications	senior secured notes	C\$230M	24-May-11

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Satellite Debt Financings – 2011

Project	Structure	Amount	Date
Echostar/EH Holding Corp.	senior secured/ unsecured notes	\$2B (\$1.1B 8 year, secured, 6.5% \$900M, 10 year, unsecured, 7.625%)	1-Jun-11
GlobalStar	convertible senior unsecured notes	\$50M (10 year, 5%)	21-Jun-11
DigitalGlobe	senior secured notes	\$600M (\$500M 7 year term, LIBOR + 4.5%, \$100M 5 year revolver)	Oct. 12, 2011
Eutelsat	senior unsecured notes (Moody's Baa2/ S&P BBB)	€1.7B (€800MM 7 year; €700MM 5 year; €200MM 5 year revolver; 5%)	Dec. 7, 2011

\$15,353,000

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Satellite Bank Credit Facilities – 2011

Company	Amount	Date
Intelsat Jackson Holdings	\$3,750,000,000	Jan. 12, 1011
DIRECTV Holdings	\$2,000,000,000	Feb. 10, 2011
LightSquared	\$586,000,000	Feb. 22, 2011
Asia Broadcast Satellite/Kingsbridge	\$215,000,000	18-May-11
Inmarsat	\$700,000,000 (3.2 – 3.3%)	13-May-11
Azercosmos	\$116,600,000	7-Jun-11
Orbital Sciences Corporation	\$300,000,000	8-Jun-11
Measat	\$120,000,000	30-Jun-11
LightSquared	\$263,750,000	1-Jul-11
Hispasat	€ 165,000,000	Aug. 1, 2011
Azercosmos	\$80,000,000	Oct. 18, 2011
Azercosmos	\$85,000,000	Oct. 31, 2011
Total:	8,434,000	

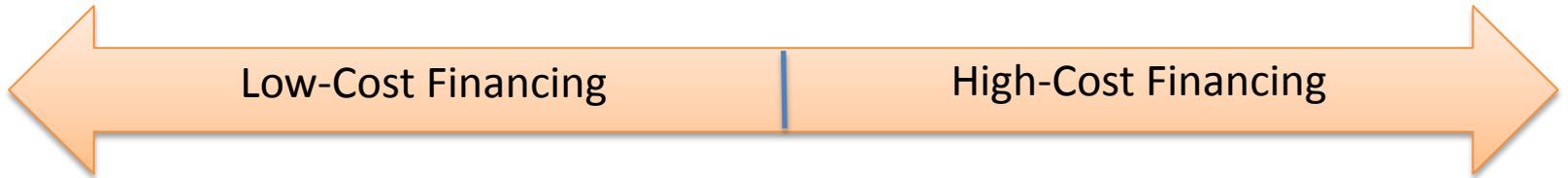
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M&A – 2011

Satellite Company	Acquirer / Investor / Arranger	Announced Date/Closing	Acquisition Price
Hughes Communications	EchoStar Corporation	Feb. 14, 2011	\$2B
DBSD North America	DISH Network	Mar. 15, 2011	\$1.4B
Blockbuster	DISH Network	April 6, 2011	\$228M
Ship Equip International	Inmarsat	April 28, 2011	\$159.5M
StarTrak Systems	ORBCOMM	May 17, 2011	\$18.5M
TerreStar Networks	DISH Network	July 8, 2011	\$1.375B
Vizada	EADS	Aug. 1, 2011	\$960M
O3b Networks	Secondary: HSBC	Oct. 31, 2011	\$15M
Eutelsat	Abertis sale: Credit Suisse, Morgan Stanley, Société Générale	Jan. 13, 2012	\$1.3B
Shin Corp.	Temasek sale: Credit Suisse, Siam Commercial Bank	Jan. 18, 2012	\$254M
PAR Logistics Management	ORBCOMM	Jan. 19, 2012	\$6M
Hispasat	Telefonica sale to Abertis	Feb. 21, 2012	€124M

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Cost of Capital



- ### The Haves
- Established companies
 - Proven/legacy technologies
 - Large issuance with liquid secondary market
 - Minimum execution risk

Vs.

- ### The Have Nots
- Smaller/startup companies
 - Newer technologies
 - Unproven market
 - Material business, technology, political risk
 - Illiquidity discount

Business Risk



Technical Risk



Political Risk



Key: Providing investors comfort related to managing business, technical and political risks.

Private/Public Partnership Structure

Orbimage (Geo-Eye)

NextView (2004):

- \$500 mm project
- No Commercial backlog
- Institutional skepticism

Structural Solution:

- Private/public partnership
- NextView-5 satellite: \$502 mm
- NGA: \$235.0 mm
- Institutional Equity: \$65.0 mm
- Institutional Debt: \$155.0 mm
- Other: \$57.0 mm
- Total: \$502.0 mm
- NGA services commitment of \$265.0 million.
- Importance of banker/advisor.

Key: Role of the US Government as sponsor and/or customer

The capital markets are attracted to such structures.

Need to manage US Government procurement and annual budgeting issues and risks.

Managing Business, Technical and Political Risks

The In-Orbit Satellite Servicing Opportunity

	Risks	Mitigating Strategies
Business Risks	<ul style="list-style-type: none">• Unproven market• No track record• Entrenched interests• Uncertain financial forecast• Uncertain investor returns	<ul style="list-style-type: none">• Firm backlog• Upfront capital/pre-payment• In-Orbit test and success• Consortium supported• Conservative funding
Technical Risks	<ul style="list-style-type: none">• Satellites not designed for in-orbit servicing• Access and repair of fuel storage and other systems• Potential damage• Insurance issues/concerns	<ul style="list-style-type: none">• Heavy research/lab testing• In-orbit test and success• Extensive due diligence• Investors to bear substantial “business risk” but require comfort on “technical risks”
Political Risks	<ul style="list-style-type: none">• Ability of government to enter into and fund multi-year commercial venture• License issues/revocation• International treaties• Classified programs	<ul style="list-style-type: none">• Private/public partnership• Upfront capital/pre-payment• Firm backlog (structuring)• Breach/consequence• Multi-year funding• Long-Term strategic priority



Key: Creating an attractive investor risk vs. return.

Potential Deal Structures

- Contribution of NASA Goddard technology
- Firm backlog (commercial and government) – e.g. DOD, NASA, etc.
- Upfront capital, pre-payment
- Seasoned bankers and advisors (all sides)
- Extensive due diligence
- In-Orbit testing and success
- Path to operating cash flow breakeven
- Potential backstop financing
- Consortium funding (Strategic, Institutional, US Government)

Conclusion

1. What is the sentiment of the capital markets toward such a project?

Answer: Investors avoid programs with material business, technical and/or political risks. Create deal structure that mitigates risks.

2. What are the program's business, technical and political risks and how can those risks be mitigated?

Answer: Preliminary risks have been identified with corresponding mitigation strategies. Potential Private/Public Partnership with upfront capital/pre-payment.

3. What are potential deal structures that can make the program attractive?

Answer: Committed backlog, pre-payment, in-orbit testing and success, consortium funding, backstop financing, sponsorship by US Government are but a few of the potential deal features.