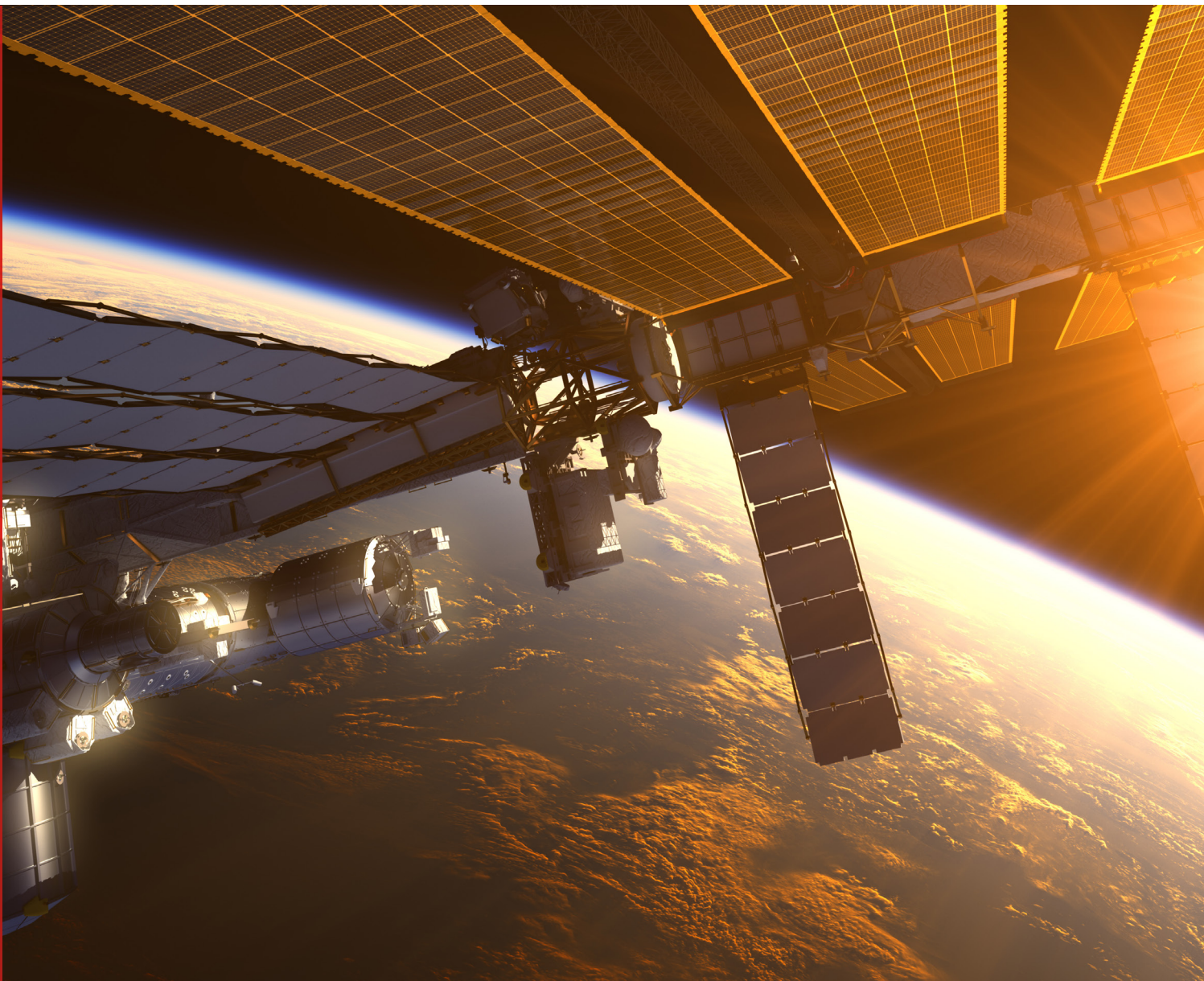


# Satellite financing



# Satellite financing

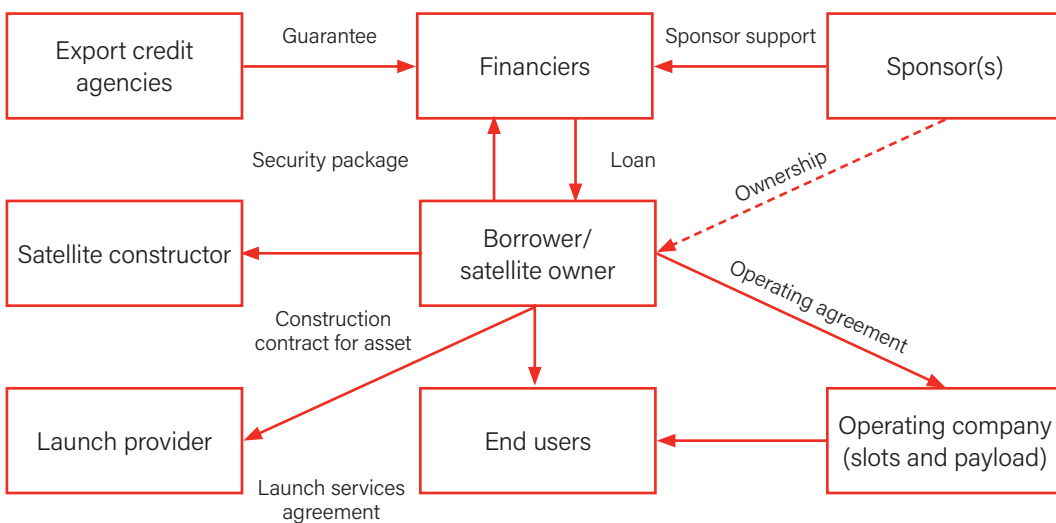
In 2015 the global space industry was worth \$340 billion, and by 2030 it is predicted to be worth \$640 billion. To put this in context, in 2012 there were between 40 and 50 launches into space, and in 2017 there are estimated to be over 300 launches. Innovative technology, together with a desire for secure and stable global internet and data services have led to huge investment in the space industry from government entities and entrepreneurs as we now enter the age of the commercial space race. Export credit agency backed financing has been available but has perhaps been underutilised in this sector. However, as competition increases and brings down costs, there will be more opportunities for financiers.

There are several United Nations Conventions (known as Space Treaties) which govern the use of space, which date back to 1967. These Space Treaties are adopted by individual countries, and are often supplemented by national legislation. Individual governments were given responsibility for certain space activities originating from their country, which tends to result in a highly regulated industry. When drafted, the Space Treaties did not anticipate that private companies would be venturing into space, and it is now expected that governments will look to enact further legislation to regulate commercial space activities.

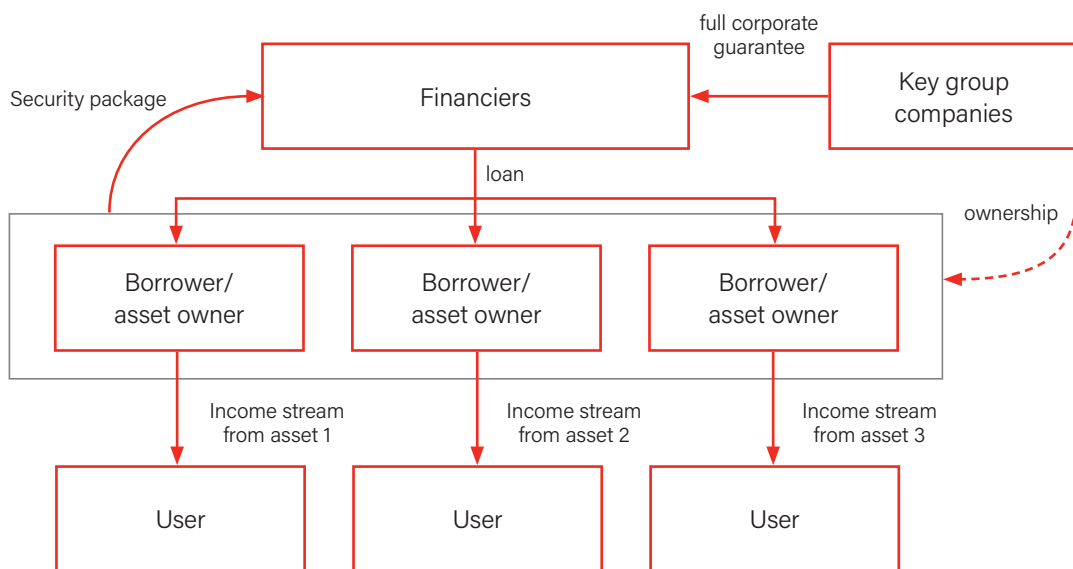
## Typical structures

No two financing structures are the same. This is a reflection of the way in which satellite companies choose to fund themselves, their tax considerations, the type of assets they operate and the terms of the underlying income arrangements. Some typical structures are:

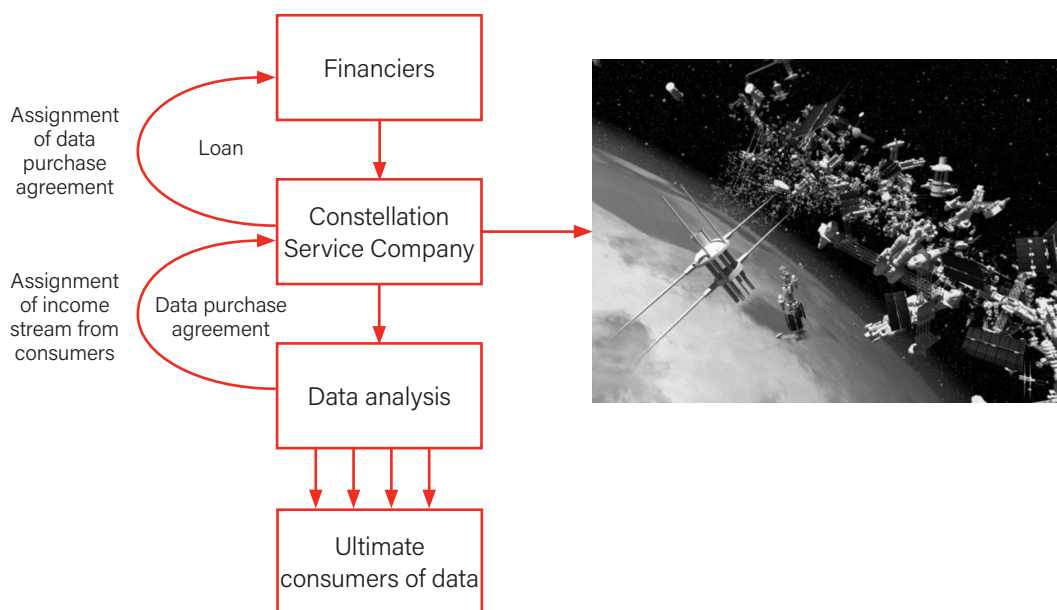
### Limited recourse/project financing



### Full recourse/corporate-style financing



### Constellation financing



## Typicals risks

### Regulatory risks

A licence to conduct space activities may be required in order to launch and/or operate a space object pursuant to applicable national space legislation. This will set out the conditions under which the licensee is able to conduct its operations.

A number of requirements will need to be satisfied by the licensee before being granted a licence, including arranging for liability insurance coverage. National space legislation may contain provisions on liability for damage that the space object causes in orbit or on the ground and may set out liability caps. Careful consideration to these caps must be given as the insurance coverage will need to match any applicable liability caps. Operators will also need to complete a frequency allocation process – together with an orbital slot allocation process for satellites in geostationary orbit. Continuing monitoring of regulatory approvals is considered essential throughout the life of the financing.

### Construction risk

Given the difficulties in launching into space, the creditworthiness and track record of the builder or contractor which performs the construction work is of great importance. Given the complexity of the work and the significant costs involved, cost overruns and delays can jeopardise the project. Financiers need to investigate whether the parties involved have the necessary expertise to complete the project and that they have satisfactory pre-completion guarantees and/ or equity commitments from creditworthy parties to cover the risk of cost overruns and delays. The financiers will usually require that their technical adviser is involved in monitoring the construction process.

### Launch risk

The launch is generally viewed as the most likely time that a space project could fail. Many financiers seek to mitigate the risk by requiring tried and tested methods of launches from launch providers that have a good track record. In addition, financiers will usually require that the launch services agreement and related insurance policies are reviewed carefully to ensure that they are adequately protected in the case of a failed launch.

### Operational and technology risk

Operational risk is enhanced where new technology is involved because often it cannot properly be tested until the asset is operating. The financiers' technical adviser will monitor operations and the financiers will usually require reserve accounts for operation and maintenance overruns.

### Enforcement risk

All assets launched into space must be registered on a national register and a centralised register currently administered by the UN Office for Outer Space Affairs. Although there is a Cape Town Convention protocol for space assets, this has not yet come into force (so far it has only attracted four signatures and requires ten) and was strongly opposed by many satellite companies. Once in orbit, it has not yet been demonstrated that a satellite can be brought back to Earth (although projects are currently underway in the context of space debris removal). As a result, in a default situation, the main recourse for any financier would be to any export credit agency or corporate support, or to sell the project as a whole to a new operator. For this reason, many project financings include significant security over assets and contracts which are considered necessary to operate the satellite, including the real estate mortgages over the property in which any ground components are housed. In addition direct agreements will be negotiated with each supplier, including launch services, operations and construction providers.

### Payment risk

The creditworthiness of the ultimate end user(s) is an important factor. In the case of a telecommunications satellite, the income stream will come from the customers for the transponder capacity (the ability to use the satellite's communications channel). For smaller imaging satellites, the loan repayments will be generated from purchasers of the data generated. These are either intermediary companies, who analyse the data and repackage it into sellable messages or companies that wish to purchase that information for their businesses. In some cases a corporate guarantee may be available during the operations phase.

## **Tax risks**

The tax treatment of each party to the financing needs to be considered based on normal tax principles. A question arises whether geostationary satellites (satellites which remain permanently fixed in exactly the same position when viewed from Earth) could result in a permanent establishment or be located in a particular jurisdiction for the purpose of sales taxes. Each jurisdiction has the right to determine the scope of its own taxing powers. However some comfort may be obtained from the Outer Space Treaty which forbids States from claiming ownership of outer space. For example, as a result of this treaty it is clear that the UK does not treat a satellite in space above the UK as either a permanent establishment or as being located in the UK when determining whether VAT should be imposed.

## **Environmental risks**

Space activities pose an inherent environmental risk in the different phases of spaceflight as a result of the technology and science involved. Licences to conduct space activities generally contain conditions requiring the licensee to conduct operations in such a way as to prevent environmental damage. Contractual arrangements between the different parties involved in the space activity can go some way to mitigating, or apportioning, pollution risk.

## **Anti-corruption and bribery risk**

This is a risk which affects all financiers and corporates irrespective of their industry focus and one that has obtained much greater prominence over the last few years.



## Jargon buster

<b>Constellation</b>	A group of satellites that work in concert to provide a service and operate together under shared control.
<b>Downstream activities</b>	Activities related to telecommunications, data capture, data processing and/or harnessing and the sale of data generated by space object(s).
<b>Frequency allocation</b>	The procedure by which a national administration allocates radio-frequency spectra domestically in accordance with the International Telecommunication Union's regional frequency allocation plan.
<b>Geostationary orbit (GEO)</b>	A circular orbit 35,786 mm above the Earth's surface and that follows the direction of the rotation of the Earth making the object appear motionless in space. This type of orbit is used for telecommunication satellites that are required to provide constant services in a particular area on the ground.
<b>Low Earth orbit (LEO)</b>	An orbit around the Earth with an altitude between the Earth's surface and 2,000 km above the Earth's surface.
<b>Orbital slot allocation</b>	The procedure by which a national administration allocates a geostationary orbital slot domestically in accordance with the International Telecommunication Union's orbital allocation plan.
<b>Outer space</b>	There is no internationally agreed legal definition of 'outer space.' However, a number of states consider that outer space begins at an altitude of 100 km above sea level (above the Kármán Line in the atmosphere).
<b>Payload</b>	The carrying capacity of the launch vehicle, usually measured in terms of weight.
<b>Satellite</b>	A space object that is intentionally placed into the Earth's orbit.
<b>Stratosphere</b>	The layer of the atmosphere between the troposphere (where the majority of atmospheric phenomena occur) and the mesosphere. Depending on the latitude, the stratosphere begins at about 18 km above sea level and ends at 50 km above sea level.
<b>Space activity</b>	There is no internationally agreed legal definition of 'space activities.' However, a number of pieces of national space legislation consider these as (i) the launching of a space object; (ii) the operation of a space object, and (iii) the activities to support activities (i) and (ii) on and from the Earth.
<b>Space object</b>	An object intended to be sent to outer space including its component parts as well as its launch vehicle and the launch vehicle's component parts.
<b>Space Treaties</b>	A collection of international legal instruments comprised of (i) the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the 'Outer Space Treaty') adopted in 1967; (ii) the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the 'Rescue Agreement') adopted in 1967; (iii) the Convention on International Liability for Damage Caused by Space Objects (the 'Liability Convention') adopted in 1972; (iv) the Convention on Registration of Objects Launched into Outer Space (the 'Registration Convention') adopted in 1975; and the (v) the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the 'Moon Agreement') adopted in 1979.
<b>Spaceport</b>	A base from which space objects are launched into outer space.
<b>Sub-orbital spaceflight</b>	Any spaceflight which reaches outer space but does not complete an orbital revolution around the Earth.
<b>Upstream activities</b>	Activities related to the engineering, manufacturing and production of equipment for space, launch services and insurance.

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# Our role

The financing of satellites involves bespoke solutions for each deal, taking into account the nature of the project and the risks involved. We have significant experience in developing and executing these structures across all major jurisdictions. If you would like to discuss any aspect of satellite financing, please get in touch with your usual Norton Rose Fulbright contacts or any of the individuals named in this briefing.

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