Corporate Overview

The world is increasingly inter-connected, cloud-based and data-driven, requiring instant infrastructure anywhere and with it a new broadband paradigm. With data creation and consumption fast outpacing existing solutions, LeoSat Enterprises is changing the rules of the game, launching a constellation of up to 108 low-earth orbit (LEO) communications satellites providing the first commercially available, enterprise grade, extremely high-speed and secure data service worldwide.

Most brilliant solutions are elegantly simple. LeoSat is taking data networks into space. Satellites have now become routers and are inter-connected with lasers forming an optical backbone in space. Data travels at the speed of light from a customer terminal to the final destination – anywhere around the globe. The result? A faster than fiber, ultra-secure and highly reliable data network.

Combining the Speed of Fiber with the Ubiquity of Satellite

Up until now traditional GEO and MEO satellites were not designed for data and considered a last resort or gap filler. Now with LeoSat's network operating in polar orbits 5 times closer to earth than MEO and 25 times closer than GEO and connected via inter-satellite laser links, LeoSat offers many advantages when it comes to throughput, latency and true global coverage. Setting a new bar for high-speed data networks, LeoSat provides a unique solution with the highest performance offered by any existing or planned system, including fiber.

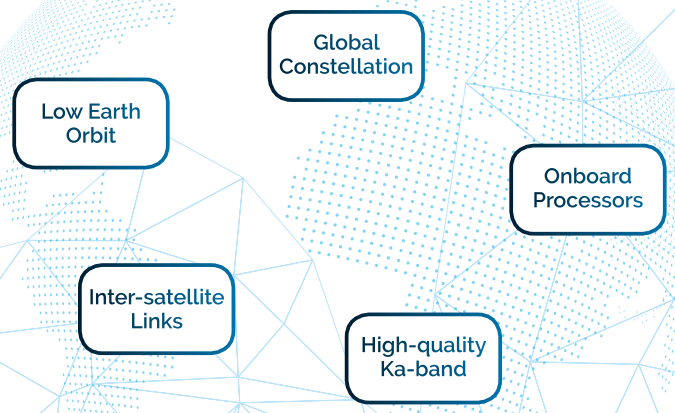
A New Architecture for Data

The LeoSat system is being developed in conjunction with Thales Alenia Space, a company with unmatched expertise in designing and manufacturing low earth orbit constellations. The high-throughput satellites (HTS) will form a mesh network interconnected through laser links, creating an optical backbone in space which is about **1.5 times faster** than terrestrial fiber backbones, thus creating a paradigm shift in the use of satellites for data connectivity – rather than a gap filler or last resort where no terrestrial alternative is available. LeoSat offers capabilities beyond satellite and beyond fiber.

- **Ubiquity** – Service without compromise to the harshest environments and the most remote areas
- **Security** – Physically separated network and high-level encryption
- **Redundancy** – Multiple satellites at any given time
- **Symmetry** – No variation in forward and return speeds

LeoSat is changing the rules of the game.

Setting a new bar for high-speed networks.



Corporate Overview

New Opportunities for Multiple Market Segments

LeoSat addresses the business to business market. The system has been designed to solve essential communications and connectivity issues and meet the ever-growing demand to move large quantities of data quickly and securely around the world in sectors such as **oil & gas, maritime, telecommunications, multi-national enterprise** and **government services** market by filling the space between satellite and fiber. The key attributes of the LeoSat service can be used for a number of applications, for example, to provide the only native **4G and 5G satellite** backhaul to the cellular industry, give banks secured networks with their foreign offices, provide enormous uploading bandwidth required for oil & gas exploration or allow Internet access to passengers on cruise ships. LeoSat will not only provide a competitive advantage in the existing satellite services market, it will help to expand these markets by enabling new opportunities through previously unavailable levels of performance with true worldwide reach. In addition, data security is assured as it stays on the LeoSat satellite network for the entire route, making it much less susceptible to monitoring, hacking or even disruption.

Unmatched Reliability and Security for Enterprise Communications

For the Enterprise Communications sector with the need to move large, sensitive amounts of data around the world, **reliability and security** are key components of a critical data network. LeoSat's advanced and unique system architecture is able to highly encrypt and logically separate and route the data as it flows through the system allowing the company to deliver the **highest performing, most secure, furthest reaching network in the world.** With LeoSat, data travels in its native form, but is encrypted and secure from end-to-end across an optical satellite network, with no terrestrial touch points. Enterprise communications can now rely on LeoSat for domestic and international data transport, communications backhaul or hosted solutions that are not only completely secure but delivered faster than on any other satellite or terrestrial network.

Increased Capacity for Cellular Backhaul

As cellular protocols become more and more sophisticated and cellular use accelerates, there is an ever increasing need to transport cellular signals for long distances, at high speeds, in high volume and native form. These growing backhaul **needs are not being met by current terrestrial networks** and existing and planned satellite networks are too slow and the bandwidth limited. For existing and emerging market telecom operators, LeoSat offers significant advantages as its latency, timing and transport are in compliance with the network standards of the newer **4G, 5G** and **LTE cellular systems.** And with the continued growth in Internet use, streaming media, smart phone use, mobile apps and the "Internet of Things", the **low latency of the LeoSat system** will become increasingly an **attractive alternative** to the high latency of GEO systems.

Seamless, Global Connectivity for Maritime Communications

Maritime operators face significant problems getting adequate broadband networks to interlink ships to each other and to a main office and to serve the ever-increasing data and Internet needs of passengers and crew. On cruise lines, **passengers are demanding more** and more bandwidth to power consumer devices and for Internet access. Existing satellite systems, most of which can only illuminate limited portions of the earth from GEO or MEO orbits, cannot satisfy these needs. A LEO system with interconnected satellites can **bring ships "on-net", regardless of their global position,** just as if they were a local network node enabling operators to leverage the new "Smart Ships" digital infrastructure where cloud-based operations will improve efficiency, operational effectiveness and safety as well as providing new business opportunities.

Corporate Overview

Secure, High-Throughput, Resilient Network for Governments

Governments are increasingly looking to the commercial satellite sector and in particular next-generation satellite constellations to provide the innovative and resilient communications infrastructure they need. The Military and Government sector relies on a number of key attributes when it comes to communications networks. Critical operations require bandwidth intensive applications, near real time command and control and advanced sensor capabilities. The proximity LEO satellites have to the earth translates into lower latencies and better data rates. Security and resilience are also key attributes and with a "touchless architecture" - taking traffic in its native form and carrying it **from any point on earth to any point on earth without touching the earth's surface in between** and therefore completely isolated from any terrestrial infrastructure – this is an enormous advantage to the Military. And for Embassy communications, rooftop-to-rooftop without any terrestrial touchpoint in between, means an **ultra-secure, resilient communications network.**

Unique Data Network Solution for Smarter Oilfields

The Oil & Gas industry needs connectivity solutions with low latency and high throughput to improve productivity and on-shore/off-shore collaboration. Increasingly modern rigs produce enormous amounts of data that ideally would be reviewed in near real time. Existing satellite networks cannot handle the bandwidth and speed requirements to move this amount of data quickly, hence LeoSat was conceived as an **ultra low latency, high throughput, global data network solution** achieved via a unique optical backbone in space. LeoSat's advanced global network architecture will enable voice, video and cloud-based enterprise applications for digital oilfield communication, **driving efficiencies** and **ensuring optimized connectivity.**

Constellation for Connectivity in the Arctics

Data communications to and from the Polar regions is challenging and expensive. Building cable networks is hardly feasible from an economic perspective and satellites communications using the traditional GEO arc comes at low speed, high costs and operational challenges. For bulk data there is no viable solution and all too often the data needs to be physically carried out to its destination. In particular, for data-intensive activities such as research, this causes serious delays and additional costs. With LeoSat's satellites in polar orbits, the Arctic regions can now **benefit from increased bandwidth** for a range of broadband communications services and **connect to any location anywhere in the world** with extremely low latency.

High Speed and Ultra Low Latency for The Finance Sector

In the finance industry and in particular the trading sector, banks, hedge funds, trading firms and financial services companies are always looking for the latest technologies and innovations to stay ahead of the competition. With exchange technology and big data at the forefront as key differentiators for success, companies are looking to address the challenges of latency management and network connectivity. LeoSat's system of low earth orbit communications satellites can achieve **lower latency** and **stronger end-to-end security** compared to traditional terrestrial solutions used today, in a market where speed advantages of milliseconds are worth **millions in potential profits**. For example, LeoSat can offer point-to-point latency of 100ms from New York to Tokyo.

Alternative Infrastructure for Video Contribution Networks

LeoSat's low earth orbit satellite infrastructure can also be deployed to complement fiber infrastructure for video contribution networks used for special event broadcasting. Often it is not technically or economically feasible to connect a particular venue using fiber, sometimes digging is not even permitted. LeoSat brings a solution that **offers the capacity and technical capabilities of a fiber network**, whilst at the same time offering the **ubiquity, ease of implementation** and **rapid deployment** which are characteristic for a satellite infrastructure. Using LeoSat, remote production becomes an option for all events, not just for those that have fiber connections to the venue, allowing media companies to cover more events in more locations.

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Satellites

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Availability

- 2019 Launch of two Early Birds offering GigaByte Store and Forward Services
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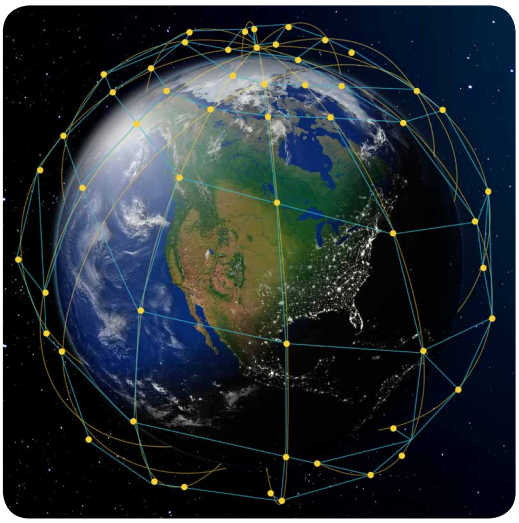
Key Specifications

Orbit	LEO
Payload	Elite Bus 2000 Plus
Payload Power	2500W
Payload Mass	430kg
Satellite Mass	670kg
Fuel Mass	150kg
Total Mass	1250kg



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Enterprise

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Capabilities Beyond Satellite...Beyond Fiber:

- **Security** – Physically separated network ensures security on the lowest physical level. High-level encryption add to physical separation
- **Ubiquity** – Any customer – anywhere. Service without compromise to the harshest environments and the most remote areas
- **Redundancy** – Multiple satellites at any given time. Redundancy unique to high-speed data networking
- **Symmetry** – No variation in forward and return speeds. Today's connections require symmetry – we deliver

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Key Features
Instant Infrastructure from Anywhere to Everywhere

- Rapid Deployment
- Ultra-secure
- Low Latency
- High Capacity
- Efficiency
- Real-time Connectivity

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Maritime

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LeoSat Connectivity Solutions

- High Bandwidth
- Cloud-based Office at Sea
- On-board Broadband

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- High throughput, Low-latency Video
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Delays Matter

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Availability

- 2019 Launch of two Early Birds offering GigaByte Store and Forward Services
- 2021 Start of launch of the constellation offering real-time, point-to-point connectivity with coverage growing from the Poles to the Equator on completion
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Cellular Backhaul

In a world increasingly inter-connected, cloud-based and data-driven, LeoSat Enterprises is launching a constellation of up to 108 low-earth orbit (LEO) communications satellites to providing the first commercially available, enterprise grade, extremely high-speed and secure data service worldwide.

Using optical inter-satellite links and operating in polar orbits at an altitude 5 x closer to earth than MEO and 25 x closer than GEO, LeoSat has many advantages when it comes to throughput, latency and true global coverage. As such, LeoSat offers a unique data network solution with the highest performance offered by any existing or planned system, including fiber.

Combining the Speed of Fiber with the Ubiquity of Satellite

The LeoSat system is being developed in conjunction with Thales Alenia Space, a company with unmatched expertise in designing and manufacturing low earth orbit constellations. The high-throughput satellites (HTS) will form a mesh network interconnected through laser links, creating an optical backbone in space which is about **1.5 times faster** than terrestrial fiber backbones, thus creating a paradigm shift in the use of satellites for data connectivity – rather than a gap filler or last resort where no terrestrial alternative is available. LeoSat will offer a **highly secure** and ubiquitous service that can rival and often beat fiber in terms of latency.

Increased Capacity for Cellular Backhaul

As cellular protocols become more and more sophisticated and cellular use accelerates, there is an ever increasing need to transport cellular signals for long distances, at high speeds, in high volume and native form. These growing backhaul **needs are not being met by current terrestrial networks** and existing and planned satellite networks are too slow and the bandwidth limited. For existing and emerging market telecom operators, LeoSat offers significant advantages as its latency, timing and transport are in compliance with the network standards of the newer **4G, 5G** and **LTE cellular systems.** And with the continued growth in Internet use, streaming media, smart phone use, mobile apps and the "Internet of Things", the **low latency of the LeoSat system** will become increasingly an **attractive alternative** to the high latency of GEO systems.

Leo Sat Connectivity Solutions:

- Backhaul to "islands"
- Backhaul towards remote locations
- Backhaul towards mobile base stations
- Event ready backhaul and seasonal hotspots
- Service hubs

System Overview

The Most Advanced Commercial Satellite System Ever Built

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Arctic Connectivity

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New Opportunities for Multiple Market Segments

The system has been designed to solve essential communications and connectivity issues and meet the ever-growing demand to move large quantities of data quickly and securely around the world in sectors such as **oil & gas, maritime, telecommunications, multi-national enterprise** and **government services** market by filling the space between satellite and fiber. The key attributes of the LeoSat service can be used for a number of applications, for example, to provide the only native **4G and 5G satellite** backhaul to the cellular industry, give banks secured networks with their foreign offices, provide enormous uploading bandwidth required for oil & gas exploration or allow Internet access to passengers on cruise ships. LeoSat will not only provide a competitive advantage in the existing satellite services market, it will help to expand these markets by enabling new opportunities through previously unavailable levels of performance with true worldwide reach. In addition, data security is assured as it stays on the LeoSat satellite network for the entire route, making it much less susceptible to monitoring, hacking or even disruption.

Constellation for Connectivity in the Arctics

Data communications to and from the Polar regions is challenging and expensive. Building cable networks is hardly feasible from an economic perspective and satellites communications using the traditional GEO arc comes at low speed, high costs and operational challenges. For bulk data there is no viable solution and all too often the data needs to be physically carried out to its destination. In particular, for data-intensive activities such as research, this causes serious delays and additional costs. With LeoSat's satellites in polar orbits, the Arctic regions can now **benefit from increased bandwidth** for a range of broadband communications services and **connect to any location anywhere in the world** with extremely low latency.

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Oil & Gas

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Unique Data Network Solution for Smarter Oilfields

The Oil & Gas industry needs connectivity solutions with low latency and high throughput to improve productivity and on-shore/off-shore collaboration. Increasingly modern rigs produce enormous amounts of data that ideally would be reviewed in near real time. Existing satellite networks cannot handle the bandwidth and speed requirements to move this amount of data quickly, hence LeoSat was conceived as an **ultra low latency, high throughput, global data network solution** achieved via a unique optical backbone in space. LeoSat's advanced global network architecture will enable voice, video and cloud-based enterprise applications for digital oilfield communication, **driving efficiencies** and **ensuring optimized connectivity.**

Key Features
Instant Infrastructure from Anywhere to Everywhere

- Rapid Deployment
- Ultra-secure
- Low Latency
- High Capacity
- Efficiency
- Real-time Connectivity

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