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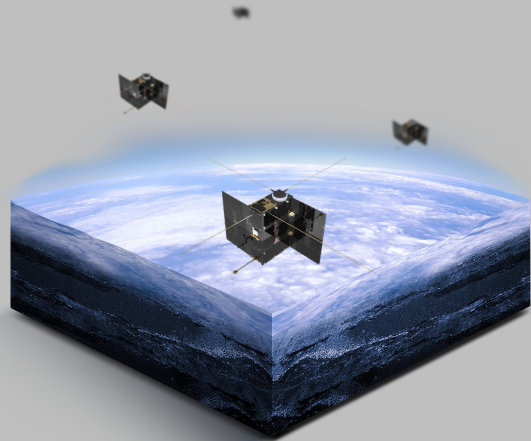


# **SPACE POWERED**

## **SIGNAL & GEOSPATIAL INTELLIGENCE**

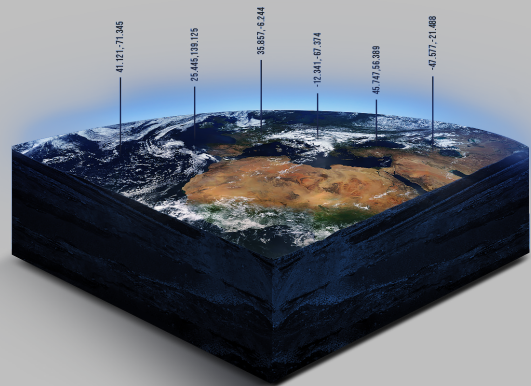
**CORPORATE BROCHURE**

May 2022



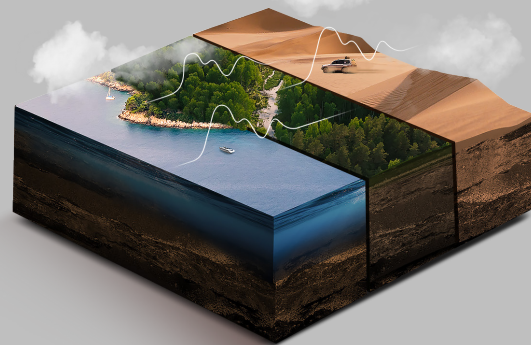
**COLLECT**

Constellation of satellites collecting RF signals over critical areas of interest.



**LOCATE**

Signals are processed, precisely geolocating RF transmitters.



**INFORM**

Delivering actionable, analytic-ready data of hidden radio activity.

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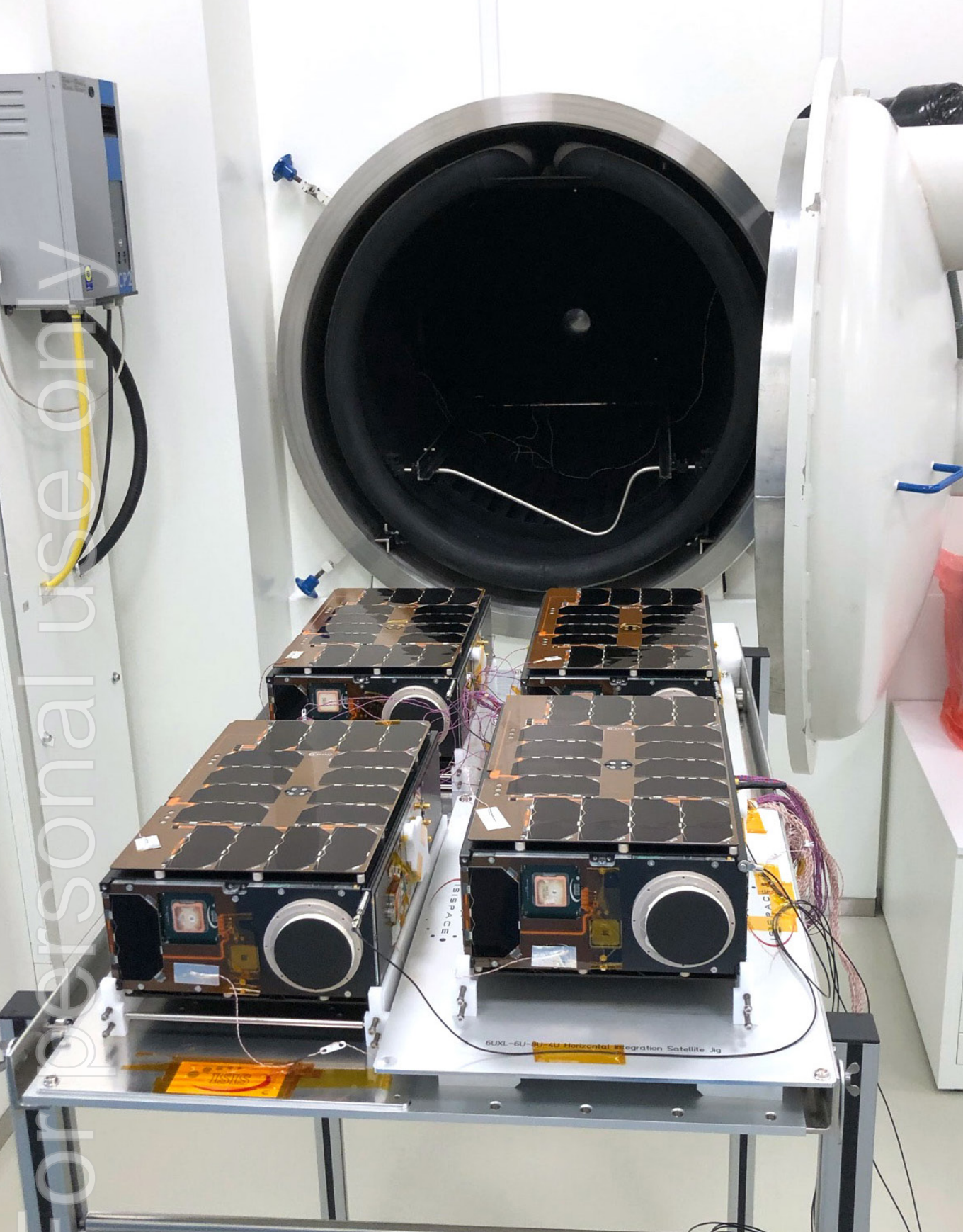
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All values are stated in US dollars unless otherwise stated.



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## KLEOS IS A SPACE-POWERED RF EARTH OBSERVATION COMPANY WITH OPERATIONS IN LUXEMBOURG, THE US AND UK.

Kleos uses Space technology to locate radio transmissions in key areas of interest around the globe, efficiently uncovering and exposing activity on land and sea. Using clusters of satellites, RF data is collected, transmitted to the ground, processed using proprietary technology, and delivered to customers worldwide.

Customers, including analytics and intelligence entities, license data on a subscription basis (Data-as-a-Service, DaaS) or by buy dedicated satellite capacity (Mission-as-a-Service, MaaS). The provided data is applicable to government and commercial use cases, aiding better and faster decision making.

### KLEOS' UNIQUENESS IS BASED ON THE FOLLOWING ELEMENTS:

- Clusters of 4 satellites fly in formation; 3 clusters (12 satellites) already in orbit.
- Kleos technology designed for precision location, and large collection volumes.
- Rapid development cycles allow for most up-to-date technology onboard with each new deployment.
- All collected RF data is downlinked, providing rich source for analytics.
- Data-as-a-Service and Mission-as-a-Service data is delivered via API.
- Significant pipeline of global, industry leading data fusion & integration entities.

## KLEOS IS A WORLD LEADER IN RF EARTH OBSERVATION, UNCOVERING PREVIOUSLY **HIDDEN** HUMAN ACTIVITY ON LAND AND SEA.<sup>i</sup>



**12**  
SATELLITES  
in orbit with global coverage



**253**  
MILLION KM<sup>2</sup>  
current max daily collection capacity



**300**  
METERS  
best case geolocation accuracy



**GLOBAL**  
COMPANY  
with an ability to supply the world



**260+**  
QUALIFIED DEALS  
across 4 continents<sup>ii</sup>

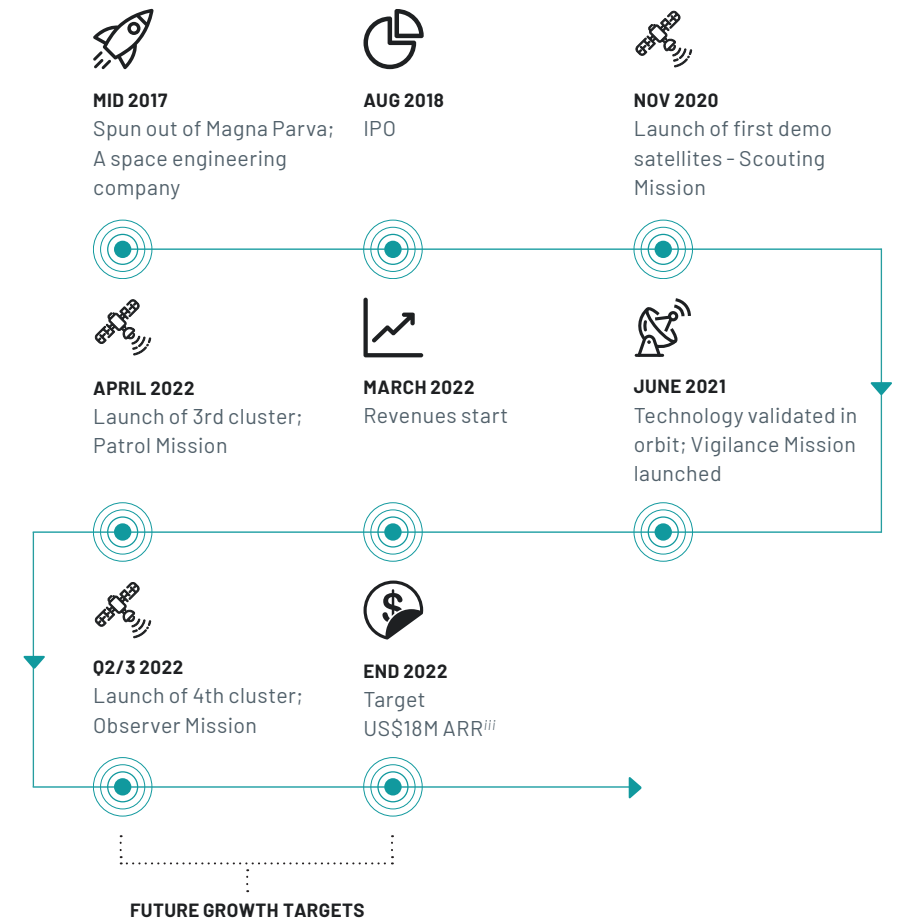


**REVENUE**  
GENERATING  
and scaling





## SINCE LAUNCHING ITS FIRST SATELLITES IN Q4:2019, THE COMPANY HAS ACHIEVED MULTIPLE MILESTONES





## KLEOS IS GROWING A CONSTELLATION OF SATELLITE CLUSTERS FOR OPTIMAL GLOBAL COVERAGES FOR ITS DaaS AND MaaS OFFERINGS.

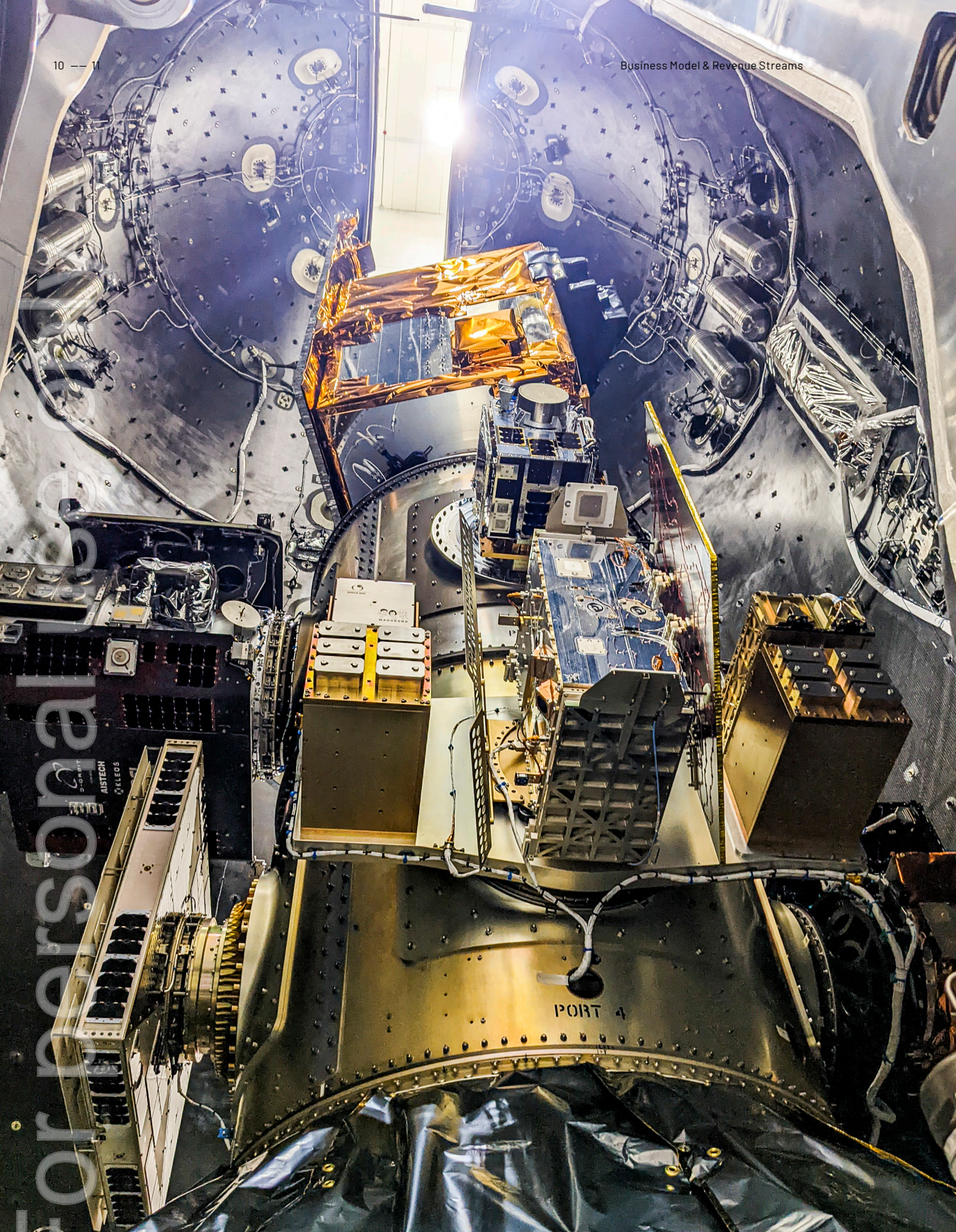
Kleos' constellation roadmap includes the deployment of new clusters in a short timeframe, increasing accuracy, improving latency and supporting a range of intelligence, defense, security, and commercial missions through enhanced situational awareness.

### DATA-AS-A-SERVICE

- We sell data to customers, including analytics and intelligence entities, licensing data on a subscription basis with limited data usage rights.
- Multiple customers can access the same commercial dataset. The DaaS data sets enable the opportunity to monetise the high volume, lower value contract market.
- Higher risk, scalable revenues with unlimited upside potential over commercial areas of interest.

### MISSION-AS-A-SERVICE

- We provide dedicated capacity to a single customer for a specific mission / Area-of Interest (AOI); customer tasks the satellites and receives data from the satellites with unlimited data usage rights.
- Each Mission-as-a-Service contract will be tailored to suit the customer requirements with the associated revenue based on the percent of satellite capacity needed, level of taskability required (i.e., how bespoke the mission is) and associated data rights (i.e exclusivity). Pricing is set to achieve the company's goals for profitability and returns. MaaS offering to deliver dedicated, high value contract opportunities.
- Low risk fixed revenues, fixed profitability, long contracts over strategic areas of interest.





BOARD/ADVISORY



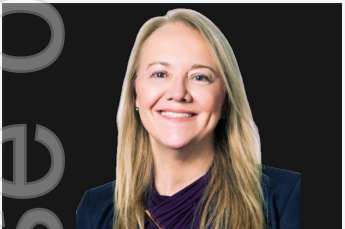
**PETER ROUND**  
Chair



**ANDY BOWYER**  
Chief Executive Officer



**DAVID CHRISTIE**  
Non-Exec Director



**DAWN HARMS**  
Non-Exec Director



**PADRAIG MCCARTHY**  
Senior Advisor to the Board

EXECUTIVE TEAM



**ANDY BOWYER**  
Chief Executive Officer



**MILES ASHCROFT**  
Chief Innovation Officer



**VINCENT FURIA**  
Chief Technology Officer



**ERIC VON ECKARTSBERG**  
Chief Revenue Officer



**HERIBERT KRÄMER**  
Chief Operating Officer



**IAIN HACKSTON**  
Chief Financial Officer

SENIOR LEADERSHIP



**KARYN HAYES-RYAN**  
Director U.S.



**MELANIE DELANNOY**  
Communications Manager



**PETER ROUND**  
Director EMEA



**GAVIN BOWYER**  
Project Manager



**GUILLERMO GUTIERREZ**  
Product Manager



**DAN MARTIN**  
Principal Systems Engineer



**DR. MARIS JUKSS**  
Principal Software Engineer



**IDIR EDJEKOUANE**  
Principal Signal Engineer

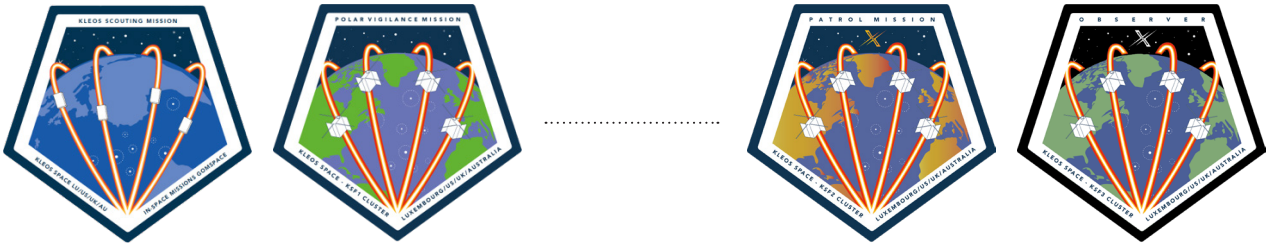


**RAMI OTHMAN**  
Senior Signal Engineer



**SEAN MCKAY**  
ISR & Defense Expert





**SCOUTING**

**LAUNCHED NOVEMBER 2021**

Four satellites in a 37-degree inclined orbit equipped with AIS & VHF collection payload. Demonstrating and validating the technology

**VIGILANCE**

**LAUNCHED JULY 2021**

Four satellites launched into a 510-530km Sun Synchronous Orbit, covering the entire globe. Equipped with AIS & VHF collection payload

**PATROL**

**LAUNCHED APRIL 2022**

Four satellites launched into a 508-530km Sun Synchronous Orbit, covering the entire globe. Equipped with AIS, VHF & X band collection payloads

**OBSERVER**

**LAUNCHING Q2/3-2022**

Four satellites launched into a 500-600km Sun Synchronous Orbit, covering the entire globe. Equipped with AIS, VHF & X band collection payloads

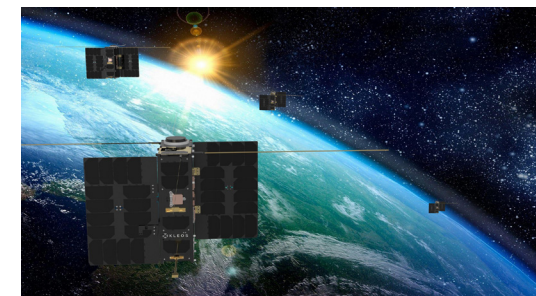
**FUTURE GROWTH**

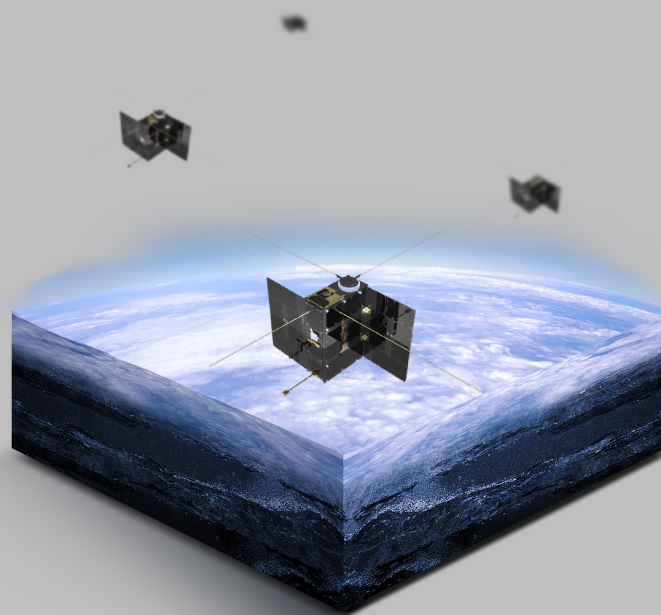
Targeting a constellation of up to 20 clusters of 4 satellites each, to be launched in the coming years.

**Every new cluster provides increased capacity and capabilities.**

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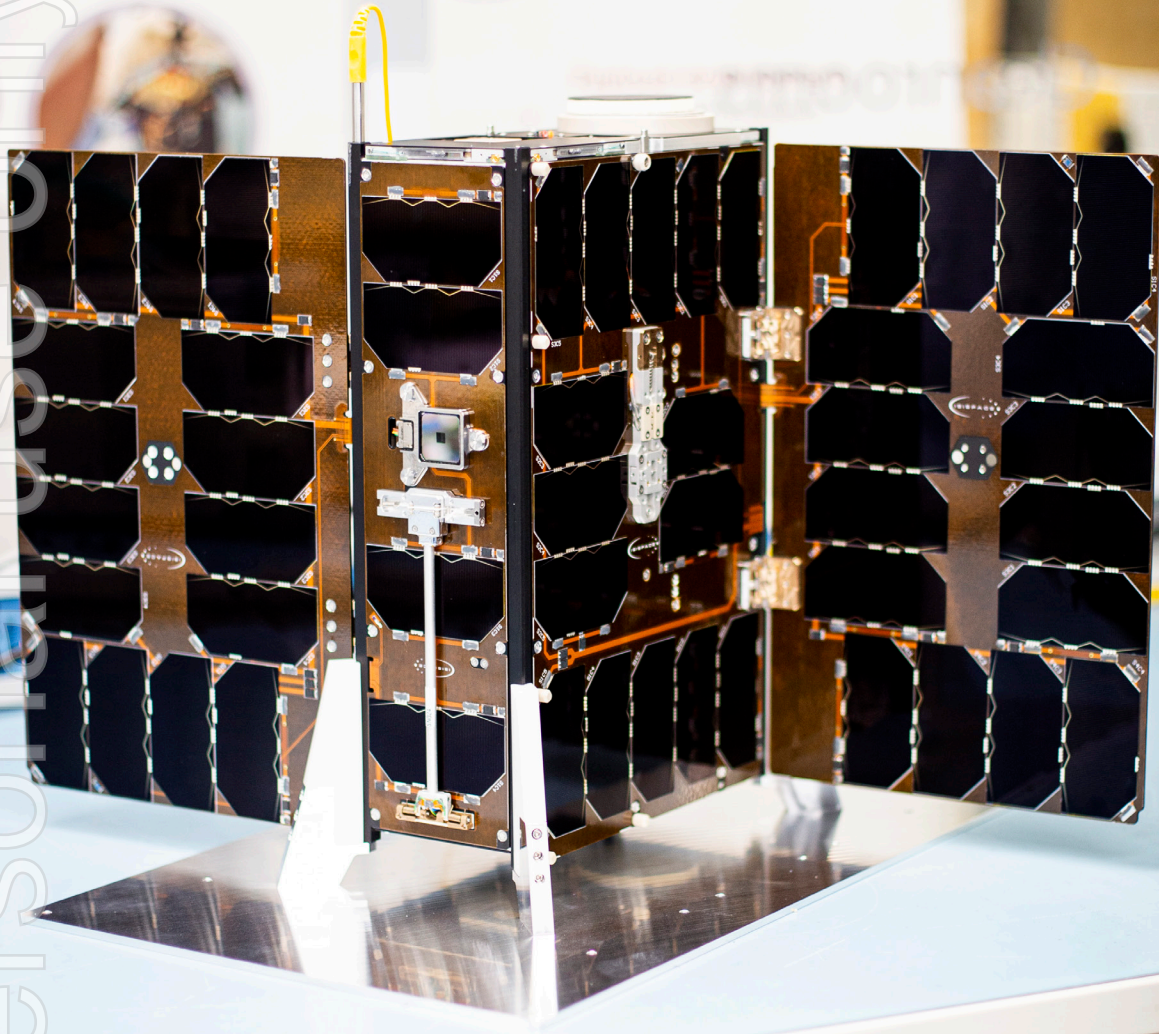
**KLEOS' GUARDIAN LOCATE PRODUCT CONSISTS OF RF  
GEOLOCATED DATA DESIGNED FOR MAXIMUM  
COMPATIBILITY AND EASE OF INTEGRATION WITH  
EXISTING TOOLS AND PLATFORMS.**

Guardian LOCATE Data is provided in industry  
standard JSON format.

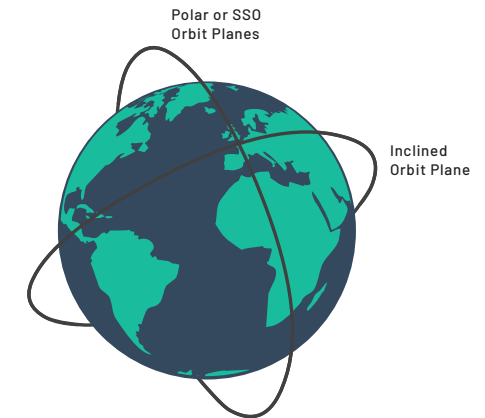
Data is made available via secure, encrypted  
RESTful API.

Detected signals are delivered as objects consisting  
of geolocated points with metadata including  
detected frequencies and timestamps. Positional  
accuracy expressed as confidence ellipses.





- Kleos is deploying a satellite constellation as a distributed sensing and intelligence gathering capability. Satellites allow for cost-effective, wide area surveillance when compared to terrestrial based assets.
- Kleos' proprietary ground based algorithms deliver analytic-ready and easily ingested data product to users.
- Kleos owns and operates clusters of four satellites flown in formation. Three clusters (12 satellites) in orbit, and more in development.
- The satellites are equipped with sensitive radios that receive RF signals emanating from transmitters commonly used for communication or navigation such as VHF radios or X-band radar.



- The data collected by the satellites is downlinked via Kleos' network of ground station providers, processed by Kleos' Geolocation System, and stored at Kleos' secure data centre.
- With collection by four satellites, Kleos' Geolocation systems precisely geolocate transmissions in three dimensions using advanced multilateration techniques.
- Kleos' geolocation is then transferred to Kleos' customers via API for use in their software, delivering insights that can be acted upon.
- Rapidly deployed technologies reduce risk and enable responsive solutions to evolving customer needs.





TYPES	USE CASES
GOVERNMENT DEFENSE	National Security (intelligence), Counter-Terrorism, Anti-Jamming, Border Security / Immigration, Sanction Prosecution.
GOVERNMENT CIVIL	Illegal Commercial Fishing, Search & Rescue, Piracy, Coast Guard Monitoring & Smuggling/ Exclusive Economic Zone Protection.
INTEGRATOR	Tool & Analytics providers are able to fuse Kleos data with other sources to provide a more comprehensive view of human activity.
RESELLER, CHANNEL PARTNER	Kleos leverages resellers and channel partners to deliver solutions to international and specialized markets.

- Increasing global risks and conflicts drive demand growth.
- Delivering data to observe and track unfriendly activities.
- Actively being used by Government end-users in multiple regions.
- Disruptive data to provide new insights to customers.
- Large established addressable defence & security market opportunity.
- Data complements and enhances existing data & analytic products available from other providers.



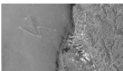

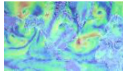


THE EARTH OBSERVATION (EO) SECTOR IS  
PREDOMINATELY SERVICED BY COMPANIES  
WORKING IN SENSOR/DATA VERTICALS  
DELIVERING TO THE APPLICATION  
DEVELOPER/INTEGRATOR LAYER WHERE  
DATA SETS ARE LAYERED, CREATING  
SOLUTIONS FOR END USERS

Kleos’ data makes other EO and analytics assets more efficient and effective.

KLEOS DATA

- Adds value to other data sets;
- Reduces time for analysts;
- Reduces costs through efficient asset tasking

					
COMMERCIAL OPERATORS	KLEOS Hawkeye360 Unseenlabs	Spire	Capella IceEye	Maxar BlackSky Planet	Spire
DATA SEGMENT	RF Geolocation High Growth	AIS / ADSB Collection Mature Growth	SAR Imagery High Growth	Optical Imagery Mature Growth	Weather High Growth
TYPE OF DATA COLLECTED	Global radio spectrum wide area surveillance.  Location of dark transmitters.	Receiving tracking messages from Ships & Planes.  Voluntary system not used by illegitimate operators .	Active radar sensing, not restricted by cloud / daylight.  Lower resolution than Optical.	Photos/videos in the visible domain.  Challenged by cloud cover and light .	Commercial weather services

APPLICATION DEVELOPER: DATA CONSUMER / ANALYST

High Growth  
App Developers, Integrators, Intelligence and Analytics Providers – More data means more growth.  
e.g (non-exhaustive): Palantir   Orbital Insight   Telespazio   L3Harris   AllSource   Maxar   etc.

END USERS

Government and Commercial Markets – Increasing global threats creating pull.





## EXAMPLE APPLICATIONS FOR KLEOS GUARDIAN LOCATE DATA

Integration customers ingest the data and often layer it with other data sets to find hidden activity creating intelligence. Kleos works with a large number of integrators, commercial entities and Governments around the globe such as: L3Harris, Carahsoft, Sypaq, AllSource, Geollect, MDA, Satellogic and many more.

Two example applications are presented with platform partners;

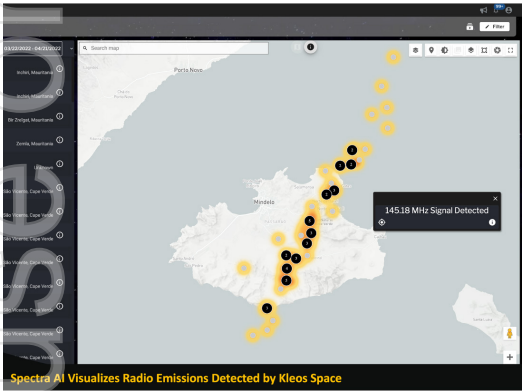
**BLACK|SKY**

**BLACKSKY SPECTRA AI**  
Tipping & Cueing Scenario

**GSTS**  
Navigate Tomorrow Today

**GSTS OCIANA**  
Risk Analysis Scenario





Spectra AI Visualizes Radio Emissions Detected by Kleos Space



TIPPING & CUEING SCENARIO

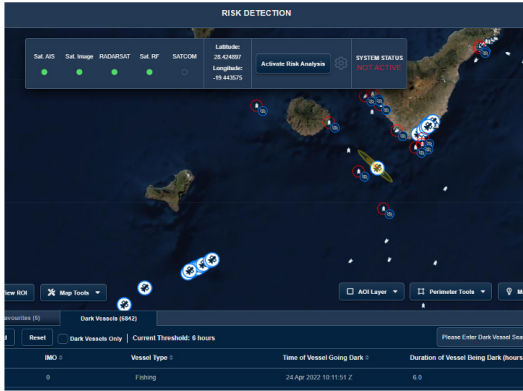
A key use case is to help find the ‘needle in the haystack’ and better task (tip/cue) other data sets such as imagery.

In this application; BlackSky ingested Kleos’ data into their AI platform, visualised the positions when Kleos identified the presence of VHF radio activity and used that information to task one of their satellites to take an image for further analysis.

The image on its own doesn’t show the extent of communication activity in the area. Land-based intelligence is imperative in understanding areas of conflict.



Investigate Kleos-Detected RF Emissions in Spectra AI



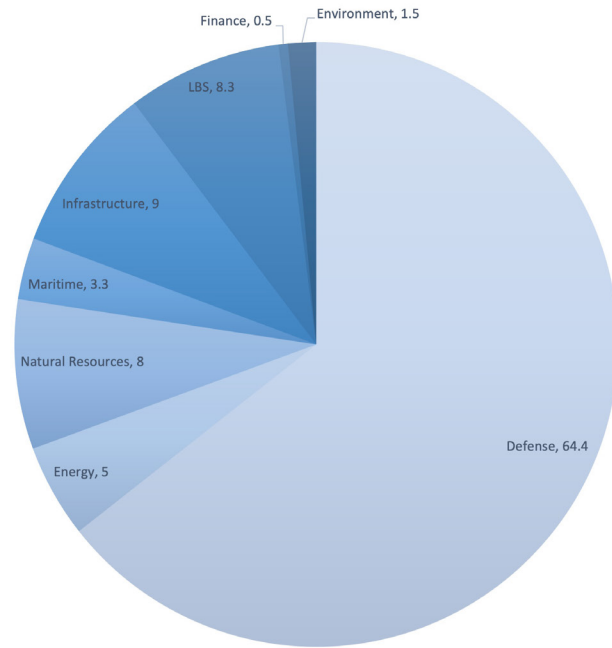
RISK ANALYSIS SCENARIO

A key use case is to help detect illegal maritime activity and reduce risks for insurers and operators.

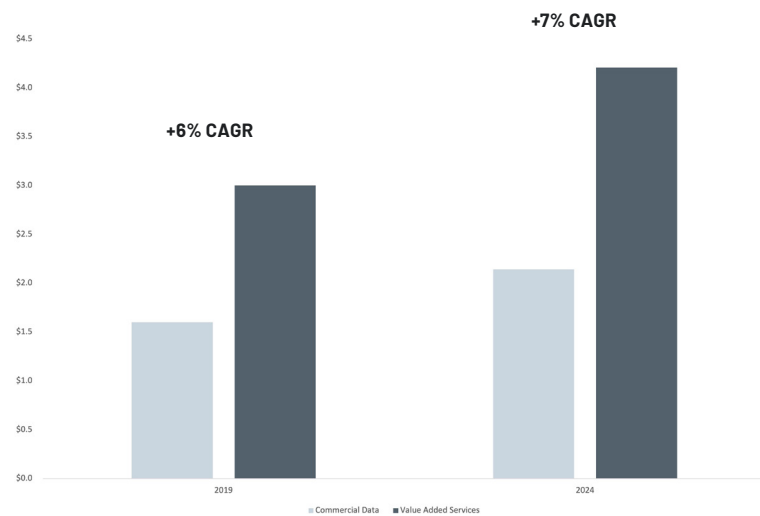
In this application, GSTS ingested Kleos’ data into their AI platform, to find suspected dark vessels. The detection was corroborated by Kleos Guardian LOCATE detection.

AIS data is used to detect legitimate maritime activity - but doesn’t find hidden maritime activity such as illegal fishing, smuggling etc.





■ Defense ■ Energy ■ Natural Resources ■ Maritime ■ Infrastructure ■ LBS ■ Finance ■ Environment



## KLEOS HAS A LARGE ADDRESSABLE MARKET FOR EARTH OBSERVATION DATA.

- Commercial market for EO data: ~\$1.6 billion in 2020, five-year estimated forward CAGR of ~5% per year<sup>1</sup>.
- Government market for EO data estimated at >2x commercial market.
- Value Added Services (VAS): ~\$3.0 billion in 2019, five year estimated forward CAGR of ~7% per year<sup>1</sup> – many customers are likely to purchase Kleos' data through a VAS.
- Participants in the ~\$550 billion geospatial market<sup>2</sup> can gain significant benefits from utilizing Kleos' new RF data sets.

### DRIVERS OF GROWTH INCLUDE:

- Rapid market adoption of data and analytics by government and enterprises.
- Advancements in AI/ML and Big Data, needed to answer complex problems.
- Expanding number of use cases leveraging space-based data.

### THE MOST ATTRACTIVE MARKETS SEGMENTS ARE THOSE SERVICED BY KLEOS:

- Defense / Military.
- Intelligence, surveillance and reconnaissance.
- Land and Maritime applications.

<sup>1</sup> Public Euroconsult articles, e.g. "Towards a \$7.5b earth observation data & service market by 2030".

<sup>2</sup> Global Geospatial Solutions Market Report 2019-2025 | \$549 Billion by 2025 – ResearchAndMarkets.com.



- i The forward-looking statements relating to targets involve known and unknown risks, uncertainties and other factors that may cause the Company's actual results, performance, and achievements to differ materially from any future results, performance or achievements, expressed or implied by these forward looking statements. Relevant factors may include, but are not limited to, technical and launch delays, satellite health status, foreign exchange fluctuations and general economic conditions, increased costs, the risk and uncertainties associated with space technology, Geopolitical and social risks, Supplier delivery issues, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues, covid 19 or other pandemic impacts, and litigation. For further information as to the risks which may impact the Company's results and performance, please see the risk factors included in the Prospectus lodged with ASX in August 2018.*
- ii A qualified deal is defined as such through detailed communication in some form with the customer, i.e. ensuring that the KSS products can fulfil the customer need and there is a procurement budget available. The negotiations on these deals have advanced beyond the unqualified lead stage, but contracts have not yet been signed, or contracts have been signed but are subject to the delivery of data.*
- iii This target is formed with reference to the current customer base and the satellite capacity that is anticipated to be online by the end of the year, and is subject to the risk factors set out in footnote i.*

 **KLEOS**  
 office@kleosglobal.com  
<https://kleos.space>