



# astrocast

Taking IoT Further

INVESTOR  
PRESENTATION

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## Today's presenters



Fabien  
**JORDAN**  
CEO/FOUNDER

15-year experience in nanosatellite business, key engineer of the SwissCube project, worked on ESA ExoMars mission



Kjell  
**KARLSEN**  
CFO

Former President of Sea Launch AG. Led its restructuring in 2010. Participated in 39 launches with a total payload value in excess of \$7 billion



Jose  
**ACHACHE**  
CHAIRMAN

Former Director of Earth Observation Programs at ESA and Deputy Director General at CNES

Introduction to Astrocast (click title for video)



# Global, cost-effective satellite constellation optimized for IoT

## INVESTMENT HIGHLIGHTS

Strong IoT market growth with **expanding use cases**

Addresses significant untapped market through **global satellite connectivity**

Vertically integrated with **in-house proprietary nanosatellite manufacturing, key technology differentiators** and **advantageous spectrum position**

Scalable business model with **high recurring service revenue potential**

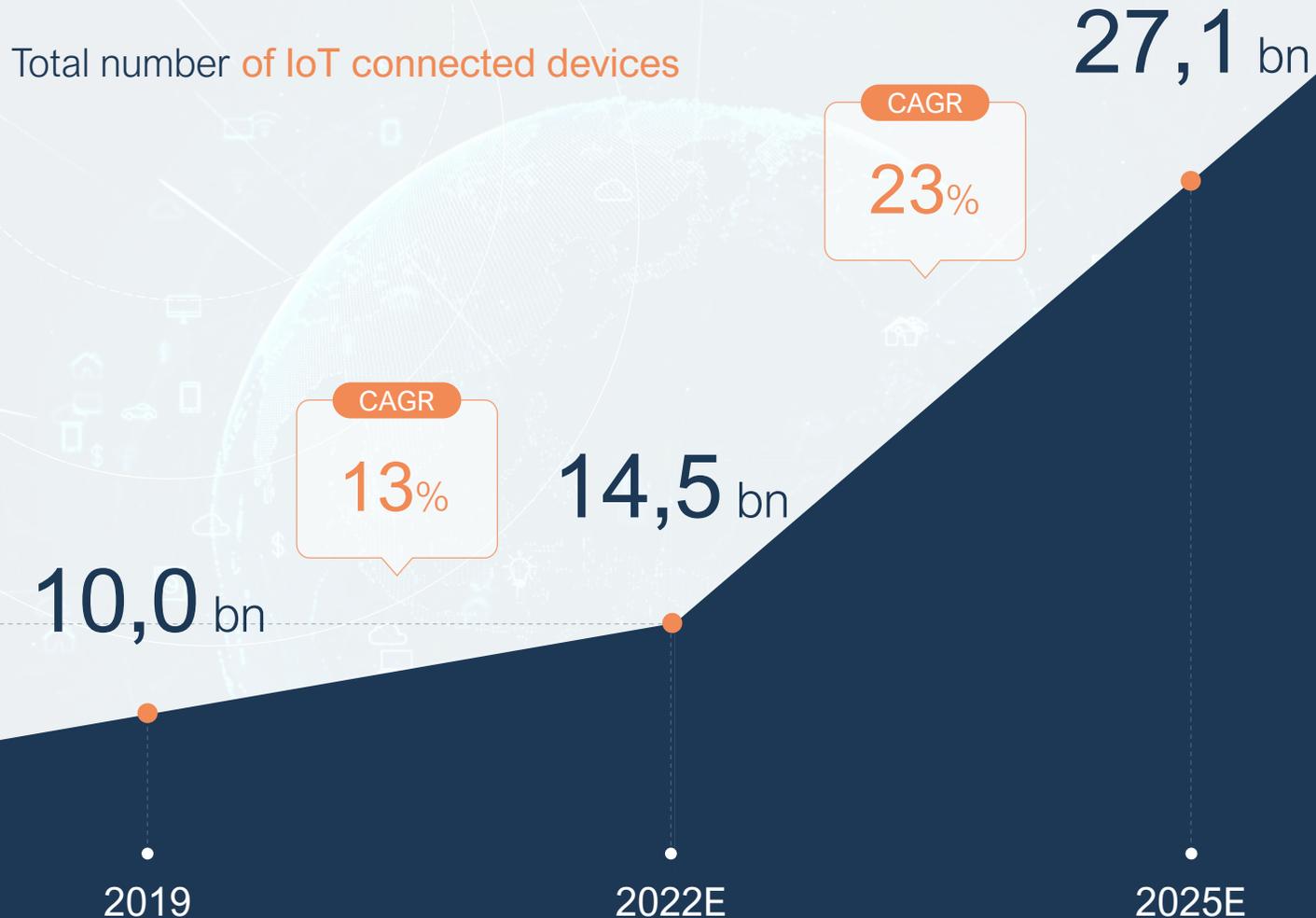
Robust **sales pipeline**, driving revenue **growth** and improving **margins**

Seasoned management team with strong track-record in **Space and IoT innovation**

**astrOcast**

# The overall IoT market is poised for growth

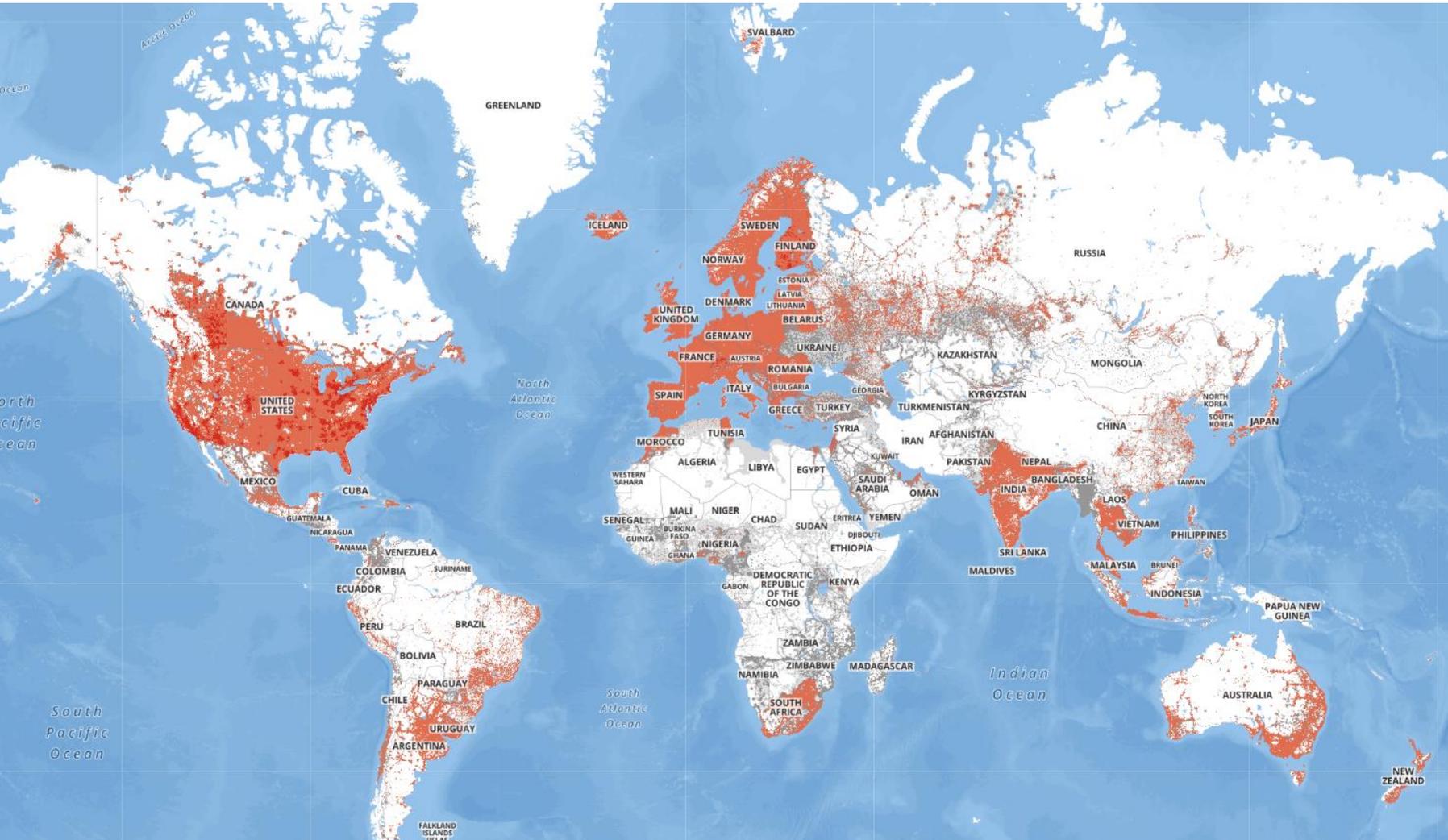
IOT MARKET GREW SIGNIFICANTLY IN THE PAST FEW YEARS AND THE GROWTH IS EXPECTED TO ACCELERATE



Decreasing connectivity and device costs unlock **untapped markets and use cases to connect “anything”**, beyond objects that were traditionally the focus of IoT, further driving demand



# Significant “white space” lacking IoT coverage



- 5G Data, Voice / Messaging
- 4G LTE Data, Voice / Messaging
- 3G Data, Voice / Messaging
- 2G Data, Voice / Messaging

Terrestrial systems only cover **10-20%** of the world's surface area



# IoT devices connected by satellite are expected to exceed 30m...

SATELLITE IOT IS COMPLEMENTARY TO AND EXTENDS THE REACH AND COVERAGE OF EXISTING TERRESTRIAL NETWORKS

Strong IoT market growth is contributing  
**to acceleration in Satellite IoT connectivity**



2019

2025E

Source: ReTHINK 2019 and company estimates

# ...driven by a vast number of use cases

MULTIPLE SECTORS TO BENEFIT FROM LOW-COST SATELLITE IOT CONNECTIVITY

## ENVIRONMENT & UTILITIES

Water infrastructure, environmental sensors, smart metering

## AGRICULTURE & LIVESTOCK

Agriculture sensors, livestock and species tracking

## ASSET MONITORING

Industrial equipment tracking  
Panic buttons



## CONNECTED VEHICLES

Vehicle telematics, commercial fleet and rental vehicle tracking, mobile tank tracking, fuel-chemical food tank monitoring

## MARITIME

Fishing buoys, navigation and environmental buoys

## OIL, GAS & MINING

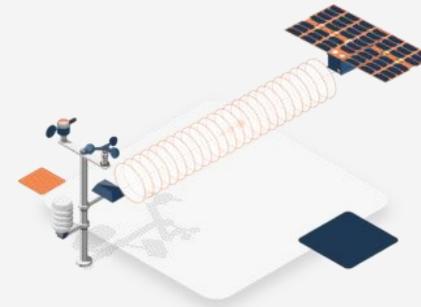
Heavy equipment, tracking and monitoring, well head monitoring, cathodic protection, environmental sensors, security

# Astrocast at a glance

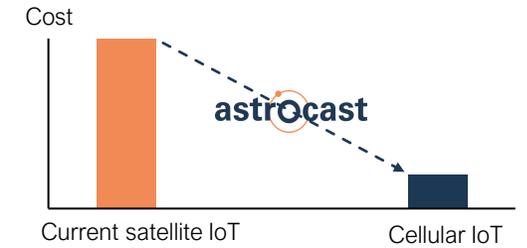
ASTROCAST  
IS DISRUPTING  
THE IOT MARKET



Astrocast has a rapidly growing network and satellite constellation, expected to be fully deployed and operational by 2023



L-Band based network, one of the most reliable and efficient spectrums for Satellite IoT applications



Proprietary, internally developed technology enables low-cost Satellite IoT communication services, driving down service cost and increasing penetration rates



## 70

Countries with activated commercial licenses across four continents and growing



## 85

Employees



## Robust sales pipeline

Advanced discussions and dev kits shipments with 70+ partners, integrators, engagements and international TELCOS



# Products overview

## ASTRONODE S

Price: USD \$49

Bidirectional satellite communication module with a serial interface and a compact, surface mount form factor

Sends messages, gets them acknowledged and receives commands



## ASTRONODE PATCH ANTENNA

Price: USD \$3.90

Compact ceramic patch antenna optimized for operation on the Astrocast network

Bidirectional communication in the L-Band and GNSS reception for tracking purposes



## ASTRONODE S+

Price: USD \$79

Certified industrial satellite communication device, ready to install and connect

Does not require resources in electronic and RF design, enabling short time to market



## ASTRONODE DEVKIT

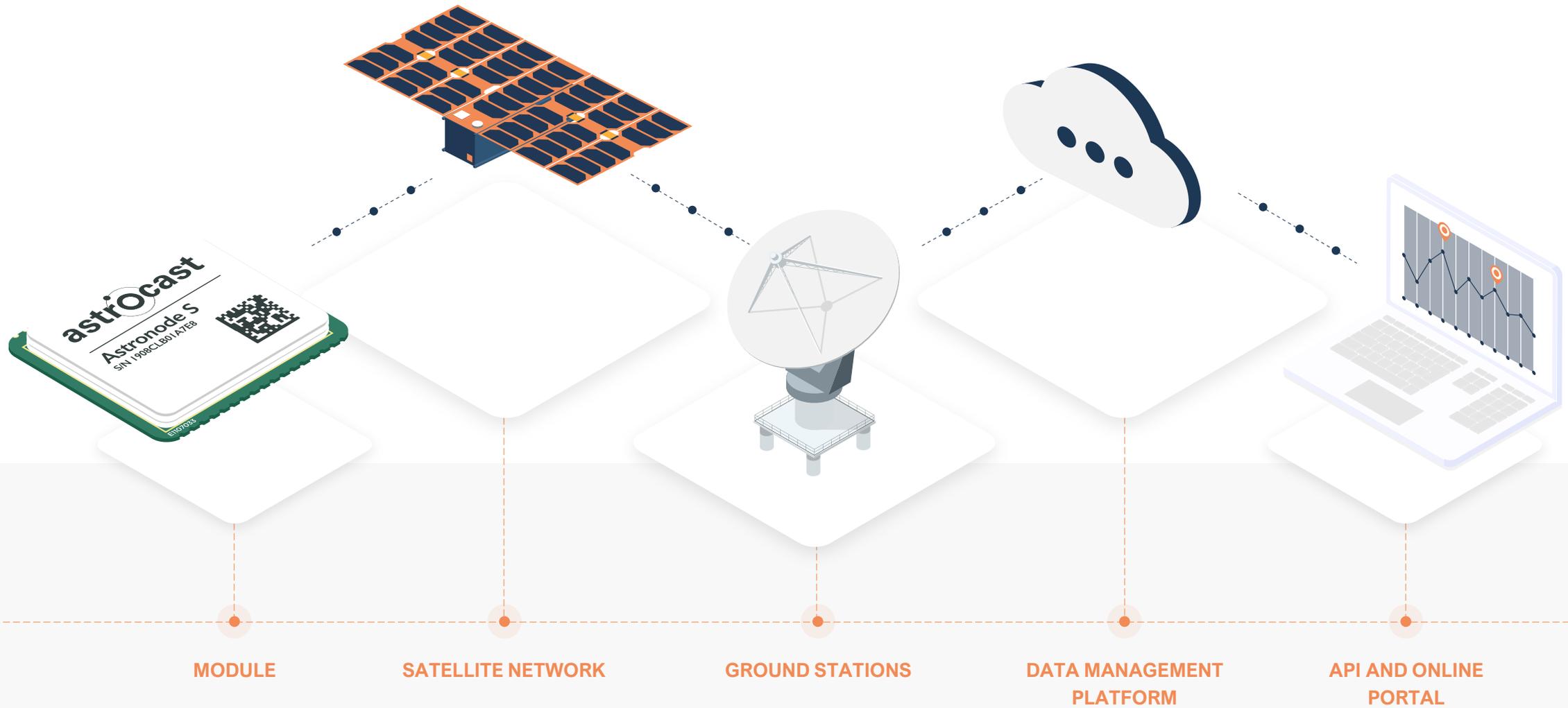
Contains items needed to connect assets to the Astrocast nanosatellite IoT network

Provides end-to-end connectivity with the Astrocast network in under 20 minutes

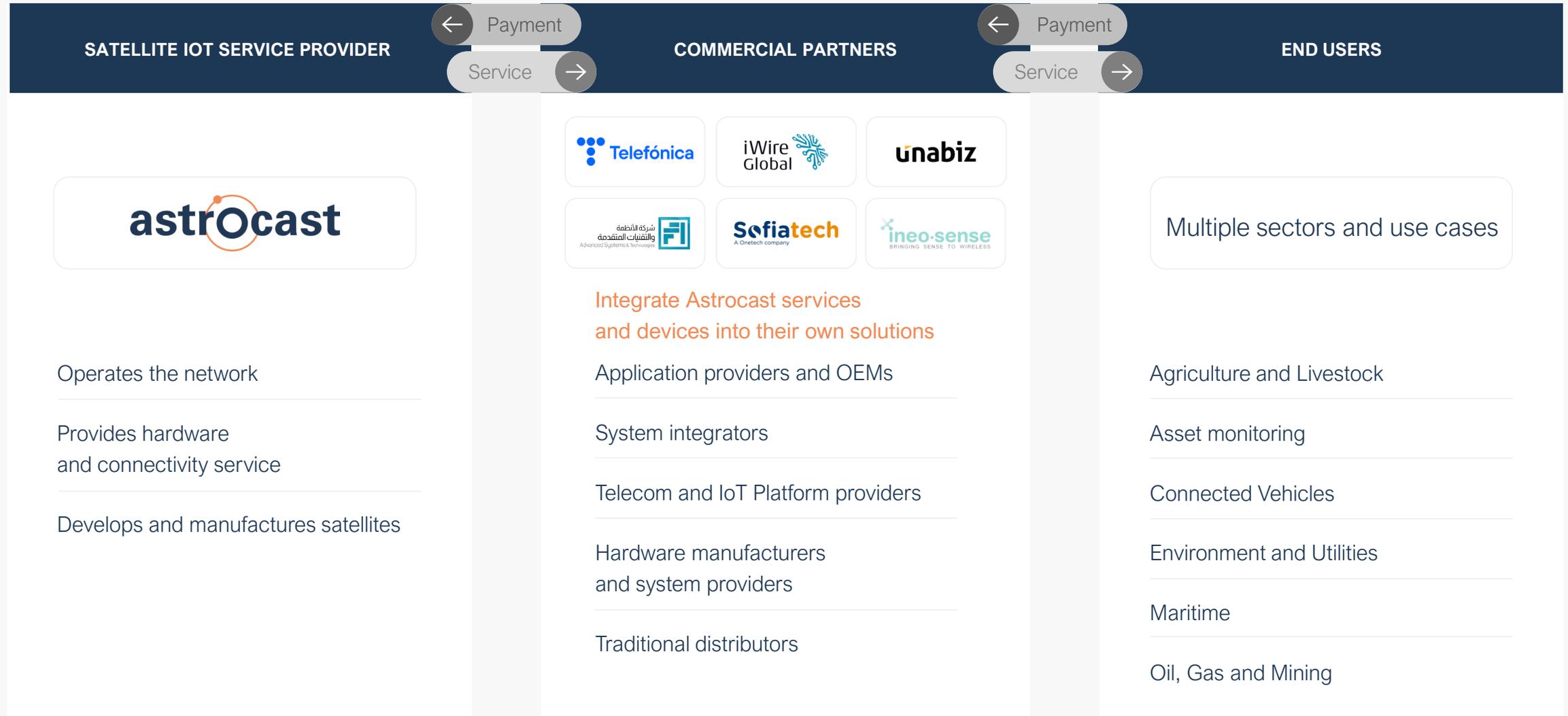


# How Astrocast works

ADVANCED DATA PROTOCOL AND SECURE DATA MANAGEMENT



# Business model aimed at reducing risk and increasing speed to market



# Case study: Telefónica taps Astrocast to provide global asset tracking

DELIVERED PROOF OF CONCEPT AND DEVELOPING PRODUCT PROTOTYPE

## SOLUTION DESCRIPTION

### Customer challenge:

Customers require global network availability in order to track and monitor the location and condition of their goods in areas that are not covered by cellular networks (80-90% of the world is not currently covered)

### Why Astrocast:

Astrocast's network allows customers to track, measure, communicate and control their IoT assets in the most remote regions

### Solution:

Container tracking and monitoring solution

### Benefit to Telefónica:

Combining Telefónica's cellular network with Astrocast's satellite solution into one IoT connection will allow Telefónica to track customer resources globally

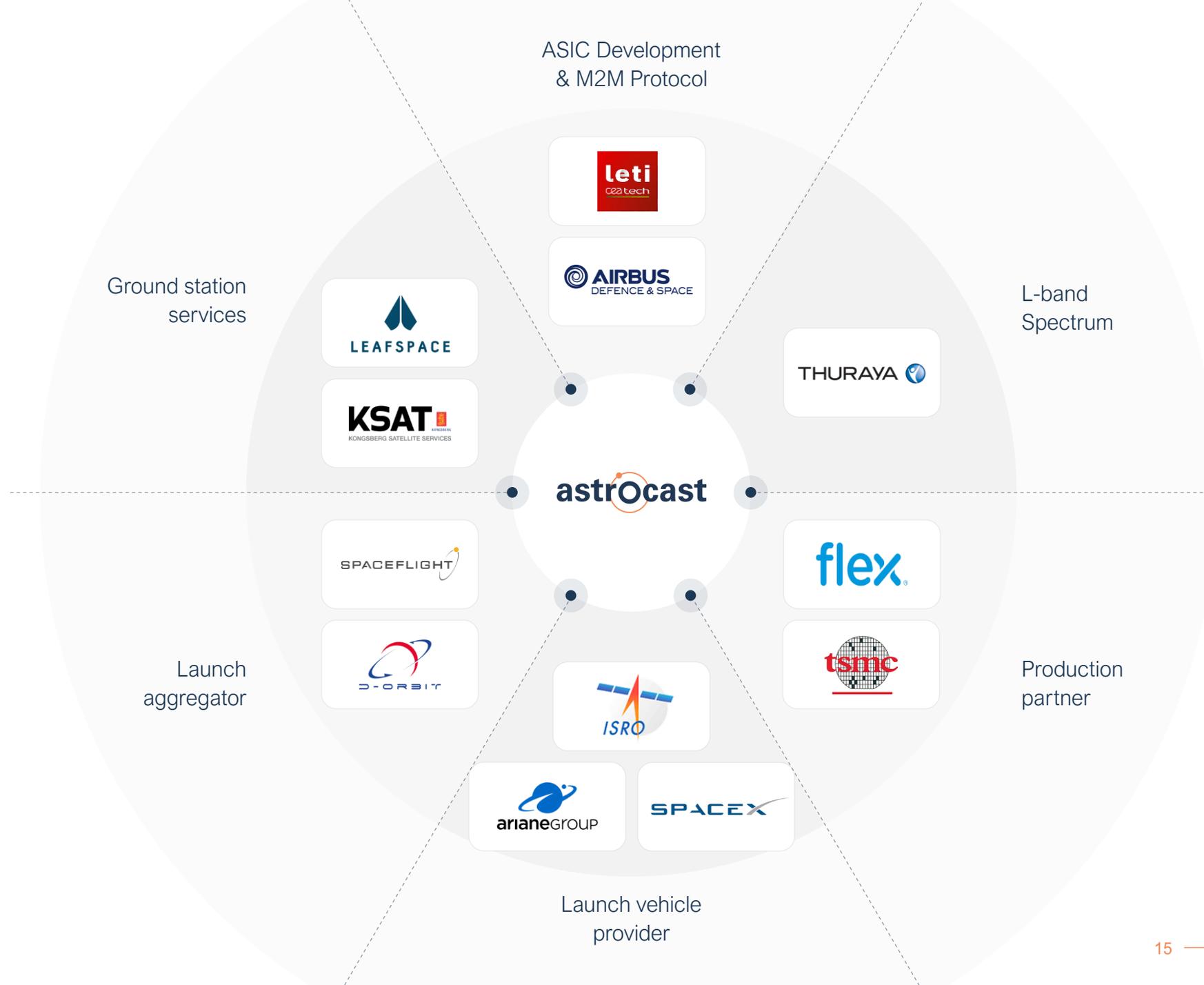
### Potential units per year:

2022: <10k / 2023: 100k / 2024: 1M+

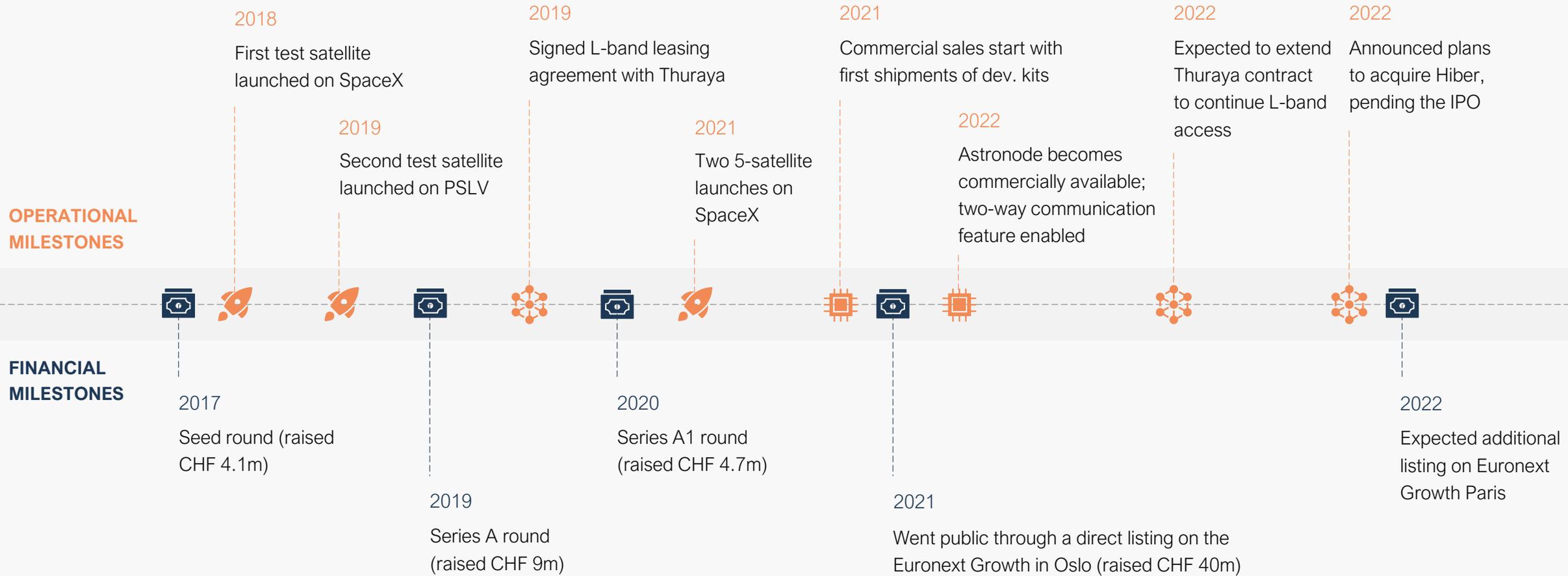
## PROOF OF CONCEPT OVERVIEW



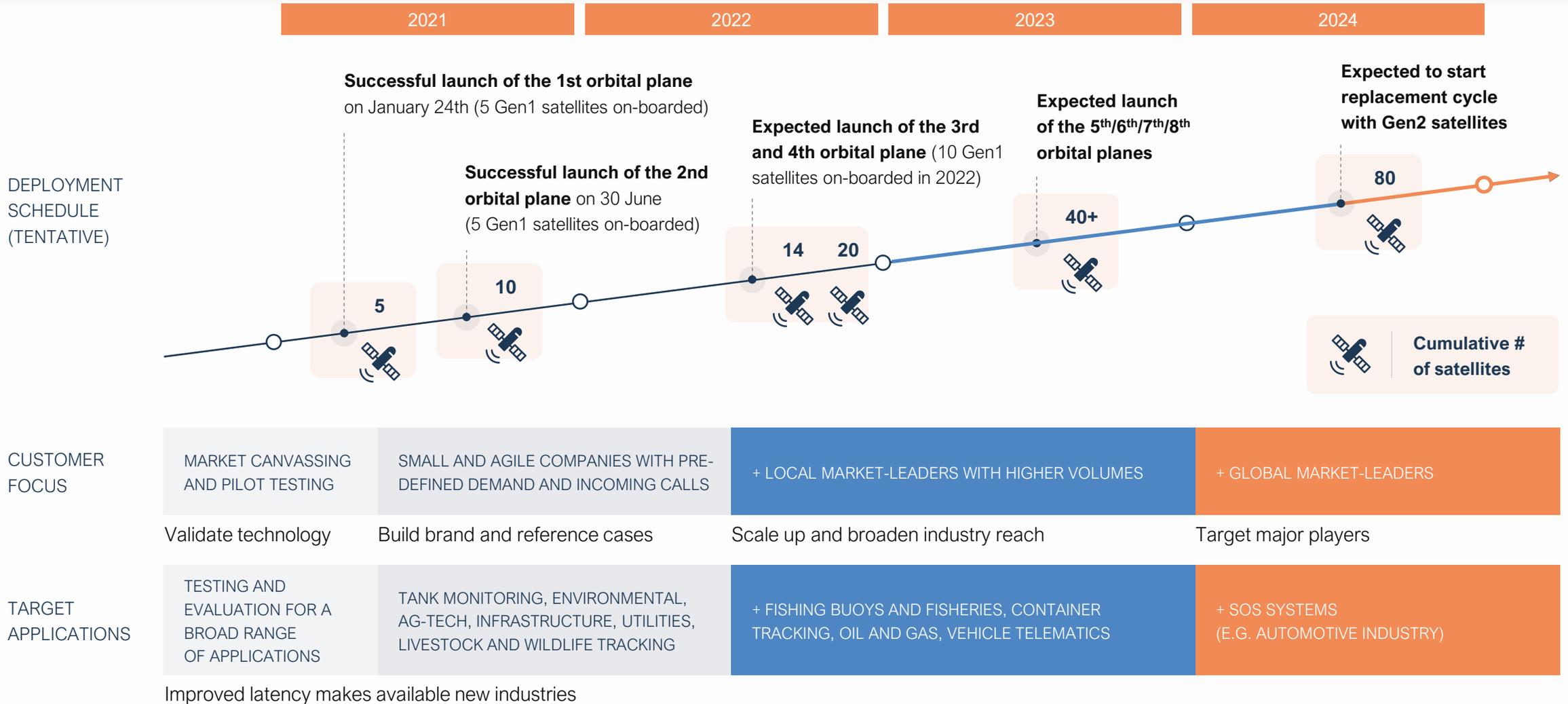
Well-established,  
high-quality  
partner ecosystem  
allows Astrocast  
to focus on its core  
competencies



# Focused execution further de-risks the business model



# Scaling the constellation to address increasing customer demand



# Astrocast in pole position to capture key IoT segments

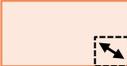
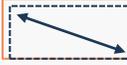
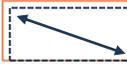
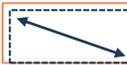
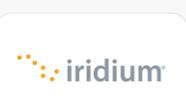
	Low bandwidth, high latency			Low bandwidth, moderate/low latency		High bandwidth, ultra-low latency			
	1	2	3	4	5	6	7	8	9
Use cases	ASSET TRACKING	TELEMETRY	TELEMATICS & ANALYTICS	FIXED SAFETY, SECURITY & EMERGENCY	MOBILE SAFETY, SECURITY & EMERGENCY	COMMAND & CONTROL	MOBILE TELEPHONY	VIDEO	INTERNET BROADBAND
Selected applications	<ul style="list-style-type: none"> <li>Cargo logistics</li> <li>Long-range tracking</li> <li>Location tracking</li> <li>Animal tracking</li> <li>Asset &amp; equipment monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Meter reading</li> <li>Tanker tracking</li> <li>Vehicle diagnostics</li> <li>Fishery management</li> <li>Flow monitoring</li> <li>Systems monitoring</li> <li>Weather data</li> </ul>	<ul style="list-style-type: none"> <li>Fuel management</li> <li>Dispatch optimisation</li> <li>Route optimisation</li> <li>Maintenance optimization</li> </ul>	<ul style="list-style-type: none"> <li>Authentication systems</li> <li>Anti-theft systems</li> <li>Panic alerts</li> <li>Theft prevention</li> <li>Security management</li> </ul>	<ul style="list-style-type: none"> <li>Emergency response</li> <li>Emergency assistance</li> <li>Accident or incident</li> <li>First responders</li> <li>Security alert systems</li> </ul>	<ul style="list-style-type: none"> <li>Automation</li> <li>Door/gate locking &amp; unlocking</li> <li>Alarm management</li> <li>Asset/station control</li> </ul>	<ul style="list-style-type: none"> <li>Communication</li> <li>Border patrols</li> <li>Coast guard</li> </ul>	<ul style="list-style-type: none"> <li>CCTV cameras</li> <li>Video monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Broadband internet access</li> </ul>
Selected players <sup>1</sup>	<div style="text-align: center;">  </div> <div style="display: flex; flex-wrap: wrap; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">FLEET</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">Myriota</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">iridium</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">SWARM</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">HEAD</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">kinéis</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">Globalstar</div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px;">ORBCOMM</div> </div>								

<sup>1</sup> non-exhaustive list of players  
 Source: London Economics (2017): "Nanosatellite Telecommunications: A Market Study for IoT/M2M applications"



# Astrocast's approach to IoT connectivity is superior on key metrics such as cost, power consumption and size

Competitive positioning

		ANTENNA SIZE	FREQUENCY	PEAK POWER	COST PER MODULE	SERVICE COST	IN-HOUSE MANUFACTURING
			L-Band		<\$50	\$1 / month	
			UHF/VHF		<\$50	-	
			UHF/VHF		-	-	
			UHF/VHF		<\$89	\$5 / month	
			UHF/VHF		-	-	
			L-Band		<\$120	\$10 / month	



# Astrocast's small form-factor antenna enables new use cases

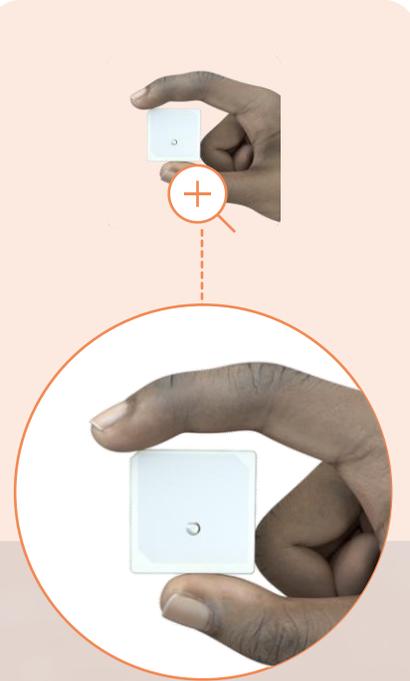
## ANTENNA SIZE COMPARISON



SWARM



Myriota



astrocast



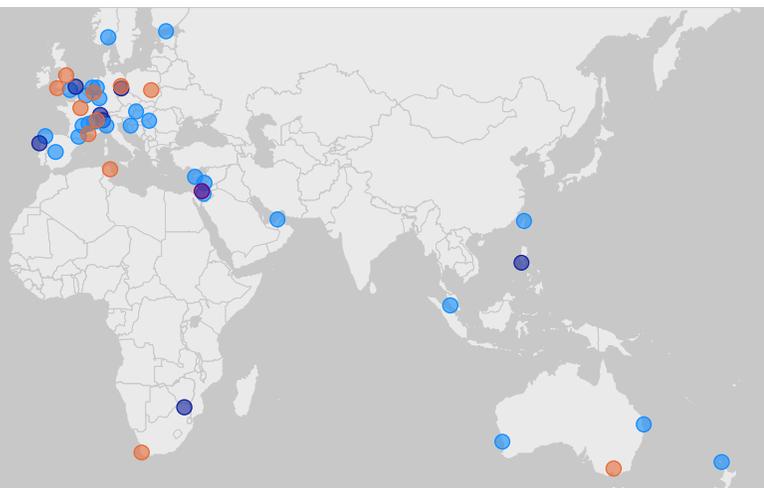
ORBCOMM



HEAD  
AEROSPACE GROUP

# Commercial activity on track

SIGNIFICANT PIPELINE: KEY MOU'S SIGNED AND 50+ ACTIVE PROGRAMS UNDERWAY



● Evaluation ● Proof of Concept ● Design & Prototyping ● Industrialization

Active programs underway

TOTAL LEADS

525

ACTIVE QUALIFIED LEADS CURRENTLY IN-PLAY

132

ACTIVE "HOT" OR "WARM" OPPORTUNITIES IN-PLAY

67

ACTIVE PROGRAMS UNDERWAY

52

Key MoU's signed



Other potential key projects with Telcos & MVNOs



Other potential key projects with OEM's



# Client and partner testimonials

HIGHLY EXPERIENCED AND COMPETENT

Peer  
**LODBROK**

DIRECTOR MNC TELEFÓNICA  
GLOBAL SOLUTIONS



By collaborating with Astrocast, Telefonica can offer its customers a multi-connectivity IoT solution and take them further on their IoT journey. The key IoT-use case is to never lose track of your assets.

Ahmed Fasih  
**AKHTAR**

FOUNDER, CEO



There is a unique opportunity to deliver immense value in the communities we serve using innovative technologies and sustainable solutions and we are excited to partner with Astrocast to enhance our offer.

Henri  
**BONG**

CO-FOUNDER & CO-CEO



The Satellite-IoT market is growing rapidly. UnaBiz is pleased to partner with Astrocast and leverage its cost-effective, low-power, bidirectional direct-to-satellite services to complement existing LPWAN projects that we are currently driving in the market.

Dr. Mike  
**PRIOR-JONES**

RESEARCH ASSOCIATE



I'm pleased to see that Astrocast have gone public with their satellite service pricing. It's incredible value for a low-bandwidth message-based service is ideal for instrument monitoring.

# End-user product integrations



# Strong ESG profile

ACTIVELY SUPPORTING ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT

## ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT



Wildfire detection, animal tracking, water monitoring & vehicle monitoring

## WILDLIFE TRACKING



Wildlife tracking, supporting biodiversity

## SOIL MONITORING



Data-logger for field monitoring

## SPACE DEBRIS



Not contributing to space debris through state-of-the-art propulsion system enabling collision avoidance satellite manoeuvres

# Astrocast signed acquisition agreement with Hiber

## HIBER OVERVIEW

Founded in 2016, headquartered in the Netherlands

B2B business model, focused on IoT-as-a-Service, in rural and remote areas

100% multi-year subscription-based model covering sensors, network hardware, satellite connectivity and dashboard

Attractive financial profile at full ramp: ~50% gross margin, cash-flow positive in month 13 in case of 4-year sample contract

Uniquely positioned within the industrial IoT market

## PORTFOLIO OF SOLUTIONS ACROSS KEY VERTICALS

Verticals	Solutions	Sample clients
<p>Agriculture</p> <p>Asset Management</p> <p>Forestry</p> <p>Logistics</p> <p>Mining</p>	 <p><b>Asset tracking IoT for off grid worksites</b></p> <p>€15/month Installation time: 10 min</p>	  
<p>Oil &amp; Gas<sup>1</sup></p>	 <p><b>Wellhead monitoring</b></p> <p>€350/month Installation time: 1 hour</p>	   

<sup>1</sup> through a joint venture with WTS Energy

# Transaction Rationale



**EXPANDS END MARKETS**

**Accelerates** Astrocast's OEM strategy and **gains** access to new industry verticals



**ADDS A TEAM OF 50+ HIGHLY SKILLED, EXPERIENCED IOT SPECIALISTS**

Hiber workforce has **unique technical capabilities and understanding** of customer IoT needs across multiple verticals



**COVERAGE OF THE AMERICAS REGION**

Leveraging Hiber's L-Band **spectrum access**



**EXPANDS PORTFOLIO OF PRODUCTS AND SERVICES**

Provide **end-to-end customer solutions** complementary to Astrocast's product and service offerings: HiberHilo and HiberEasypulse solutions



**BROADENS INVESTOR BASE**

Provides **exposure** to new investors

# Key financials

As more satellites are deployed and latency is reduced, additional market segments become available, increasing the total addressable market

Astrocast expects strong revenue growth driven by ramp-up in sales activity and deployment of additional satellites

Estimated capacity utilization 2025 (KB) of less than 25%

Financial guidance		
	Medium-term	Long-term
Data Plan Revenue	~25-40%	~80%
Hardware Revenue	~60-75%	~20%
<b>Annual Revenue</b>	<b>CHF 80m – 150m+</b>	<b>CHF 150m – 350m+</b>
<b>Gross Margin</b>	<b>~20 – 40%</b>	<b>~50 – 80%</b>
<b>EBITDA Margin</b>	<b>~20 – 30%</b>	<b>~50 – 75%</b>
<b>Average Annual Capital Expenditures</b>	<b>CHF 20m – 25m</b>	



# Appendix

INVESTOR PRESENTATION

**astro**Ocast



# Seasoned management with strong track-record in Space and IoT

HIGHLY EXPERIENCED AND COMPETENT



Fabien  
**JORDAN**  
CEO/FOUNDER

15-year experience in nanosatellite business, key engineer of the SwissCube project, worked on ESA ExoMars mission



Federico  
**BELLONI**  
CTO/FOUNDER

12-year experience in satellite and telecom technologies having worked at Swiss Space Center on CHEOPS, CubETH, CleanSpaceOne, MicroThrust and SpaceCam projects



Kjell  
**KARLSEN**  
CFO

Former President of Sea Launch AG. Led its restructuring in 2010. Participated in 39 launches with a total payload value in excess of \$7 billion



Antonio  
**WALLER**  
VP OF GLOBAL SALES

15+ years of general sales, management and business development experience with a focus on B2B technological sectors, IoT, Fleet Telematics, M2M and Telecoms (Orbcomm in particular)



Laurent  
**VIEIRA DEMELLO**  
COO

18-year experience in international program management and business development for satellite telecommunications and solution providers within SITA and ESA



Marcel **BARAT**  
VP CUSTOMER SERVICE AND NETWORK OPERATION

30 years of senior management and customer service experience for Telecom service providers and premium vendors building strong worldwide organizations



# Senior and competent Board of Directors

STRONG INDUSTRY EXPERTISE



Jose  
**ACHACHE**

CHAIRMAN

Former Director of Earth Observation Programs at ESA and Deputy Director General at CNES



Jan Eyvin  
**WANG**

BOARD MEMBER

Joined Wilhelmsen in 1981 and currently holds the position as Executive Vice President New Energy. Has held several senior positions in Norway and abroad. Recently led the Edda Wind listing in Norway



Jon  
**CHOLAK**

BOARD MEMBER

Seasoned venture investor and software professional with over 15 years of industry experience. Currently serving as Managing Director of Adit Ventures



Fabien  
**JORDAN**

CEO/FOUNDER  
& BOARD MEMBER

15-year experience in nanosatellite business, key engineer of the SwissCube project, worked on ESA ExoMars mission



Federico  
**BELLONI**

CTO/FOUNDER  
& BOARD MEMBER

12-year experience in satellite and telecom technologies having worked at Swiss Space Center on CHEOPS, CubETH, CleanSpaceOne, MicroThrust and SpaceCam projects



Roland  
**LOOS**

BOARD MEMBER

Extensive experience in satellite and telecom technologies having worked as COO and EVP of ITC Global, founder of NewSat Communications as well as Director at Verestar



Yves  
**PILLONEL**

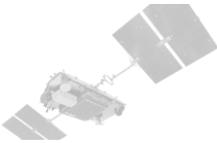
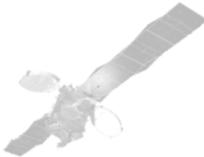
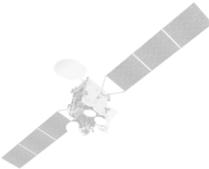
BOARD MEMBER

More than 25 years of experience as Portfolio Manager and focusing on client acquisition at leading banks and private institutions including UBS and Pictet. Currently Senior VP Private Banking at Suntrust Investment



# Astrocast's constellation is optimized for M2M/IoT

CLEAR DIFFERENTIATION FOR NANOSATELLITES AGAINST INCUMBENTS AND BROADBAND PROVIDERS

	Nano	Micro	Mini	Small	Medium-Intermediate	Large	Heavy/Extra heavy
Mass (KG)	(1 – 10)	(10 – 200)	(200 – 600)	(600 – 1,200)	(1,200 – 4,200)	(4,200 – 5,400)	(5,400 – +7,000)
Example	<b>Astrocast 0.2 (CubeSat1 3U) 4 kg</b> 	Orbcomm OG2 172 kg 	Starlink Block v1.0 260 kg 	Iridium NEXT 860 kg 	Thor 5 1,960 kg 	Hotbird 10 4,900 kg 	Inmarsat 5-F2 6,100 kg 
Typical receiver							
Orbit since	2019 (in LEO)	2012 (in LEO)	2019 (in LEO)	2017 (in LEO)	2008 (in GEO)	2009 (in GEO)	2013 (in GEO)
Cost per satellite <sup>2</sup>	~250,000 USD	~6,500,000 USD	~1,000,000 USD	~40,000,000 USD	~150,000,000 USD	200,000,000 USD	~250,000,000 USD
Target user(s)	Communication M2M <sup>3</sup> /IoT	Communication M2M/IoT traffic monitoring	Broadband internet access	Global mobile satellite network	Fixed telecommunications and direct-to-home television broadcasting	Direct broadcasting	Telephone and data services
Lifetime	3-5 years	+5 years	1-5 years	15 years	15 years	15 years	+15 years

Source: UCS Satellite Database, Skyrocket, Company websites

1) One CubeSat unit measures 10x10x10 cm, 2) Estimated cost, 3) M2M = Machine to machine