

CONNECTIVITY AT SEA

November 2019

MARITIME APPLICATIONS

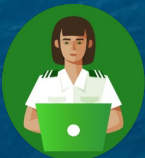


IP enabled Bridge

- Terrestrial LAN integration
- Corporate VPN, VoIP & cellular
- Video-conferencing
- Electronic navigation/ECDIS
- Operational data exchange



- Vessel Management
- Condition monitoring
- IT remote management
- Remote diagnostic and repair
- Engine and operational data exchange
- Online supply and repair orders



- Crew Communications
- Web-browsing, email
- Cellular service and VoIP
- Streaming video
- Online training
- Telemedicine

THE CONNECTED SHIP

Trends & Observations by End-User Segment

Merchant



- Crew welfare & training
- Electronic charting & weather
- Electronic port & customs reporting
- Remote IT services

A merchant vessel generates up to 60GB of data per day

Passenger



- Entertainment & Streaming video
- Interactive guest services
- Onboard wireless services
- High-speed internet

Increasing throughput rates per ship from 10s to 100s of Mbps

Offshore



- Crew welfare & training
- System automation, cloud computing
- Live video monitoring & conferencing
- Seismic data transmission

75% of today's crew members bring >3 devices onboard

Fishing



- Online sales of catches / auctions
- Vessel monitoring
- Regulatory reporting
- Telemedicine

Increasing crew & regulatory needs in Fishing

Leisure



- Entertainment & Streaming video
- Interactive guest services
- Onboard wireless services
- High-speed internet

Streaming At Sea...on smaller and smaller vessels

GLOBAL MARITIME SATCOM MARKETS SUMMARY

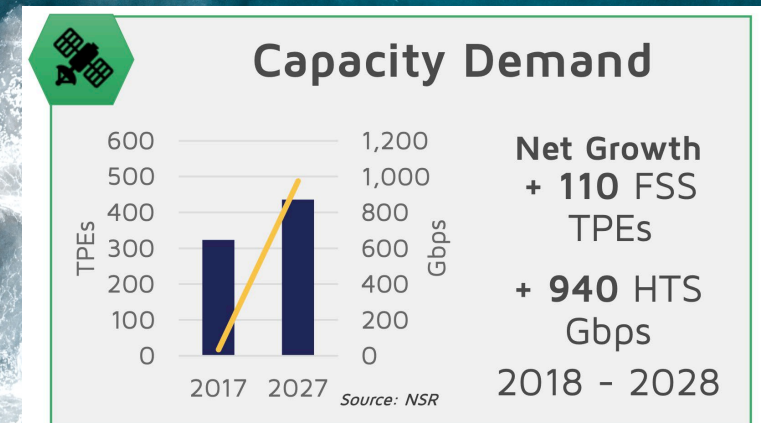
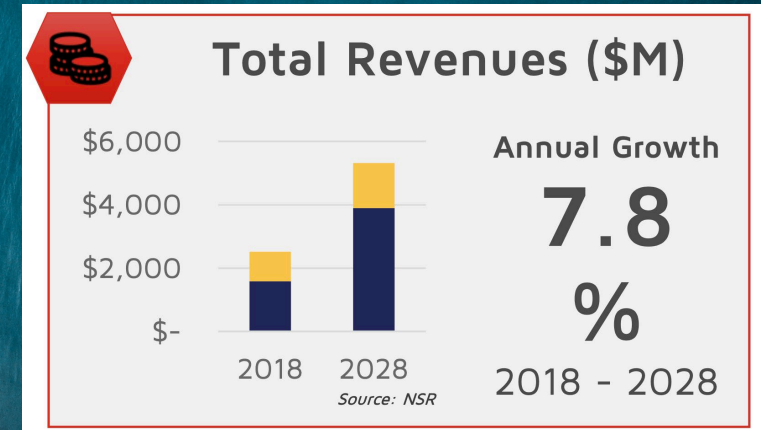
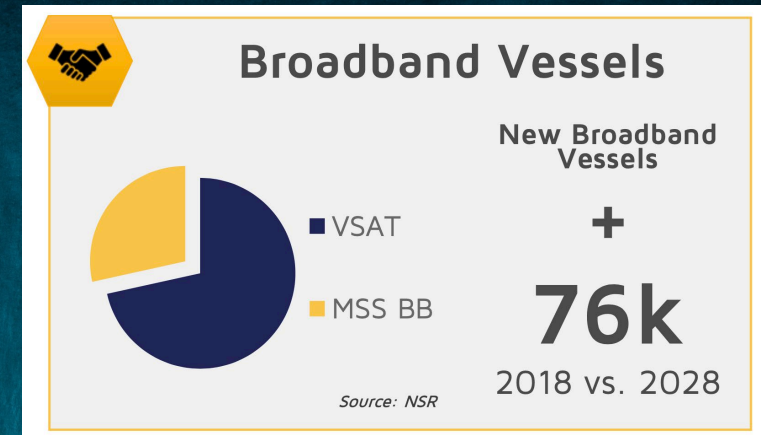
Strong Growth through uptake of VSAT Connectivity Options

According to NSR, the number of active maritime satellite terminals is expected to see a steady increase, driven by demands to improve operational efficiency and the crew's need for connectivity while on board the vessel.

- Strong conversion of Vessels from MSS to VSAT, along with relatively robust growth capture in Merchant sector.
- Merchant will account for roughly 50% of new Revenue Growth.

Overall, strong market for Broadband Connectivity, and a shift towards expanding the lower end of the Addressable Market is underway.

With nearly **700,000 In-Service Units by 2028** Maritime SATCOM Markets remain poised for growth.



HELLAS SAT AT SEA



Our satellites are located at 39° East orbital slot offering excellent coverage over Europe, M. East and Sub Saharan Africa.

From 39° East we serve leading DTH operators by delivering content to more than 3 million households, while we provide cost effective solutions to enterprises and governments that want to expand connectivity to every location of their network in our coverage areas.

From our ground facilities in Greece and Cyprus we provide a wide range of managed services to meet our customers' communications needs when and wherever is required.

At Hellas Sat we believe that leveraging our deep expertise to provide fast reliable and cost effective solutions to our customers is at the core of everything we do.

Bridging worlds



Hellas Sat at 39° East



Hellas Sat 3

Replacing the existing Hellas Sat 2 by providing service continuity and incremental capacity for expansion in Europe, Middle East and Southern Africa.

Spacecraft

Thales Alenia

Spacebus 4000C4

Orbital position

39° East

Launch Date

28 June 2017

Design Lifetime

16,5 years

Payload

47 Ku-band transponders

1 Ka-band transponder



Hellas Sat 4

Launched in 2019 to provide in-orbit backup, redundancy services for Hellas Sat 3 and further expansion Ku capacity over Europe and Southern Africa.

Spacecraft

Lockheed Martin

A2100TR

Orbital position

39° East

Launch Date

05 February 2019

Design Lifetime

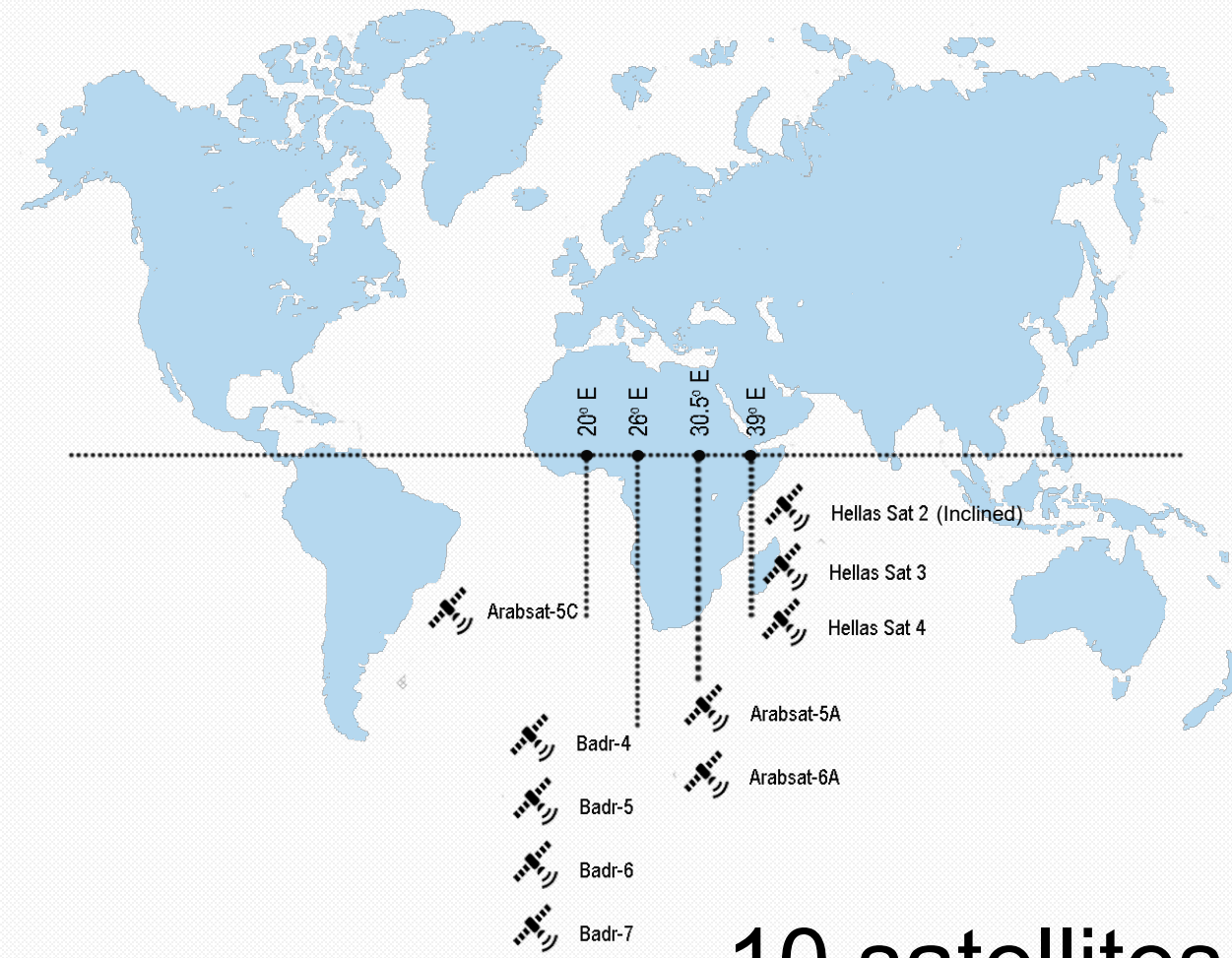
20 years

Payload

34 Ku-band transponders

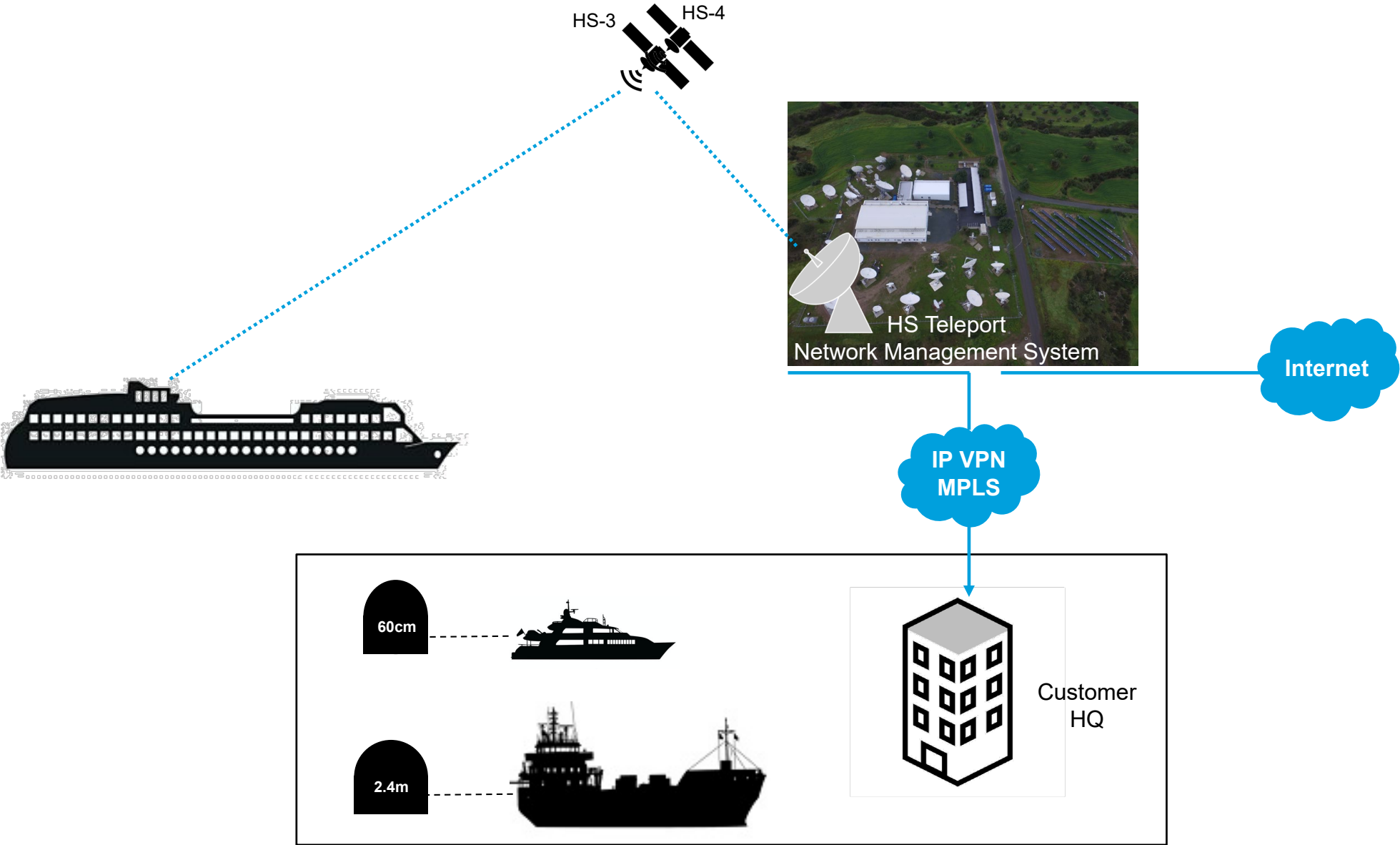
Combined Fleet

hellassat



10 satellites
in orbit

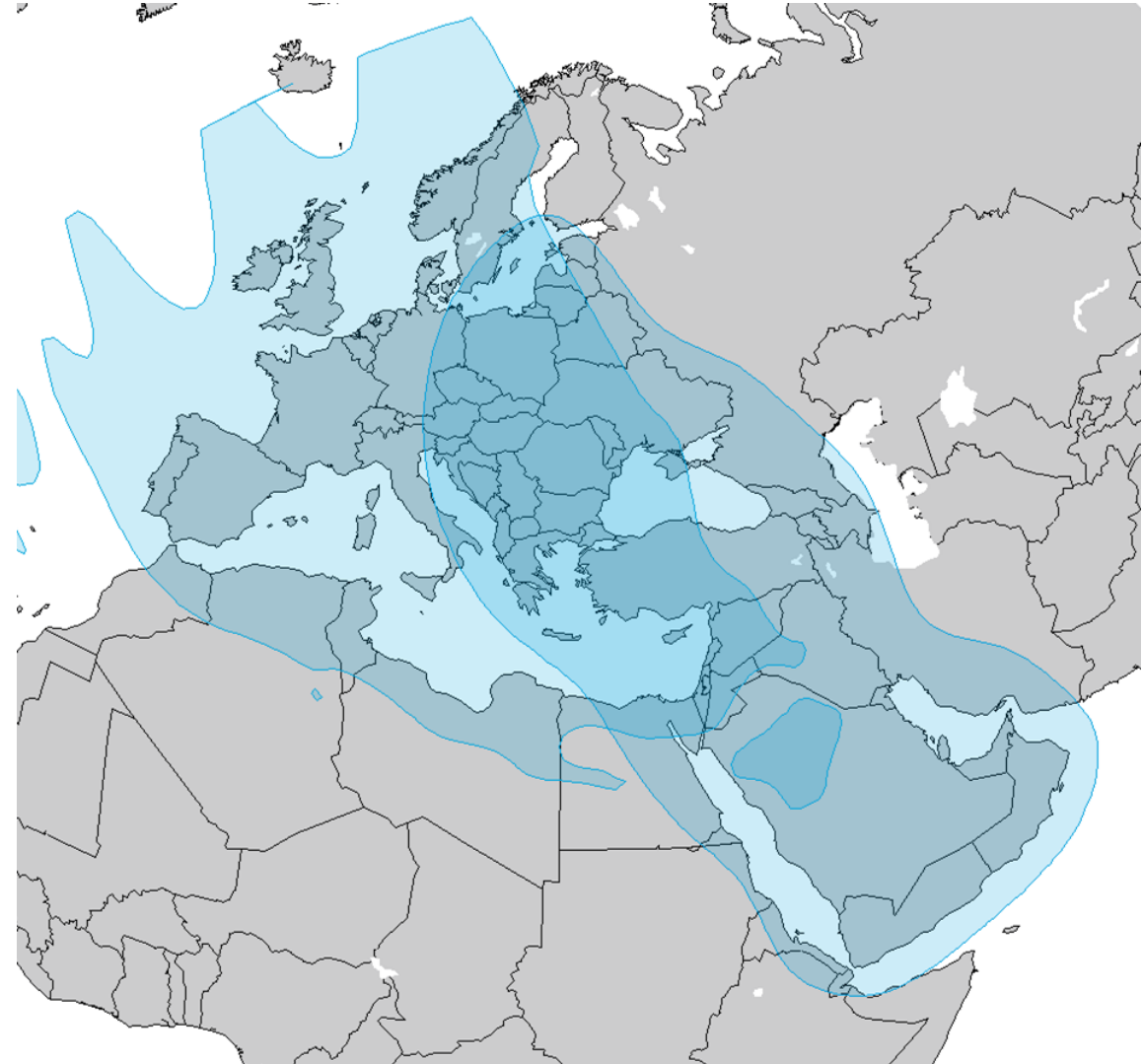
Hellas Sat Managed Connectivity Service



Hellas Sat Maritime Solution

- Reliable Ku band coverage to ensure our customers are always connected.
- Scalability options leading to rapid expansion of our customers network.
- Access to our satellites at 39° East, complemented with terrestrial network and hub solution for enhanced connectivity.
- Technical expertise coupled with our 24/7 support in Greece and Cyprus.
- Access to VNO services and customized solutions.

Service area



RELIABLE, FLEXIBLE, SCALABLE



2 NEW SATELLITES
collocated at
39° East



HIGH POWER
more than
54dBW



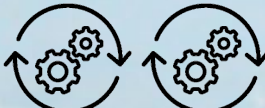
AMPLE ROOM
for future
expansion



BANDWIDTH
optimization



2 x TELEPORTS
Greece & Cyprus



2 x NOC 24/7
Greece & Cyprus



A blue-tinted background image of a space shuttle launching, with a large plume of white smoke and fire. The shuttle is positioned vertically on the right side of the frame. In the center, the words "THANK YOU" are written in white, bold, sans-serif capital letters, set against two vertical black bars.

**THANK
YOU**