

A network diagram with blue nodes and lines on a dark blue background, representing connectivity and digitalization.

VSAT Connectivity: Setting the Pace for Maritime Innovation & Digitalization

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1st Cyprus Shipping ICT Conference

VSAT Adoption on the Rise



- **Trend in recent years**
- **COVID accelerating pace**
 - KVH saw demand for connectivity increase rapidly during the pandemic
- **COVID impacting demand for IoT / connected ship**
 - “COVID may become the catalyst for smart ships and automation...” – Euroconsult 2020

Three Reasons VSAT Adoption Accelerating



1. Focus on crew welfare
2. Benefit of IoT
3. Need for fast data

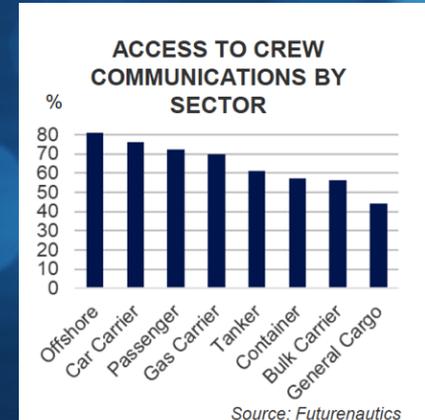
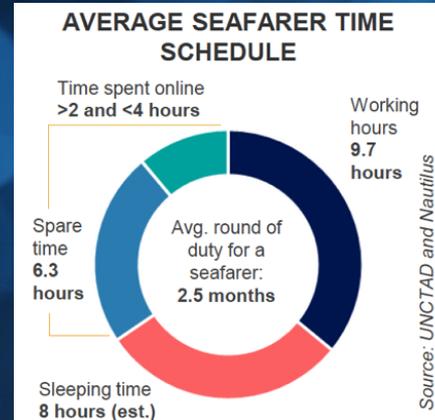
Reason 1: Focus on Crew Welfare

- **Seafarer wellbeing seen as foundation of safe, efficient operations**
- **To increase wellbeing: provide connection to home via connectivity and content**
 - Crew account for 80% onboard data usage



Shipping's New Reality: Seafarer Bandwidth

- **Seafarer online 2–4 hours/day**
 - 75% will only work for ship with good Internet
- **Tankers, oil & gas vessels need to keep highly skilled crew, Internet critical**
 - Less important for fishing operator



Source: Euroconsult "Prospects for Maritime Satellite Communications 2020"

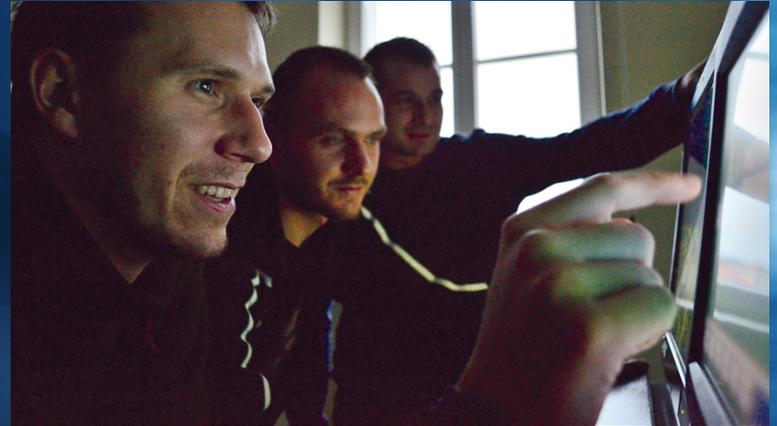
News & Movie Content Key to Crew Welfare

- **Vessel logistics**
 - Traditional delivery methods (DVDs, etc) mean video news and sports aren't timely
- **Size of multimedia files**
 - Browsing to video sites uses too much data
- **Cybersecurity risk**
 - Crew-supplied content introduces unacceptable cyber and licensing risks



Solution: Curated Content via Satellite

- **Deliver news, movies, TV, sports licensed for commercial use via satellite link**
 - Vessel subscribes to content, without impacting vessel data plan
 - Example: KVH Link
- **Corporate videos can also be delivered**
 - Fleet operators can inform crew and enhance relations worldwide
 - Example: KVH YOURlink



KVH Spotlight: YOURlink

- **In July 2020, Pacific Basin produced a video message about crew changes and sent it to 116 vessels at once**

“For Pacific Basin, using KVH YOURlink to send a video quickly to all our ships and seafarers simultaneously is an effective way for our company to get an important and heartfelt message out directly to our colleagues at sea.”

– Jay K. Pillai, Fleet Director, Pacific Basin

Reason 2: Benefit of Maritime IoT

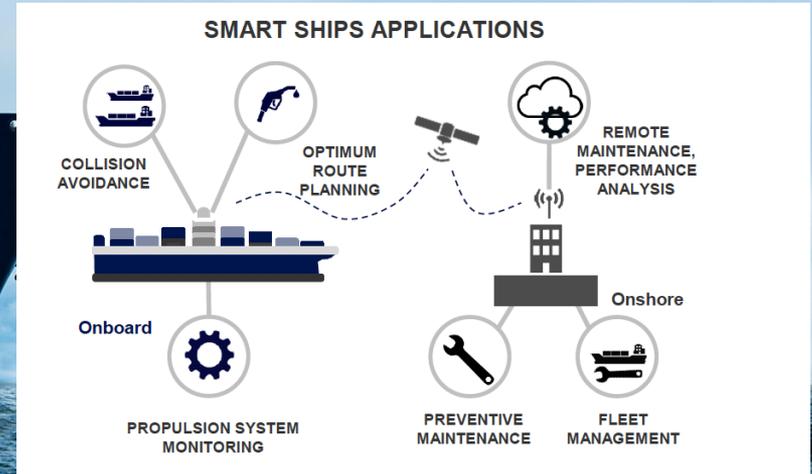
- **IoT = Internet of Things (machine to machine)**
 - Uses equipment sensor data flow from vessel to shore to optimize vessel performance
- **Maritime IoT accelerating**
 - Focus on vessel performance optimization and operational efficiency
 - COVID as a catalyst



Maritime IoT: How & Why

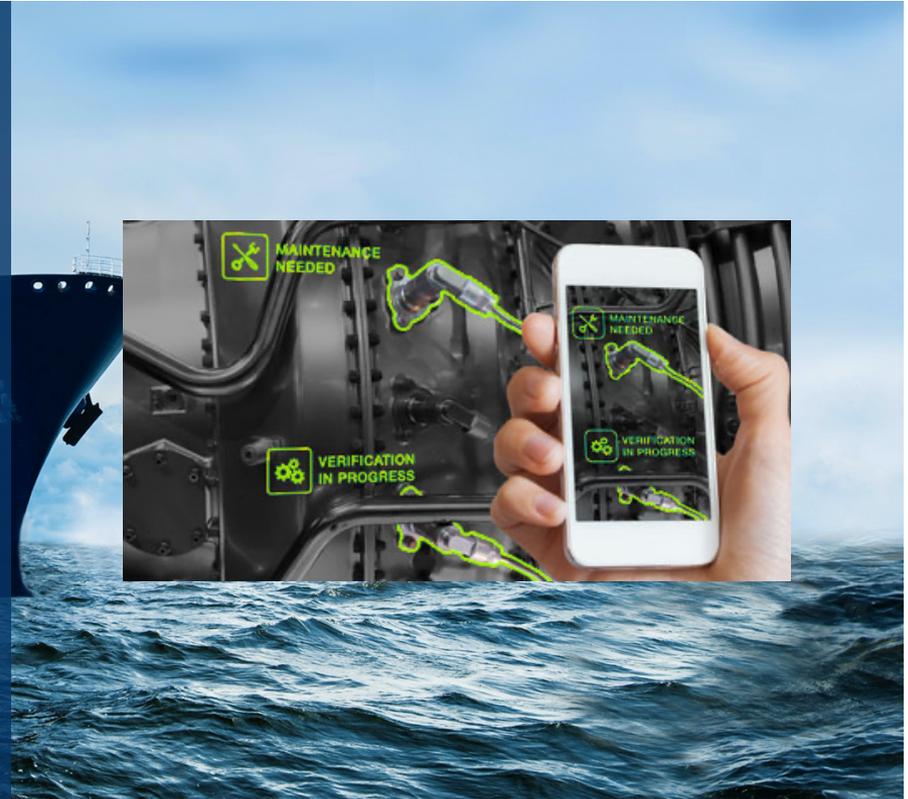
- **Maritime IoT how: sensors on vessel equipment emit data, which is fed into programs for analysis**
- **Maritime IoT why: connected ship is smarter**
 - Performance management and condition monitoring via digital technologies
 - Onboard and onshore, many applications

Source: Euroconsult "Prospects for Maritime Satellite Communications 2020"



IoT Best When It Provides Insights at Sea

- **VSAT connectivity enables more powerful use of IoT**
 - Many vessels wait to download entire voyage data feed once they are in port
 - More beneficial to gain actionable insights while vessel is at sea
- **Remote intervention by experts on shore**
 - VSAT connectivity enables video conference when it is most needed, to solve an issue at sea



Maritime IoT as a Competitive Advantage

- Maritime business models are well established
- First vessel operators using IoT will see business transformation and competitive edge



KVH Spotlight: Maritime IoT Solutions



KVH Watch

KVH Watch

IoT Connectivity as a Service

When you need dedicated IoT connectivity for equipment or systems that you manufacture or support for:

- Dedicated, isolated IoT connectivity for optimal cybersecurity
- Integration with onboard data sensors and linkage to the cloud
- 24/7/365 remote monitoring via Flow and on-demand Remote Expert Interventions



IoT Inside

UNLIMITED CHANNEL

Speed-based plans with unlimited usage

- ▶ Fixed price with no overage
- ▶ IoT/Remote Support Applications:
 - remote monitoring
 - data transfer
 - vessel tracking
 - VPN

1

&

2

HIGH-SPEED CHANNEL

Plans as fast as 20/3 Mbps down/up

- ▶ All plans offer fastest network speeds
- ▶ IoT/Remote Support Applications:
 - remote tech support
 - videoconferencing
 - security cameras
 - document transfer



Spotlight: KVH & Kongsberg

- KVH Watch provides connectivity for Kongsberg's Vessel Insight
- Customers can cost efficiently capture and aggregate quality data from their assets, and securely transfer them to the cloud
- Pilot installed on Kongsberg vessel Simrad Echo



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Reason 3: Need for Fast Data

- **Fast, uninterrupted connectivity required on vessels today**
- **Operational efficiency**
 - Email, charts, onboard server connections to shore, regulatory mandates
 - Enhanced recruiting to get the best seafarers
- **Data speed key criteria**
 - Telemedicine
 - Videoconferencing



What Makes VSAT Fast

- **HTS technology**
 - Making the high-speed revolution possible
 - Redundant beams for seamless connectivity
- **Ku-band VSAT speeds far exceed L-band**
 - KVH 1 m Ku-band HTS antenna 20/3 Mbps
 - L-band top speeds 400-500 Kbps
- **Legacy L-band vessels switching to VSAT**



Why Vessels are Switching to VSAT

- **Need more bandwidth and speed than L-band can provide**
 - Commercial vessels using more than 80GB/month
- **VSAT more cost-effective use of satellite technology**
 - Broader pool of available bandwidth
 - VSAT airtime prices lower than L-band
- **VSAT always on, 24/7 connectivity for vessel**



Technology Support Critical

- **Vessels often short-staffed for IT**
- **Manage onboard data usage**
- **Best service providers offer**
 - Easy-to-use tools for managing usage
 - Application engineering
 - Project management
 - Installation of onboard terminals
 - Creation of vessel monitoring and notification systems
 - Ongoing support



KVH Spotlight: AgilePlans

Antenna, data
plan, maintenance

All-inclusive with no
commitments

Removes barriers to
VSAT adoption

Reflects maritime
business realities

“The fact that everything is included is the reason we chose KVH AgilePlans: connectivity, content, hardware, installation, and maintenance. Also key deciding points were the fact that there is no commitment, and no risk of investment for the vessel owner.”



Jacobus Varossieau
Senior Operations Manager
Nordic Hamburg
30+ vessels – V7HTS

Questions

To learn more about VSAT connectivity, schedule a 15-minute one-on-one briefing with David Tropp Hag: calendly.com/dhag/15min

Visit kvh.com/ICT to download your connectivity e-book

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