



# IRIDIUM CERTUS<sup>SM</sup>: MARITIME SATELLITE COMMUNICATIONS REINVENTED

# WHAT DO MARINERS WANT?

- Reliable Service
- Smaller equipment that is easy to install and maintain
- Reasonable pricing for services and hardware
- Higher speeds
- Global coverage (important for those in areas that do not have coverage)
- Systems that provide real value for money for:
  - Business operations
  - Crew communications
  - Fishing
  - Leisure





# ADVANTAGES OF L-BAND – THE NATURAL CHOICE

- Robust – doesn't suffer from rain attenuation
- Reliable – more forgiving on pointing accuracy
- Compact – solid-state antenna requiring less maintenance, small Below Decks Unit





# ADVANTAGES OF LOW EARTH ORBITING SATELLITES (LEO)

- Low latency – 800km vs 36,000km
- Multiple points of redundancy – multiple satellites, always moving and with in-orbit replacements
- Absolute coverage
- Iridium LEO = Meshed Network not “bent pipe” - disaster proof call pipe
- Other benefits – can be used for other payloads (AIS)



# WHAT IS CERTUS?

Comprehensive New LEO/L-band network of Satellites (NEXT)

## New Services

- High Quality Voice
- Highest L-Band Data throughput (up to 1.4Mb)
- SBD, Burst and PTT

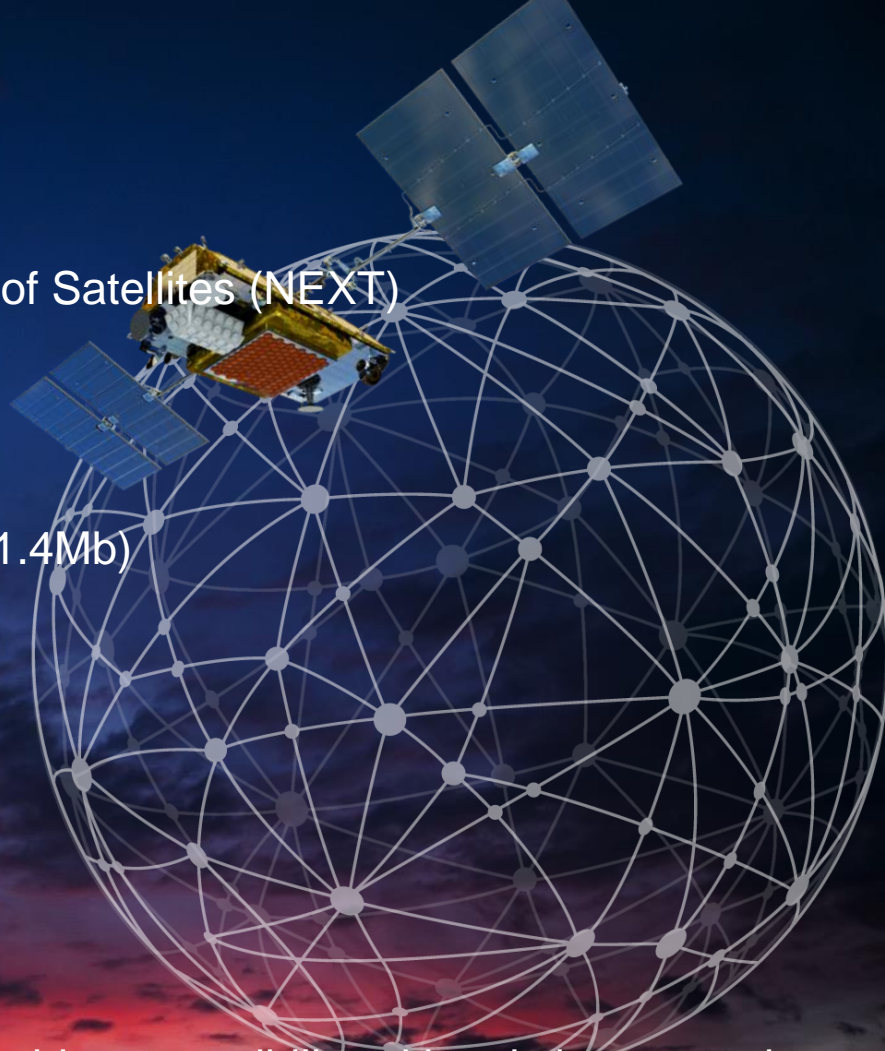
## New Terminals

## Safety Services

## New Applications

## New Solutions

Provided by NEXT Satellites which also provide compatibility with existing network and devices for backwards compatibility and service continuity





# EVOLUTION TO IRIDIUM NEXT



Significant improvement in voice quality  
and data speeds with Iridium NEXT

## Current Constellation

Voice: 2.4 Kb/s

Short Burst Data (SBD)  
Iridium Burst®

LBT Data:  
Circuit switched 2.4 Kb/s Up/Down

Broadband:  
Iridium OpenPort® up to 134 Kb/s

Supports Current "Block 1" Terminals

## Iridium NEXT Capabilities

Voice: 4.8Kb/s (HQ)  
and 2.4Kb/s (SQ)

Short Burst Data (SBD)  
Iridium Burst®

Data:  
Circuit switched 2.4 Kb/s Up/Down  
22-88 Kb/s Up/Down

Broadband:  
88 Kbps Up/Down  
176 Kbps Up/Down  
352 Kbps Up/Down  
352 Kbps Up / 700 Kbps Down  
512 Kbps Up / 1.4 Mbps Down

Supports Current "Block 1" and New Terminals



# A ROADMAP TO THE FUTURE

The Iridium network will become more reliable, higher performing and more powerful as Iridium migrates to Iridium NEXT.

## **Iridium NEXT**

Our next-generation satellite constellation will support enhanced products and services through higher data speeds, lower latency and increased bandwidth, smaller antennas and greater transmitting power

## **Iridium Certus<sup>SM</sup>**

An entirely new class of mobile satellite broadband services capable of meeting critical communication needs anywhere on the planet through enhanced infrastructure and capacity

# IRIDIUM CERTUS ADVANTAGES

Coverage

✓ 100% global

Reliability

✓ All-weather, meshed

Mobility

✓ Seamless access on-the-move

Simultaneous service use

✓ All services

L-Band IP data speeds

✓ Up to 1.4 Mbps

High quality voice lines

✓ Integrated

Tracking/monitoring capability

✓ Integrated

Push-to-Talk

✓ Integrated

GMDSS

✓ Integrated

AMS(R)S

✓ Integrated

Latency/jitter

✓ Lowest

Acquisition time

✓ Fastest



# WHY IS CERTUS IMPORTANT?

Broader access to Satellite Communications for all Mariners

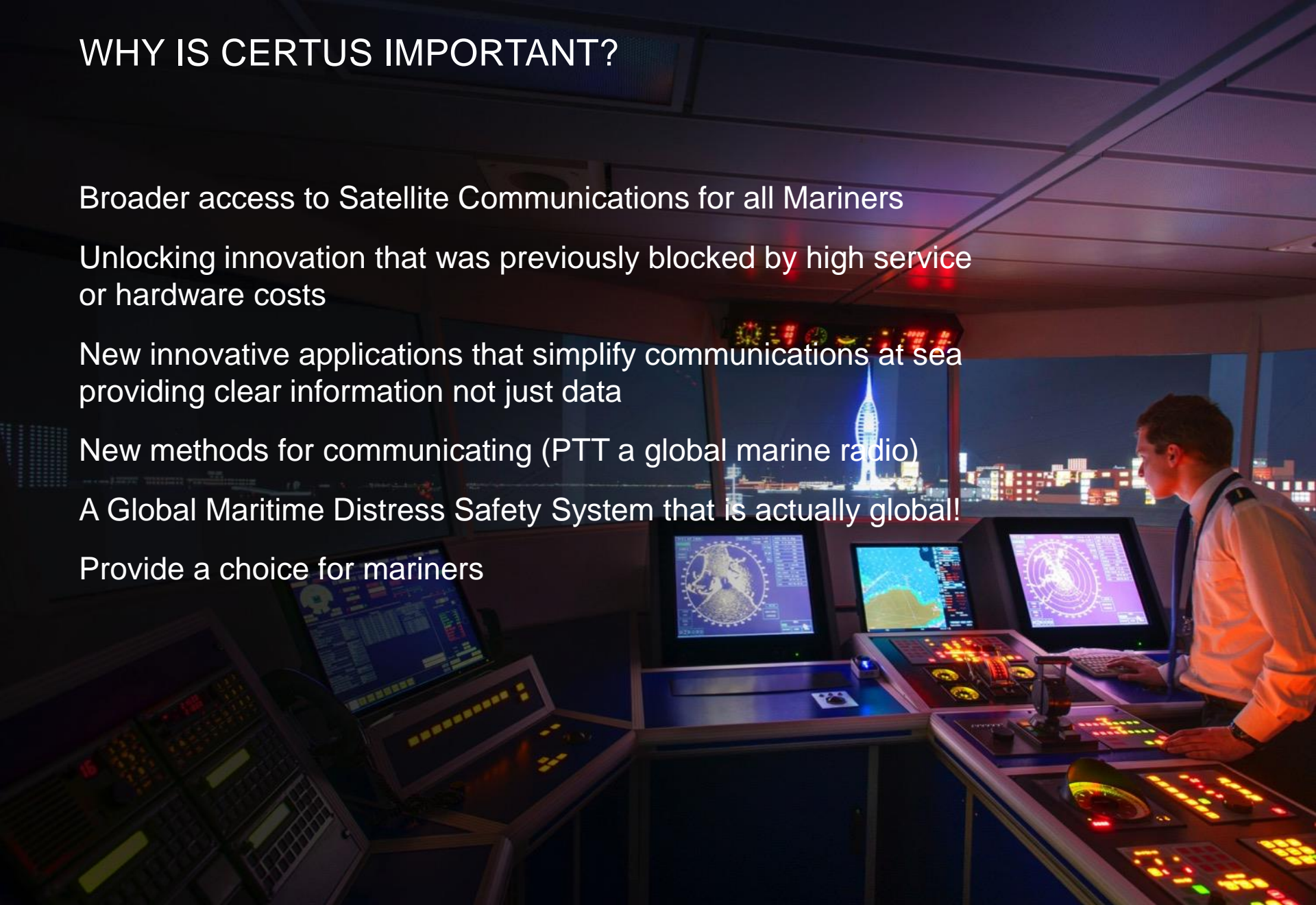
Unlocking innovation that was previously blocked by high service or hardware costs

New innovative applications that simplify communications at sea providing clear information not just data

New methods for communicating (PTT a global marine radio)

A Global Maritime Distress Safety System that is actually global!

Provide a choice for mariners



# WHAT DO I NEED TO KNOW ABOUT CERTUS?

- Commercially Available in 2017
- Almost double the speed of fastest existing L-band for price of midrange terminal
- Designed to be the best value for maritime satellite communications
- Ideal for primary or companion use
- Evolving data service initially (download speed):
  - 134k Block-1 Satellite/ 352k NEXT
  - Full 352k in 2018
  - Software upgrade to 704k in 2018



# IRIDIUM CERTUS MARITIME MANUFACTURERS



***COBHAM***

**THALES**

# Iridium Certus<sup>SM</sup> Maritime

## Expected Availability

## Above-Deck Equipment (ADE)

Height & Diameter



Form Factor

Electronically switched and phase steered, horizon to horizon - no moving parts

## Below-Deck Equipment (BDE)

Form Factor

Standalone      Standalone      Standalone or Rack Mount      Standalone or Rack Mount      Rack Mount

## IP Data, Background

all best-effort, maximum speeds

|                 |         |          |           |          |           |
|-----------------|---------|----------|-----------|----------|-----------|
| Vessel Receive  | 88 kbps | 176 kbps | 352 kbps* | 704 kbps | 1408 kbps |
| Vessel Transmit | 88 kbps | 176 kbps | 352 kbps* | 352 kbps | 528 kbps  |

## IP Data, Streaming

Upload / Download Rate

|         |          |          |          |          |
|---------|----------|----------|----------|----------|
| 56 kbps | 128 kbps | 256 kbps | 256 kbps | 256 kbps |
|---------|----------|----------|----------|----------|

## Telephony

Number of Voice Lines

determined by partner implementation

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| x 2 | x 3 | x 3 | x 3 | x 3 |
|-----|-----|-----|-----|-----|

## Target Markets

- Commercial fishing
- Sport fishing
- Leisure sailing
- GMDSS\*\*
- Commercial fishing
- Tugs, tows & river craft
- Leisure motor & sail
- Sport fishing
- Merchant shipping
- Commercial fishing
- Work boat
- Merchant shipping
- Commercial fishing
- Large leisure
- Work boat
- Offshore platforms
- Scientific research
- Cruise & ferry
- Yacht

\*134 kbps on Iridium legacy satellites

\*\*Pending IMO recognition

The Iridium Certus Maritime Product Portfolio is being developed by third-party manufacturers and as such, is indicative and subject to change without notice.

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# MARKETS: MARINE MARKETS SERVED BY IRIDIUM



**Merchant Shipping:** Cargo ships, tankers, bulk carriers, Ro-Ro



**Research Vessels:** Scientific, Polar, Fisheries, Seismic



**Commercial Fishing:** Catch processors, seiners, trawlers, trap setters

**Workboats:** Tugs, Offshore Supply, AHTS, dredgers, barges, inland vessels



**Recreational:** Yachts, sailboats, private/polar cruise, kayak, fishing



**Fixed:** Jack up rigs, platforms, buoys, submersibles, floats, gliders, offshore construction





# SUMMARY - IRIDIUM CERTUS

- Giving the Maritime sector the satellite communications they have always wanted.
- New Satellites
- New Technology (20 years later)
- LEO Constellation
- New Ground Infrastructure
- New Distribution Approach
- New Manufacturers (the best in the world)
- Choice
  - Coverage
  - Cost
  - Capability



