Digital Ship Copenhagen 2016

6 April 2016
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inmarsat
The mobile satellite company

Digital Ship Copenhagen 2016

Agenda

1	Inmarsat at a glance
2	Maritime data evolution
3	FleetBroadband and Global Xpress update
4	Fleet Xpress – a new standard in maritime communications

01

Inmarsat at a glance

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Our market

The Internet of everywhere

Maritime   **Enterprise**   **Aviation**   **US Government**   **Global Government**

Powering global connectivity for mission critical communications

02

Maritime Data Evolution

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Global mobile data shows explosive growth

GLOBAL MOBILE DATE TRAFFIC EXPLODING

Exabytes per month
+53% CAGR (2015-2020)
(Cisco VNI Mobile 2015)

EXPLOSIVE GROWTH IN SOLUTIONS

Cloud-based services

Apps

INCREASING DEVICE AND SENSOR PENETRATION

Cloud-based services

Internet of Things

1 Exabyte = 1,000,000,000,000 Megabytes

Global Mobile data traffic:

> Global mobile data traffic grew 74 percent in 2015
> 3.7 exabytes per month at end of 2015
> 30.6 exabytes per month by 2020

Exabytes per Month

3.7 EB — 2015
6.2 EB — 2016
9.9 EB — 2017
14.9 EB — 2018
21.7 EB — 2019
30.6 EB — 2020

Maritime data evolution

2010	2013	2016	2020
Traditional shipping	**Digital shipping**	**Smart shipping**	**Drone ships**
› Voice calls › E-mail and attachments	› Ops data to shore › Automated transfer	› Automated data gathering › Real-time decision making	› Fully automated, unmanned vessels

Inmarsat Maritime services portfolio

Satellite connectivity for all vessels

> Inmarsat enables the maritime industry to stay connected with a broad portfolio of voice and data services

> Fleet Xpress (FX) has been designed for customers looking for high-speed broadband connectivity

> FX replaces the XpressLink Ku-band service
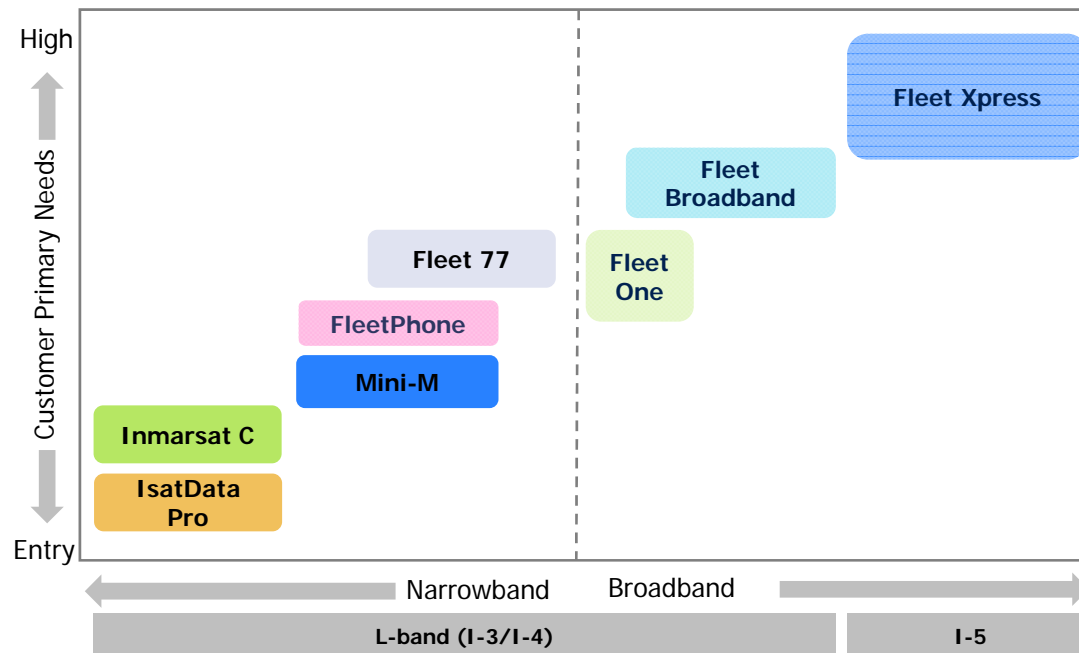
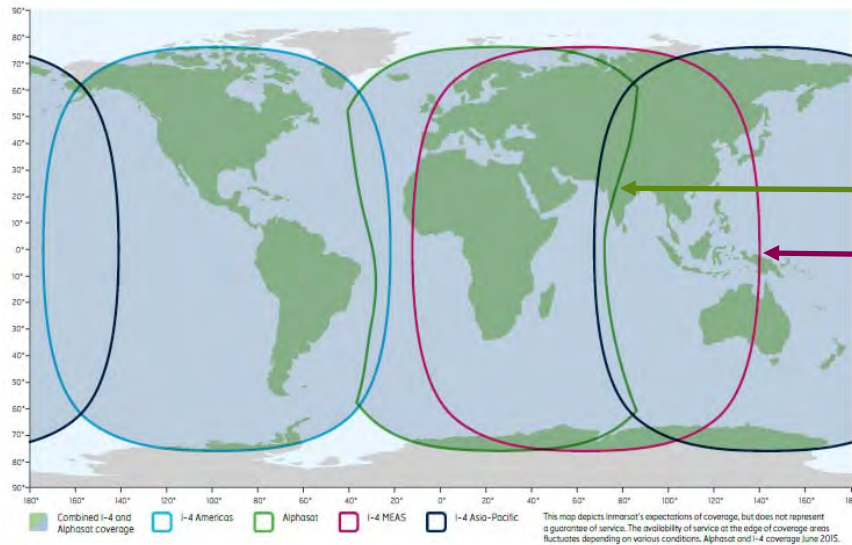# 03

FleetBroadband & Global Xpress

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FleetBroadband

Global broadband connectivity and voice solution

> FleetBroadband is a proven maritime broadband solution

> Continued growth with over 45,000 active terminals

> Alphasat online adding more capability

> I-4 F2 moved, creating a 4th Region: MEAS

> Fast growth of 'Internet Access' subscribers on FleetBroadband

  > Utilising smart box technology

  > Enabling crew internet access

> FleetBroadband provides unlimited back-up for Fleet Xpress

$1.6bn
Global broadband network

2015
Commercial launch

89
Ka-band beams on each satellite

Inmarsat Global Xpress

One high speed network, one trusted provider, one seamless global solution

> Next generation high throughput satellites
> One single operator delivering seamless coverage, worldwide
> Powered by three Inmarsat-5 (I-5) satellites built by Boeing

> Each I-5 satellite has an expected lifespan of 15 years
> Wide range of terminals
> Fleet Xpress is the maritime Global Xpress solution

Ground station infrastructure

Dual ground stations support redundancy
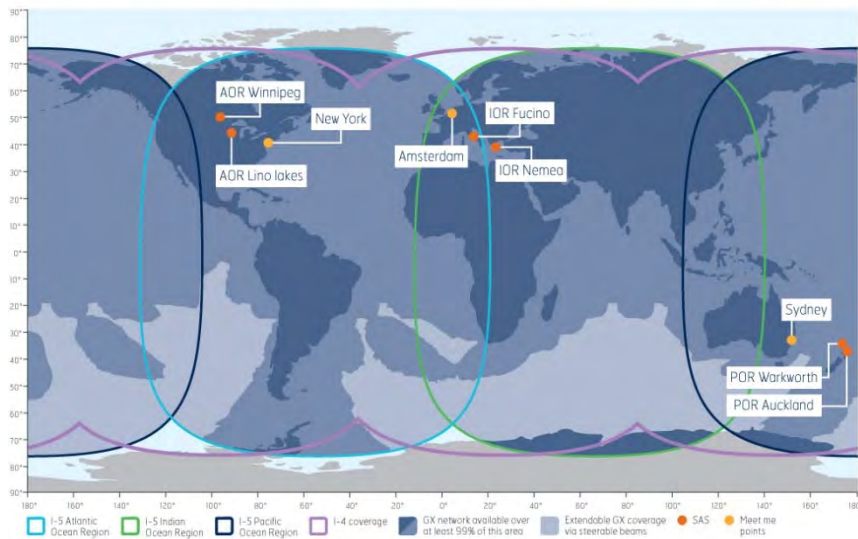
> Duplicated ground infrastructure
>> Secured, operated and managed by Inmarsat
>> 2 Satellite Access Stations per satellite, total 8

> Both sites receive all terminal traffic
>> When a fade event is experienced traffic is handed over to the alternate site immediately
>> No traffic loss

Service designed for mobility

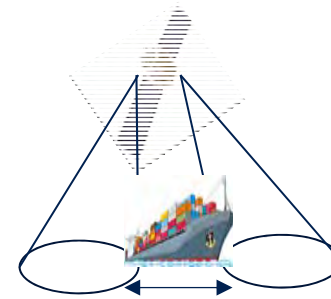Spot beam design provides the same connectivity performance everywhere
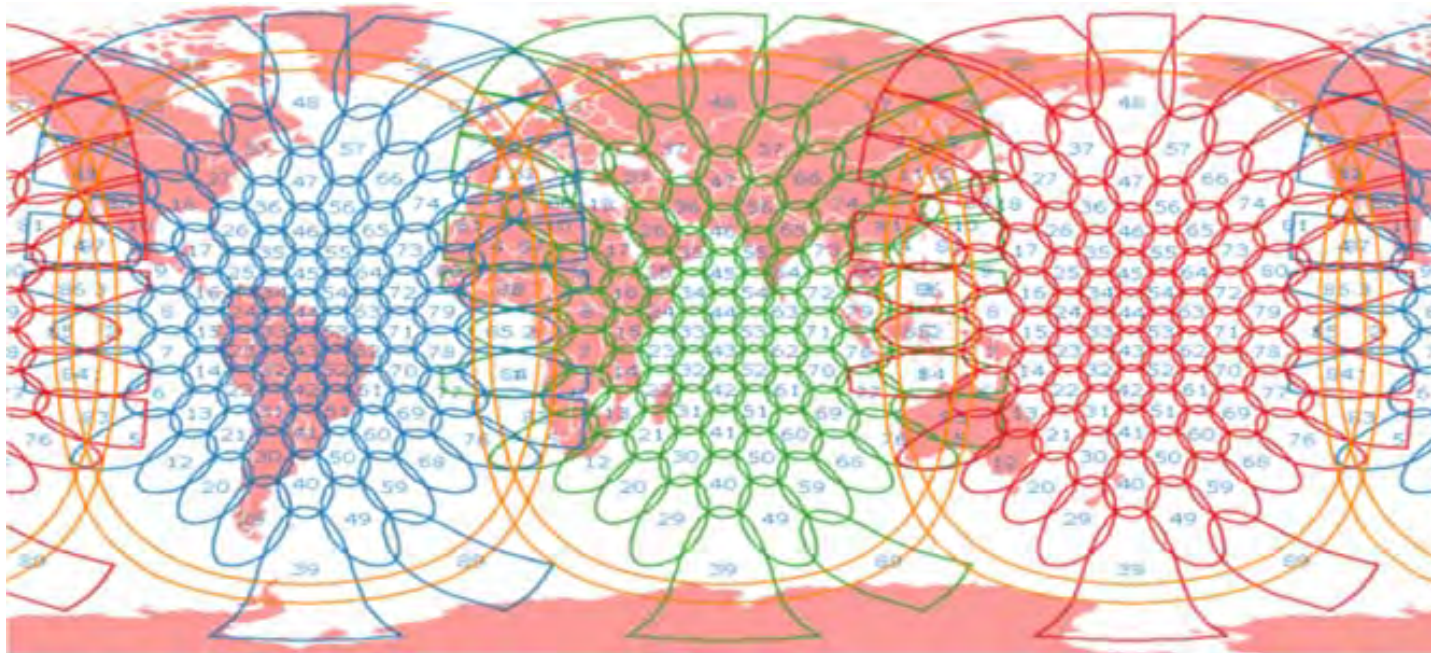
The network

Inmarsat specific Network Management System functions

Dual receiver on the remote site

> Allows beam switching and load balancing

Advanced adaptive modem technology

> Flexible Modulation and Coding to mitigate for rain fade

> Also allows Uplink Power Control

  Adjusts the power from the terminal within a controlled regulatory framework
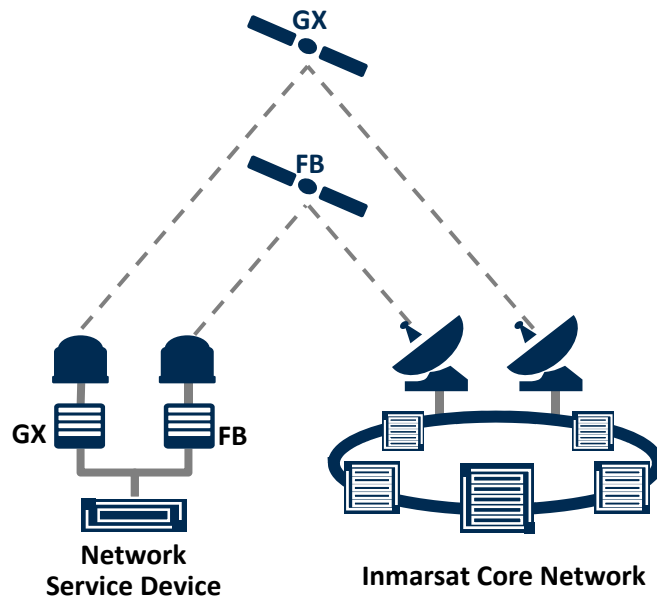
04

Discover the power of Fleet Xpress

A new standard in maritime communications

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Fleet Xpress network

Network designed for high-speed, mobility and continuous connectivity

GX

FB

GX   FB

**Network
Service Device**

Inmarsat Core Network

> **Redundant**
  - Dual terminal, satellite and teleport design

> **Expandable**
  - Satellite capacity can be increased

> **Global high-speed service**
  - Single operator – global standard
  - Flexible Bandwidth options
  - Seamless handover
  - Secure operation

> **Maritime eco-environment**

Fleet Xpress Primary Subscription

Revolutionary bandwidth design enables more accurate customer bandwidth planning, management and support and 3rd party applications

Bandwidth elements:

> Customer bandwidth for business and crew

> Voice service is separate from customer bandwidth

> Site management and support for service assurance

> Bandwidth for third party applications

> Unlimited FleetBroadband back-up

Customer bandwidth

Business

Crew

Fleet Xpress

Voice

Management and support

Business applications

Fleet Broadband
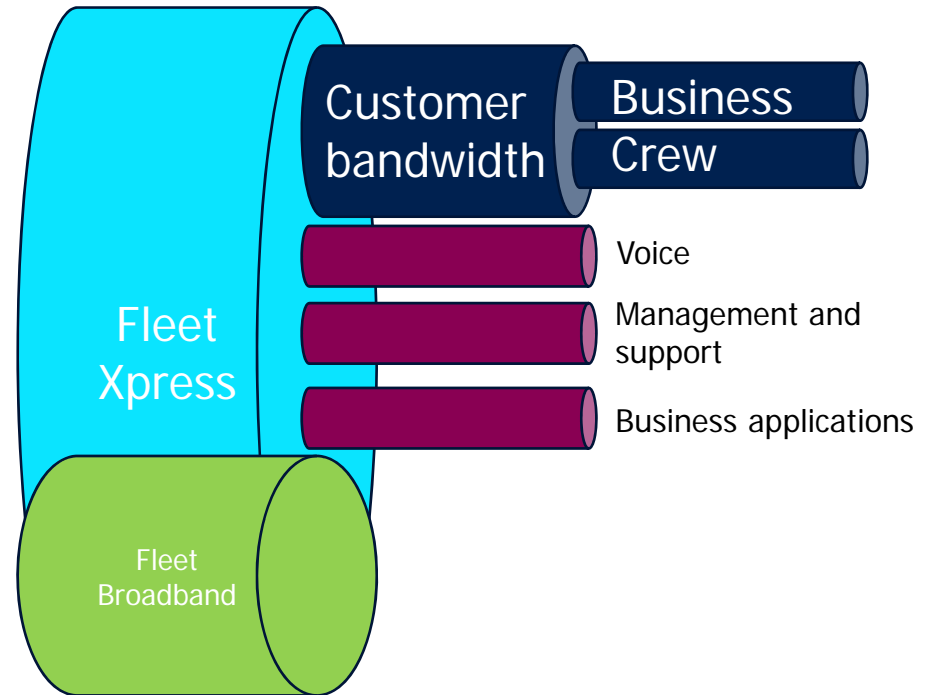
Inmarsat Gateway

Customer interface to the Inmarsat Service Enablement Platform (ISEP)
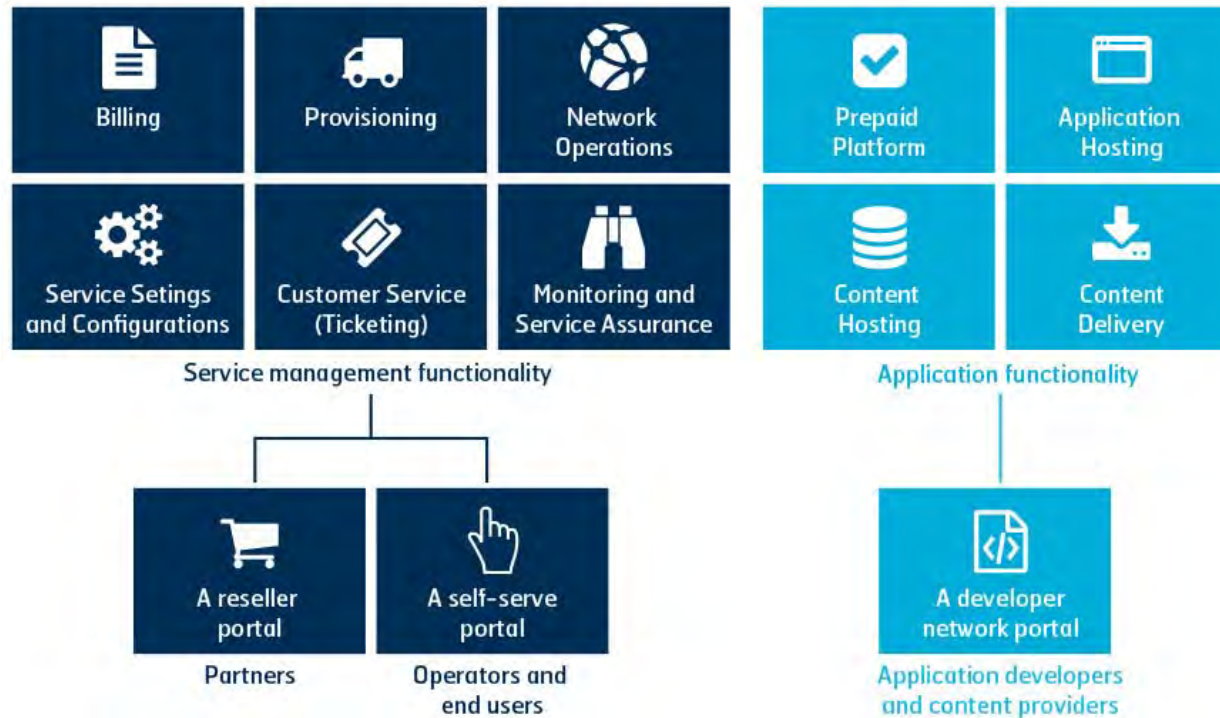
A new maritime ecosystem of business applications

Development of specialist third party maritime applications

Operational efficiency
> Engine Monitoring
> Planned Maintenance
> Chart Updates
> Weather / routing

Safety and compliance
> Emissions monitoring
> Anti-piracy
> Telemedicine
> Remote surveillance

Crew welfare
> Internet access
> Voice and video
> Current news and sports
> TV, radio and gaming

IT and security
> Remote IT support
> Corporate email
> Voice & Video Chat
> Cyber Security

Powered by Fleet Xpress

Flexible Real-Time Bandwidth Control

Entire GX Bandwidth Capacity

Customer bandwidth

- Browsing
- Business Apps & content
- Voice
- Video conferencing

Services carried over customer's bandwidth

Additional bandwidth availability

- Content delivery
- Applications
- TV, video, entertainment
- Video conferencing

Services carried outside of the customer's bandwidth
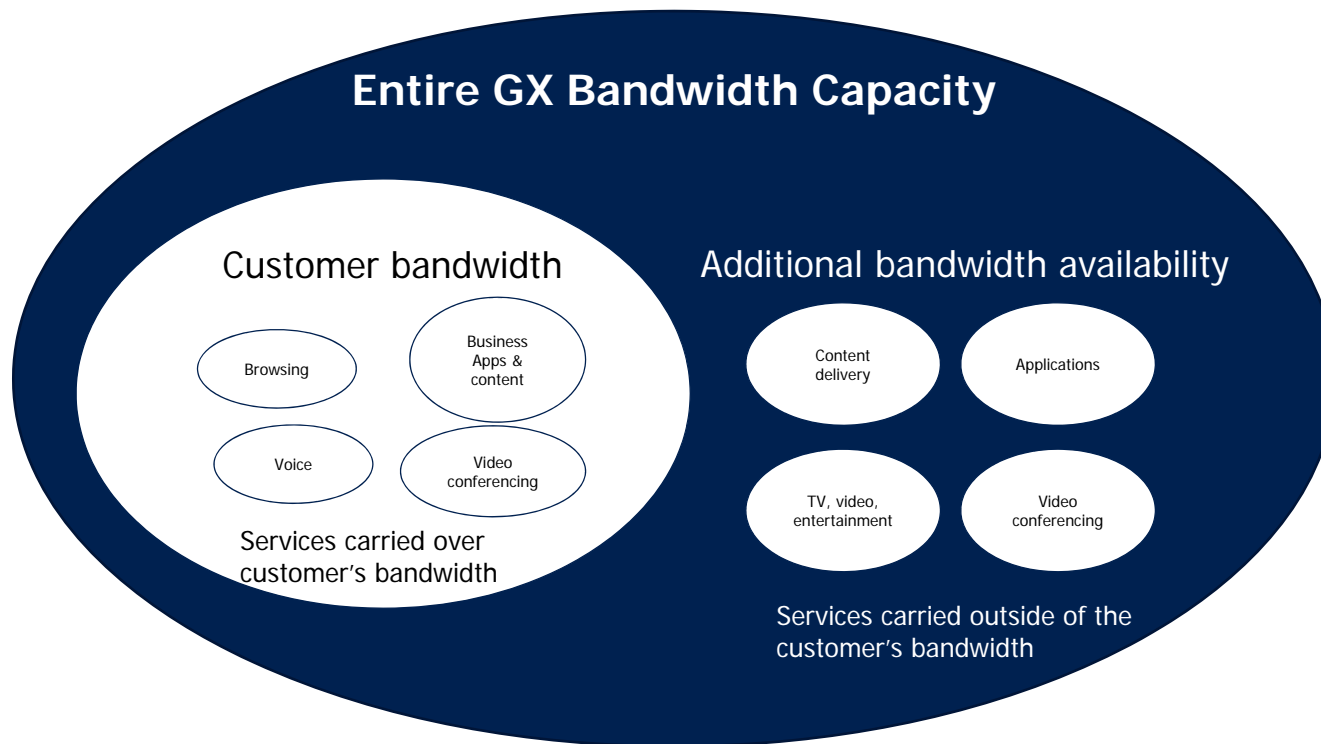
Secondary subscription

Entire GX Bandwidth Capacity

Customer Primary Subscription

Secondary Monthly Subscription

Monthly Invoice ($)

Ship Owner

Monthly Invoice ($)

Application Provider

Data traffic

Data traffic

Crew Browsing
Email
Application Data

Business / Crew LAN

Engine monitoring
VDR, Nav. systems,
client connectivity etc....

Vessel Equipment LAN / client LAN
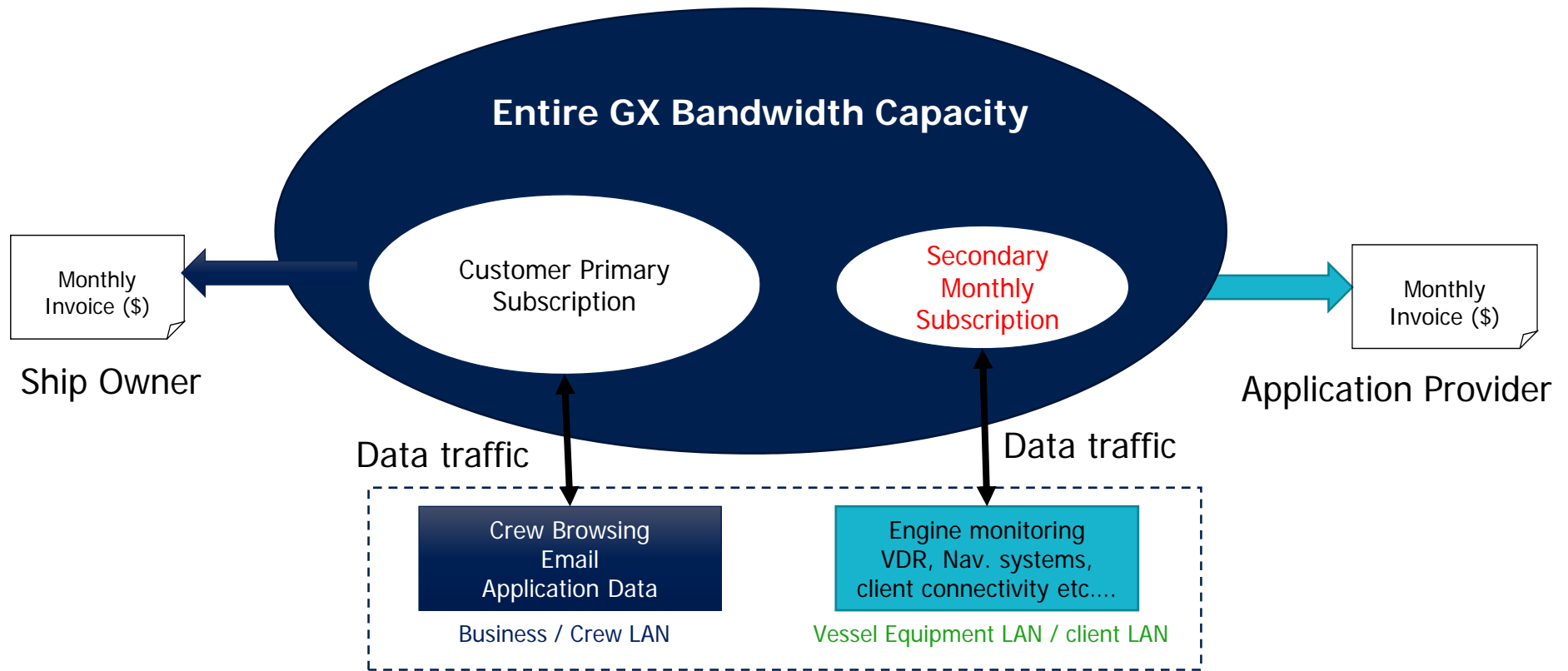
A new standard in maritime communications

Five powerful sets of benefits that together make Fleet Xpress unique

CONTINUOUS CONNECTIVITY
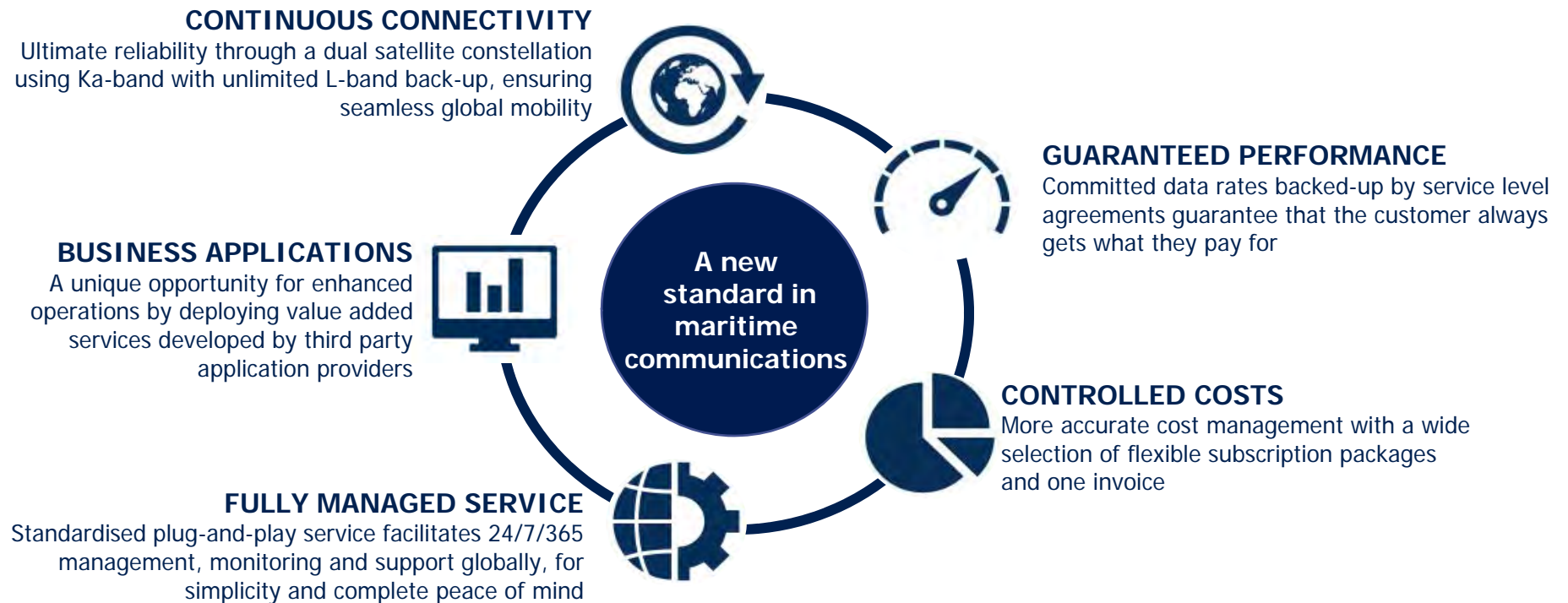Ultimate reliability through a dual satellite constellation using Ka-band with unlimited L-band back-up, ensuring seamless global mobility

GUARANTEED PERFORMANCE
Committed data rates backed-up by service level agreements guarantee that the customer always gets what they pay for

BUSINESS APPLICATIONS
A unique opportunity for enhanced operations by deploying value added services developed by third party application providers

A new standard in maritime communications

CONTROLLED COSTS
More accurate cost management with a wide selection of flexible subscription packages and one invoice

FULLY MANAGED SERVICE
Standardised plug-and-play service facilitates 24/7/365 management, monitoring and support globally, for simplicity and complete peace of mind

Driving
innovation
in maritime communications

Shaping
the future of the
connected
ship

Building
maritime communities

Defining
Connectivity at Sea