Defining Connectivity at Sea

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A brief history

The industry leader for more than 35 years

1979 The International Maritime Satellite Organisation was formed as a not-for-profit organisation.

1992 The IMO, the agency of the United Nations responsible for ship safety, introducing GMDSS.

1996 Inmarsat-3 F1 was launched, using the latest spot-beam technology to reallocate bandwidth.

2005 Inmarsat-4 launched, delivering Inmarsat’s Broadband Global Area Network, the world’s first global 3G network.

2015 Successful launch of Global Xpress I5 satellite constellation
Our markets

The Internet of everywhere

Maritime  Enterprise  Aviation  US Government  Global Government

Powering global connectivity for mission critical communications
Inmarsat Global Xpress
Inmarsat-5, Global Xpress
One high speed network, one trusted provider, one seamless global solution

- First global Ka-band commercial satellite service
- US$1.6 billion investment by Inmarsat
- Single operator delivering seamless coverage, worldwide
- Powered by three Inmarsat-5 satellites built by Boeing
- Steerable beams for flexible, additional network capacity
- Each I-5 satellite has an expected lifespan of 15 years
- Wide range of terminals
- Complements our L-band services
What is Fleet Xpress?

➤ Fleet Xpress is the maritime service offering of GX

➤ Combines GX with L-Band in a fully managed, subscription-based service

➤ Provisioned, managed and billed through the Inmarsat Gateway

➤ Shipboard Network Service Device (NSD) manages traffic flow and bandwidth allocation on the ship

➤ Advanced capabilities enable new ways for applications to use the satellite network
Fleet Xpress

Coverage with the SAS sites and MMPs
GX Spot Beam Design Advantages

**Unique spot beam design**
- Global beam composed of 89 spot beams
- Frequency reuse ensures high capacity in each individual spot beam
- Seamless switch between spot beams

**Bandwidth Sharing Capability**
- Load balancing between beam pairs
- Dynamic re-allocation of capacity

**High Capacity Overlay Beams**
- Additional steerable beams for additional capacity in high traffic areas
Fleet Xpress
Built for the Ultimate in Reliability

**Redundant**
- Dual Teleport design
- Weather, maintenance and local outages

**Expandable**
- Additional Ka-band satellites can be added as needed

**Hybrid L-band network**
- Handles any Ka-Band interruption
- Blockage, coverage, atmospheric, regulatory and equipment
- Maintains IP and VoIP services
- No additional costs
The Fleet Xpress Solution
The Fleet Xpress Solution

- Designed and built by Boeing
- Owned and operated by Inmarsat
- Proven, reliable platform
- 3 satellites provide global coverage
The Global Xpress Solution

Shipboard Terminals

- High throughput performance
- 60cm and 1m models available
- Inmarsat Type Approval ensures quality
- Upgradable Ku-Band terminals
The Global Xpress Solution

Satellite Communications

- Designed by iDirect specifically for GX
- Enables advanced services to work between Cisco and iDirect platforms
- Traffic prioritisation
- Bandwidth management
- Multicast
The Global Xpress Solution

The Network Service Device

- Cisco 2911 router platform
- On-board LAN, WAN, telephone interfaces
- Mass storage device for content hosting
- Cisco Cloud Application Hosting platform
Fleet Xpress

Enabling Applications and Services

**Flexible, dynamic prioritisation for standard data delivery**

- Prioritise by traffic type, by user, by application
- New off-peak delivery capabilities take advantage of low usage periods

**GX Multicast introduces a step change in capabilities**

- Highly flexible delivery options
  - To all ships in a fleet
  - To groups of ships
  - To ships in a geographic area
  - To all ships subscribing to specific services
- Broadcast data is stored within shipboard NSD for fast retrieval
- Minimal impact on network
Fleet Xpress Dynamic Bandwidth

Customer Bandwidth
(i.e. 1Mbps MIR / 256 CIR)

- VoIP
- Corporate Email & Data
- Browsing
- Traditional Application Data
Fleet Xpress Dynamic Bandwidth

**Customer Bandwidth**
(i.e. 1Mbps MIR / 256 CIR)

**FX Dynamic Bandwidth Allocation**
- Certain Apps may require additional bandwidth
  - Short term, high volume data needs
  - Customer does not want business traffic negatively impacted
  - Prepaid Applications, when the crew is paying for airtime directly
Fleet Xpress Dynamic Bandwidth

Application control of Bandwidth
- Application requests additional bandwidth
- Data traffic is passed over the satellite
- Application closes bandwidth
REMOTE CONTROL/OPERATION
- Monitoring & Control
- Navigation & Piloting
- Operation of payload systems

DECISION SUPPORT
- Navigation (e.g. Routing)
- Situational awareness
- Collision avoidance
- Safety support

NAVIGATION & POSITIONING
- Situation awareness & Sensing
- Dynamic Positioning & Auto pilot
- E-Navigation

OPERATIONS OPTIMISATION
- Onboard energy optimisation
- Fleet optimisation
- Revenue optimisation

CONDITION MANAGEMENT
- Health monitoring
- Self diagnostics
- Smart maintenance schemes
- Remote support
- Maintenance robots

ONBOARD AUTOMATION
- Automatic reporting
- Automatic systems (e.g. Mooring)
- Robotics
- Full autonomous operation

Image: Courtesy of Rolls Royce
Thank you!