

# Capital Markets Day 2016

7 October 2016



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# Agenda

## 2016 Capital Markets Day

### Presentations:

Chairman's overview	10:05	Andrew Sukawaty
Context of the capital markets day	10:15	Rupert Pearce
Demand, supply, technological evolution and how we compete + Q&A	10.30	Michele Franci
Break	11.30	
Aviation + Q&A	11.45	Leo Mondale
Maritime + Q&A	12.30	Ronald Spithout
Summary + Q&A	13.15	Rupert Pearce
Lunch	14.00	

### Exhibition stands:

Maritime, Aviation, Government and Enterprise

Breaks/lunch

**Note: Inmarsat is in its close period for Q3. Q3 results will be published in early November 2016**

# 01

## Chairman's overview

Andrew Sukawaty

# Confident that we will continue to deliver

A resilient core business with growth opportunities, even in tough market conditions

- > 37 years market leadership in Mobile Satellite Services
- > 3 generations of L-band satellites flown successfully
- > Ka-band Global Xpress constellation launched and being commercialised
- > New aviation technologies and partnerships developed, EAN in roll-out
- > Strong and experienced Board and management team
- > Strong balance sheet – recent capital refresh
- > 11 years as a PLC – 11 years of strong dividends
- > Clear strategy being implemented – disruptive innovation

# Board objectives

Based on independence, experience & governance

- > Manage Board transition
  - > Retain expertise while adding new members
  - > Maintain independence & diverse business backgrounds
  - > Mrs Pip McCrostie joined the Board on 1 September 2016
- > Balance interests of customers, employees & investors
- > Continue commitment to safety as a Public Service duty
- > Deliver long term profitable growth through disciplined deployment of capital

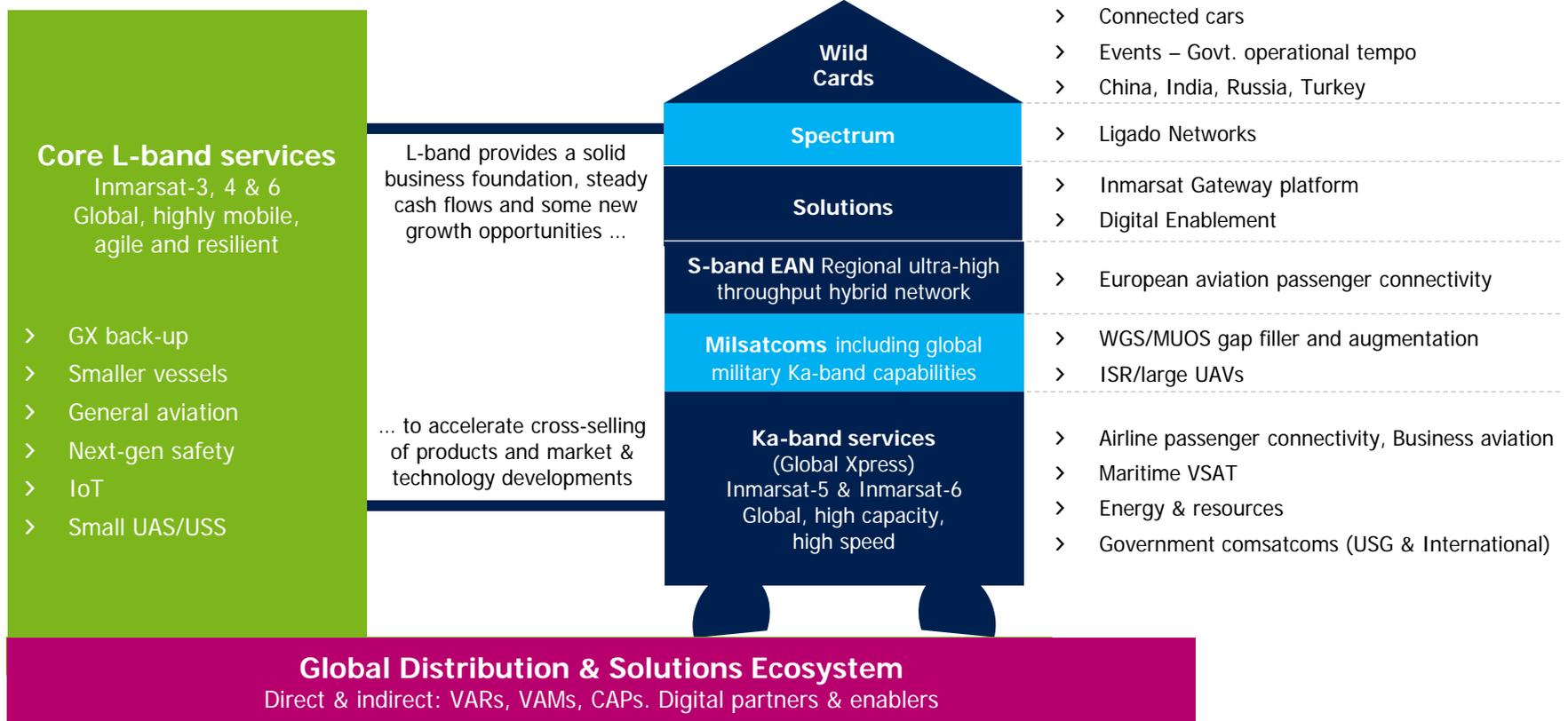
# 02

## Context of the Capital Markets Day

Rupert Pearce, CEO



# Best in class networks, solutions & distribution

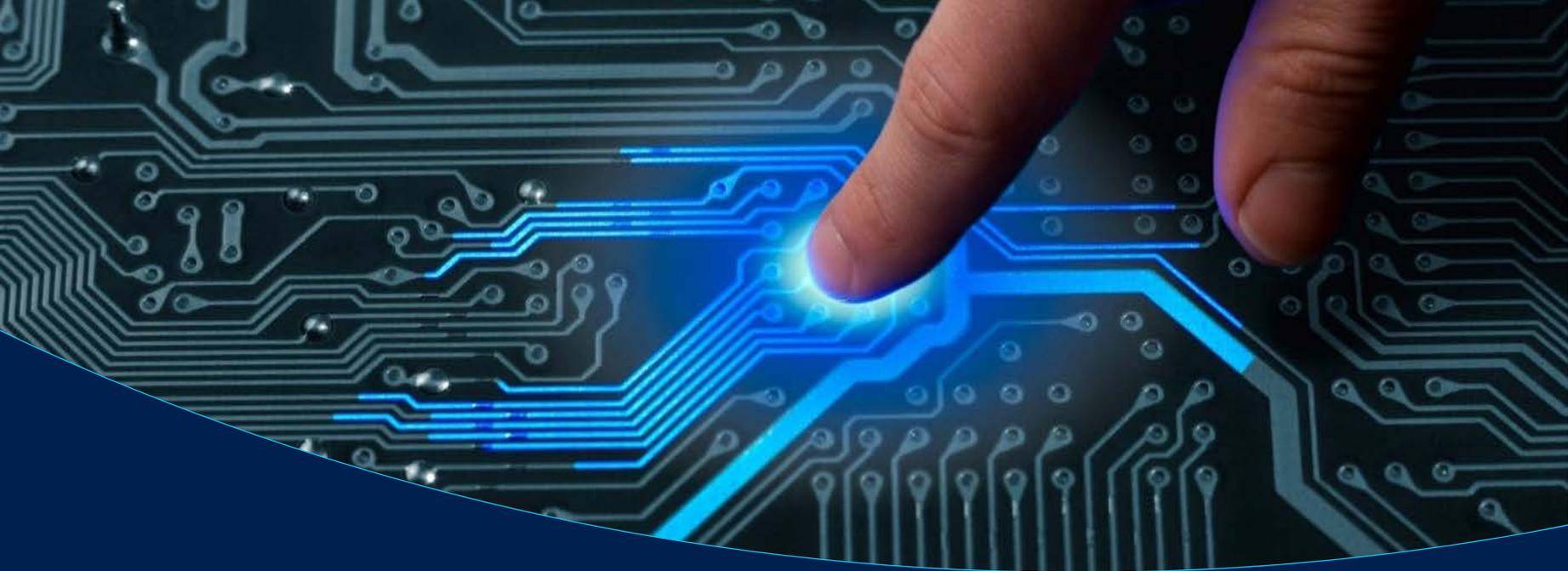


# 03

Demand, supply, technological evolution and how we compete

Michele Franci, CTO



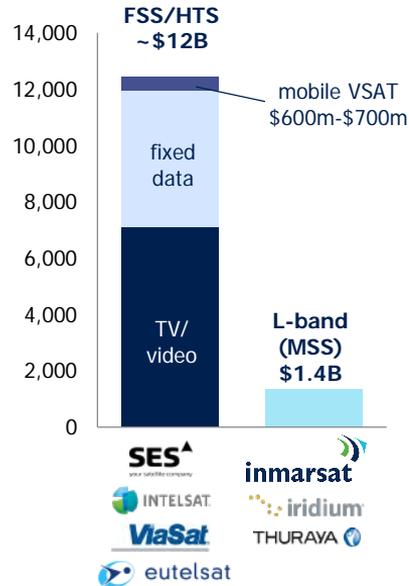


## Overall market dynamics

# Satcom market experiencing growth but also structural change

Demand growth is uneven...traditional fixed under pressure...mobility market opportunities

## Satcom Operator Wholesale Revenue in 2015\*



- > Traditional Fixed Satellite Service (FSS) sectors (TV, enterprise VSAT, trunking), slowing down or declining
- > FSS wholesale revenue grew at ~1% CAGR over 2010-15 and is projected to grow at <3% CAGR over next 10 years\*
- > FSS sector moving to High Throughput Satellites (HTS) with risk of capacity oversupply and declining capacity prices
- > Growing importance of managed services vs pure capacity wholesale
- > Increasing focus of FSS players on mobility markets as a major growth opportunity

**Maritime VSAT** to grow at a **CAGR of ~15%** over the next ten years (Euroconsult 2015)

Number of **Maritime VSATs** to **double** within the next **4 years** (Comsys 2015)

Global **Satellite M2M** market to grow at a **CAGR of ~12%** over the next 10 years (Markets&Markets)

**Commercial MSS broadband (L-band)** to grow at a **CAGR of 9%** over the next ten years (Euroconsult 2015)

Number of **connected commercial aircraft** to grow from 5,300 in 2015 to **>23,000 by 2025** (Euroconsult 2016)

**Aviation wholesale satcom revenue** to grow at a **CAGR of ~16%** over the next ten years (NSR 2016)

\*Source: Euroconsult; NSR; Inmarsat estimates

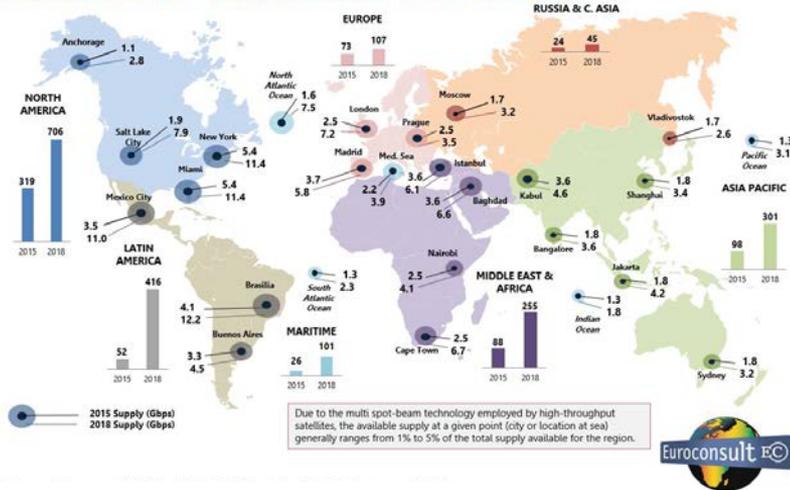
# Capacity rising in response to demand growth

## Significant amounts of capacity being launched... with uneven distribution

- > HTS capacity to grow from <700 Gbps in 2015 to ~3,000 Gbps 2020, while demand by 2020 not expected to exceed ~1,000 Gbps\*
- > >20 operators launching HTS satellites and/or payloads over the next 3 years but few focusing on mobility markets that require global coverage\*

- > Most satellite operators devote the vast majority of their available HTS capacity to address fixed applications and regional demand
- > Capacity heavily concentrated on North America and Latin America **each** accounting for ~30% of net capacity additions over 2015-2020
- > Europe (a key region for maritime and aviation traffic) with marginal HTS capacity additions over 2015-20
- > Capacity over ocean regions remains moderate with HTS supply for maritime regions remaining at no more than 5-8% of total supply over 2016 to 2020
- > Spectrum efficiencies for mobility applications lower than for FSS markets (less bps/Hz) reducing actual useable capacity for mobility
- > Due to small spot beam architecture, supply at a given location will be limited

World map of HTS supply (in Gbps) for 2015 and 2018



**Due to the specific user requirements (high and consistent power levels, network management) and the nature of traffic distribution (global but with high concentration in hot spots), we estimate there will be a capacity shortage for mobility applications in certain areas**

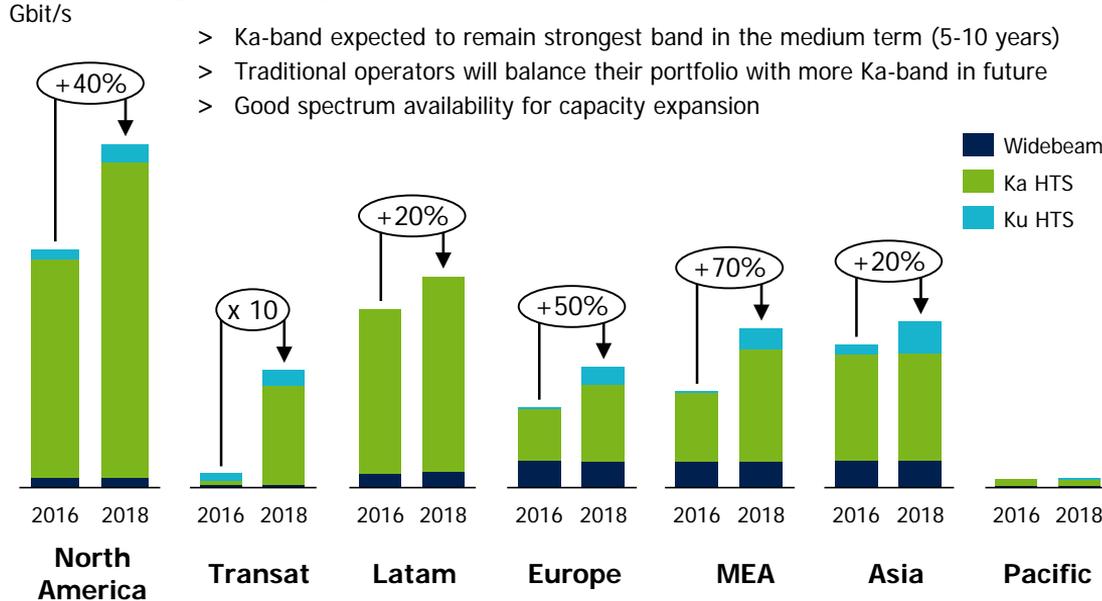
\*Source: Euroconsult; HTS – Vertical Market Analysis & Forecasts (2016)

Source: Inmarsat analysis of Euroconsult and NSR

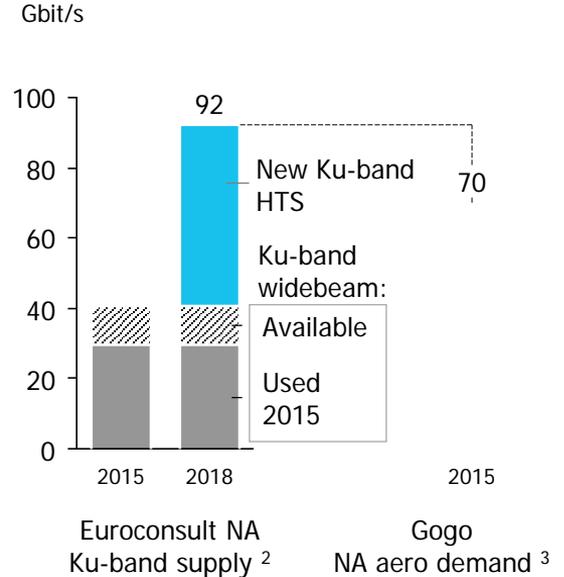
# Evolution of supply

Ka-band supply availability remains large. Ku-band is expected to expand in 2016-18 but to remain an order of magnitude lower. In North America Ku-band supply could be limited, supporting price

Short term regional supply by frequency band<sup>1</sup>



Focus on North America for Ku-band<sup>2,4</sup>



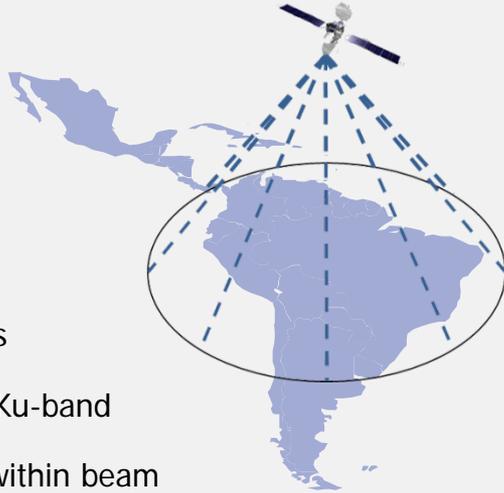
Source: 1. Inmarsat; 2. Euroconsult 2016 with Aero spectral efficiency set at 1.3 bit/Hz; 3. Gogo investor day 2016

Notes: 4. Excludes SES-17 which is expected in 2020 and is planned to cover the Americas – the band remains undecided (Ka-band or Ku-band)

# So what is actually this **HTS** leading to all that change?

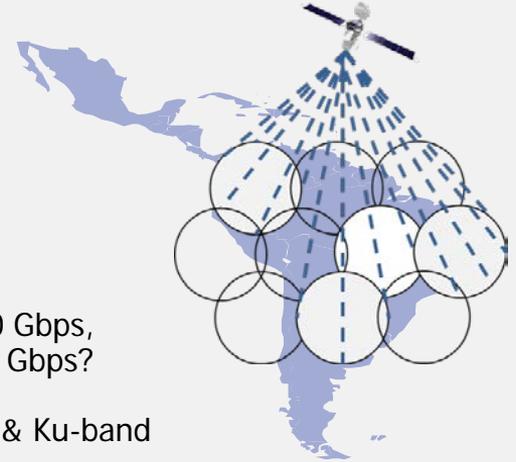
Nothing magic...essentially a multi-spotbeam architecture, high power, and frequency re-use

## Widebeam



- > Typically 1-3 Gbps
- > Mainly C-band & Ku-band
- > Capacity shared within beam
- > Ideal for broadcast

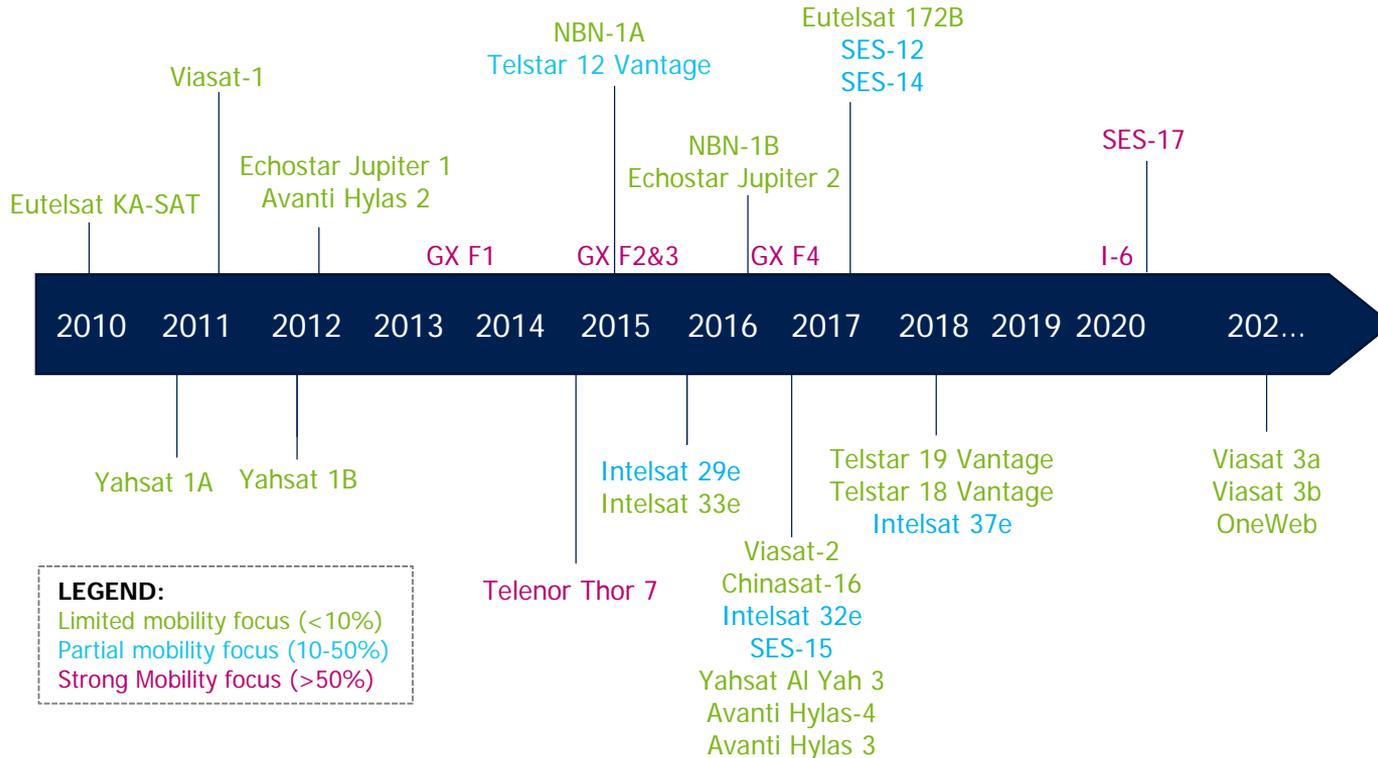
## HTS



- > Today up to 150 Gbps, tomorrow >500 Gbps?
- > Mainly Ka-band & Ku-band
- > Frequencies re-used across multiple beams
- > Ideal for two-way broadband

# The number of HTS satellites increases rapidly

...but not so many of them are actually relevant to Inmarsat and mobility markets



## LEGEND:

- Limited mobility focus (<10%)
- Partial mobility focus (10-50%)
- Strong Mobility focus (>50%)

- > Dates still uncertain and subject to delays
- > Not all satellites funded
- > Many operators reviewing strategies and capex plans
- > Significant amounts of upcoming capacity already committed
- > May see decrease in speculative capex with new satellites only upon anchor commitments

# In short: Inmarsat's competitive landscape is changing

Competitors are trying to move in Inmarsat's direction....we must have done the right things right !?

L-band competitors launching next generation systems	> Improvements to Inmarsat L-band too
Traditional fixed satellite (FSS) operators show increasing interest in mobility markets as growth in traditional fixed markets has been slowing	> Mobility services require entirely different skillset, infrastructure and business model, and will take time for FSS operators to master
Part of the significant HTS capacity wave targeting mobility applications (incl. over oceans)	> The vast majority of capacity still focused on fixed broadband
New emerging operators (e.g. LEO constellations) possibly bringing substantial amounts of capacity (incl. over the oceans)	> Still substantial challenges (funding, technology, regulation,...); focus on fixed broadband and backhaul
Players racing for more disruptive and ever bigger satellites/systems	> Trade-off between quantity and quality to be found
Service providers gaining scale and acting as multi-vertical VNOs, directly addressing Inmarsat's core markets	> Multiple ways for Inmarsat to go to market and compete
Governments launching proprietary Milsatcom systems	> Interoperability as a key to success in Government markets
Terrestrial network expansions (4G, LPWAN, 5G,...)	> Significant opportunity for Inmarsat to leverage on growth as integrated part of these networks



# Inmarsat's differentiation

Building on a unique set of assets to drive competitive advantage

# Inmarsat's strategy in light of satcom sector evolutions

Deploying mobile, global, scalable capacity providing unique services and value to our customers



- Continued focus on capacity optimised for mobility markets that clearly differentiates from FSS HTS
- Unique holistic mobility satcom approach including optimised ground infrastructure, tailored user equipment, and enhanced network management ability
- Leverage on ability of GX to scale up and improve over time along with evolving user ramp up and increasing user requirements
- Use of highly cost efficient EAN S-band technology for dense European air space...  
...and potentially others
- Leverage on L-band assets with no risk of oversupply to complement our broadband offering, providing a highly differentiated value proposition in the industry
- Increased focus on service/solution enablement that provides new revenue opportunities for us and our partners and enhances value of connectivity
- Broad area coverage for global mobile services (available where people go)

# Competition

We have invested earlier in lower \$/bit Aviation infra than direct competition, with control over the location of capacity to follow real, not theoretical demand

- > HTS supply competition limited to 2-3 per region
- > Inmarsat roadmap stronger over time, allows \$/bit anticipation
- > Now geo/route focused, contrasts with competition building coverage
- > Anticyclical to SES
- > Downstream service providers already benefit from SES 2017 launches
- > Service providers speculation on lower \$/bit from current sat providers

High level 5-year roadmap comparison

Time period	Market player	Aviation infrastructure (HTS or equivalent)	More capacity	More targeted	Lower \$ per bit
2015	Inmarsat	GX HTS global + GX HCP + GX I-5 F4	↑	↓	Global/APAC
2016	Viasat	widebeam Ku patchwork + Viasat 1 (2012)	↑↑	↔	US ↑↓ V1
	Eutelsat	widebeam Ku patchwork + Ka-Sat (2011)	↑	↔	Europe ↑↓ Ka-Sat
	Intelsat	HTS Ku 29e, 34 (20, 23)	↑	↓	US/transat ↓ 29e
	SES	Widebeam coverage	↔	↓	widebeam ↑
	Inmarsat	EAN	↑↑	↔	Europe/regions ↓↓
2017 2018	Viasat	Viasat 2	↑↑	↔	US/transat ↓↓
	Eutelsat	172B	↑	↔	Pacific ↓
	Intelsat	33e, 35e, 37e (coverage TBD)	↑↑	↓	Europe/Asia ↓
	SES	SES 15, 14 (2017), SES 12 (2018)	↑↑↑	↔	US/transat/APAC ↓↓↓
	Inmarsat	I-6 HCP + augmentation options	↑↑↑	↑	Aviation routes ↓↓↓
2019 2021	Viasat	Viasat 3 (TBD)	↑↑↑↑	↓	Global ↓↓↓
	Eutelsat	quantum, Africa satellite	n.a.	↔	Africa n.a.
	Intelsat	more EPIC Class (TBD)	n.a.	↔	n.a. n.a.
	SES	SES 17 (Thales only)	↑↑	↑	Aviation routes ↓↓

# Competitive positioning of GX

Real capacity for real markets vs theoretical capacity for theoretical markets

	 <b>inmarsat GX</b>	<b>Ku-band HTS</b> (Intelsat EPIC, SES 12/14/15, Eutelsat 172B)	<b>Viasat-1&amp;2</b> (plus Ka-Sat)	<b>Viasat-3</b>	<b>LEO BB</b>
<b>Coverage</b>	Global	Regional patchwork	Regional (N. America part of N. Atlantic)	Eventually global (starting regional over the Americas)	Global
<b>Availability</b>	Here and Now	In creation	Only one satellite up	Next decade	Next decade
<b>Frequency band</b>	Ka-band (complemented by L-band and S-band/EAN)	Ku-band	Ka-band	Ka-band	Ku - and Ka-band
<b>Designed for</b>	Global mobility satcom	Fixed data (VSAT); partially mobility	Consumer broadband; (aviation as a secondary market)	Consumer broadband; (aviation as a secondary market)	Consumer broadband and trunking/backhaul
<b>L-band complement</b>	Yes	No	No	No	No
<b>Capacity dedicated to mobility</b>	100%	<25-30%	<5-10%	<5-10%	<5%
<b>Scalability</b>	Highly scalable (possibility to launch additional high capacity satellites & payloads covering hot spots if and when needed)	Limited by amount of Ku-band frequency and slots available; Ku-band regulation treats mobility secondary with priority for fixed applications	Scalable through next generation Viasat satellites that are however replacing rather than augmenting previous generations.	Scalable through next generation Viasat satellites that are however replacing rather than augmenting previous generations.	Scalable to a limited extent; launch of new generation constellations required
<b>QoS</b>	Designed to meet highest industry standards with assured SLAs and CIR	No QoS assurance: fully dependent on application, equipment, service provider, etc.	No QoS assurance; designed for best effort consumer grade services	No QoS assurance; designed for best effort consumer grade services	Tbd. (likely no QoS assurance as mainly targeting low-cost best effort services)

Source: Inmarsat analysis of public website data

# Global Xpress (GX)

Setting a new standard for global mobile satellite broadband connectivity

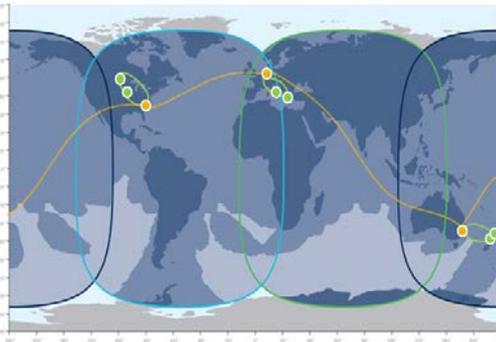
**89** Ka-band spot beams per GX satellite

**6** steerable high capacity overlay beams on each GX satellite

**I-5 F4\***  
ready for launch

Speed of  
**50Mbps** per terminal

**\$1.6** billion GX investment



**3** GX satellites in orbit today

**2** Ka-band payloads under construction on I-6s

**> 30** VARs signed up

## Key Inmarsat differentiators

- ✓ GX designed and optimised from the ground up for mobility broadband and WGS interoperability
- ✓ GX currently the only seamless, global, high-performance satellite broadband system from a single operator, built for mobility
- ✓ Other FSS systems are either regional only (Viasat) or patchy/inconsistent (Ku-HTS)
- ✓ 3 GX satellites successfully launched and healthy in operation with 4 more satellites/payloads ordered
- ✓ High Capacity Overlay beams provide extra throughput in demand hot-spots
- ✓ Designed to be scalable through additional satellites/payloads to augment capacity/performance when and where needed
- ✓ Solid regulatory frame of Ka-band for mobility (ITU) vs Ku-band where mobility remains secondary to fixed applications
- ✓ Unique business proposition from Inmarsat by complementing GX with other Inmarsat platforms (L-band, EAN, Gateway)

# And our Ka-band franchise is growing

The first three GX satellites are only the beginning of a long journey

Targeted capacity - More throughput – Lower Cost per bit  
Terminal Backward & Forward Compatibility  
Existing Global Coverage complemented by regional overlays



**1.0 - DVB-S2**  
Up to 70 Mbps per A/C

**Forward Compatibility ensured**

**Backward Compatible with I5F1,F2,F3,F4,3<sup>rd</sup> party Ka-band**

Throughput per terminal: 70 Mbps

**Forward Compatibility with I-6, GX1.8 , GX2.0**

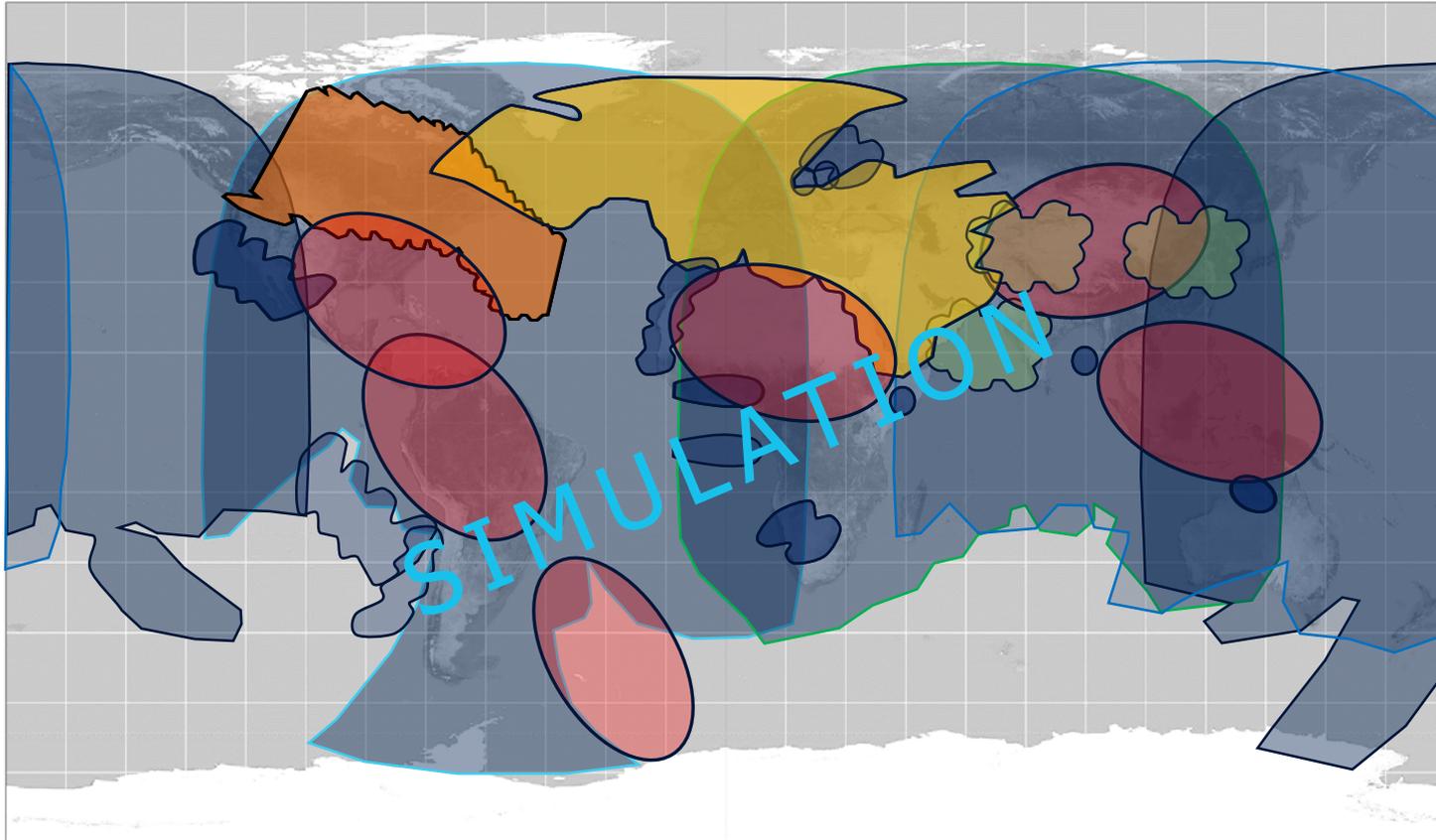
Throughput per terminal: 500 Mbps (GX1.8 and 2.0)

**2.0 (2017)**  
**DVB-S2 and DVB-S2X**

(\*) : Options

# Scaling up Global Xpress

A wide range of flexible and efficient options – sample simulation...



- > Seamless (sub-second) beam handover (make before break)
- > Sub-minute satellite switchover (vs 5-10 min for FSS and HTS)
- > Equal performance across the globe
- > Unique type approval process to ensure that minimum performance is met by any mobile terminal
- > All properties will remain over time and not be lost/idle as we add capacity
- > Adding satellite capacity does not impact the heart of our Service Delivery Platform and is done seamlessly

- I-5
- I-5 HCC \*
- I-6 F1\*
- I-6 F2
- Thor 7
- Fill In\*
- \* = Steerable

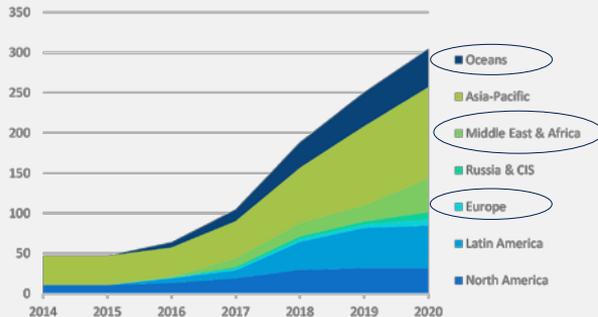
# How Ku-band HTS compares to Inmarsat

Ku-band HTS will compete with GX but mainly serves to protect fixed data business of FSS operators

HTS Ku-band satellites will win market shares in mobility markets over the coming years and will be a serious competitor to GX in certain regions/segments

However, **GX** has a clear and compelling long term competitive advantage in mobility market given its inherent design strengths and limitations of HTS Ku-band in mobility markets

## Maximum Ku-band HTS capacity supply in Gbps per region



Source: Euroconsult 2016

- > Only two Ku-band HTS satellites which target mobility currently in orbit;  
→ majority of systems not expected to be in service before 2018
- > Still primarily dedicated and optimised for fixed applications (backhaul, fixed VSAT, trunking) rather than mobility
- > Intended to protect/re-boost declining FSS data businesses with better cost/bit and throughput than Ku-band widebeam  
→ short term impact on legacy FSS widebeam businesses
- > Used by FSS players as an entry into the mobility business  
→ will take time and requires major changes to business models, ground infrastructure, service capabilities, etc.
- > Remains a patchwork coverage  
→ not fully global and with inconsistent service levels, main capacity additions over Latin America and Asia; limited capacity over oceans, in Europe, and in the Middle East
- > Ku-band spectrum is allocated to fixed services first, then mobility  
→ limited orbital slots and spectrum available for future growth
- > Ka-band spectral efficiency is superior in particular for aero applications (above the clouds)

# How LEOs and MEOs compare to Inmarsat

## LEO broadband systems still seen as a long way off and facing a multitude of challenges

- > LEOs/MEOs optimised for fixed point-to-point and/or consumer grade applications rather than mobility
- > Systems still facing multiple challenges including technical, regulatory, interference/coordination, funding, user equipment, etc.
- > Mobility a secondary market for some of these systems, will bring greater challenges and take time
- > Competitive threat to GX expected to be limited for the foreseeable future but may eventually come in 8-10+ years

Operator	Orbit	Launch	# of satellites	Status
O3b (1 <sup>st</sup> gen)	MEO	2013-14	12	operational in-orbit
O3b (2 <sup>nd</sup> gen)	MEO	~2018	8	in construction
OneWeb	LEO	2018-2020	648	\$500 million financing to date; total capex estimated at >\$4bn
LeoSat	LEO	>2020	78-108	in early funding stages
Telesat	LEO	>2019	80-150	2 test LEO satellites to be launched in 2017

Source: Operators

### PROs

- > Lower latency
- > Global coverage (Incl. Polar regions)
- > Reduced unit satellite costs (but many more and more often)

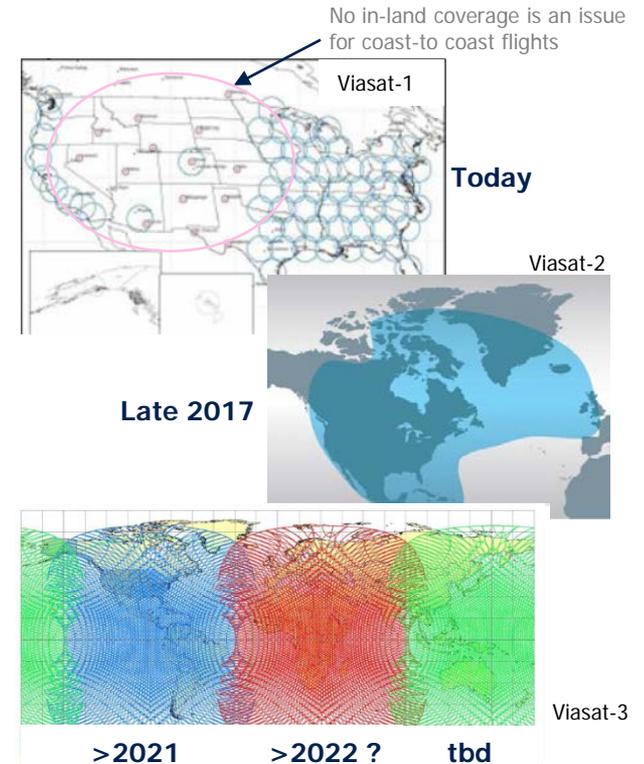
### CONs

- > Very difficult frequency coordination worldwide
- > Large number of satellites to support GX type spec
- > More difficult to bring down cost/bit than GEO HTS
- > Complex and costly system architecture (either multiple ground gateways or inter-satellite links)
- > No progressive deployment possible
- > Terminal costs (at least initially)
- > Limited satellite lifetime (continuous replacement capex)

# ...and what about Viasat?

At heart a regional Ka-band consumer grade home broadband provider

- > Main satellite service business is understood to be consumer grade direct-to-home broadband (>90% of service revenues) – lower QoS
- > Mobility services mainly limited to regional IFC and Government
- > Limited proposition for international airlines/customers today, depending on Ku-band fall-back and a few regional Ka-band partnerships
- > Viasat-3 a very heavy technology programme; will eventually bring a lot of raw capacity but is again designed for fixed, consumer-grade markets
- > Viasat-3 programme understood to be not yet fully funded with large capex requirements in space and on the ground
- > No global Ka-band HTS coverage expected until at least 2023/24
- > A closed system, dependence on in-house technology and innovation puts risk on the schedule and requires continuous R&D funding
- > New satellites more replacements rather than network augmentations



**Inmarsat GX operating globally today with upgrades to come**

# European Aviation Network (EAN)

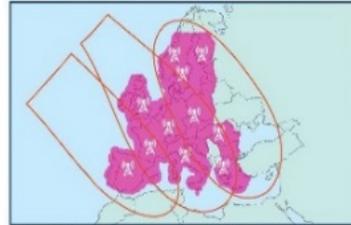
Unique capability setting new performance standards for aviation broadband connectivity in Europe

300+ towers across Europe

Europasat S-band satellite to be launched in early 2017\*



Deutsche Telekom as key partner



Full Service start in **H2 2017**

Up to 75Mbps per terminal

Service in 30 countries



Terrestrial LTE User Terminal Technology adapted for Aeronautical use

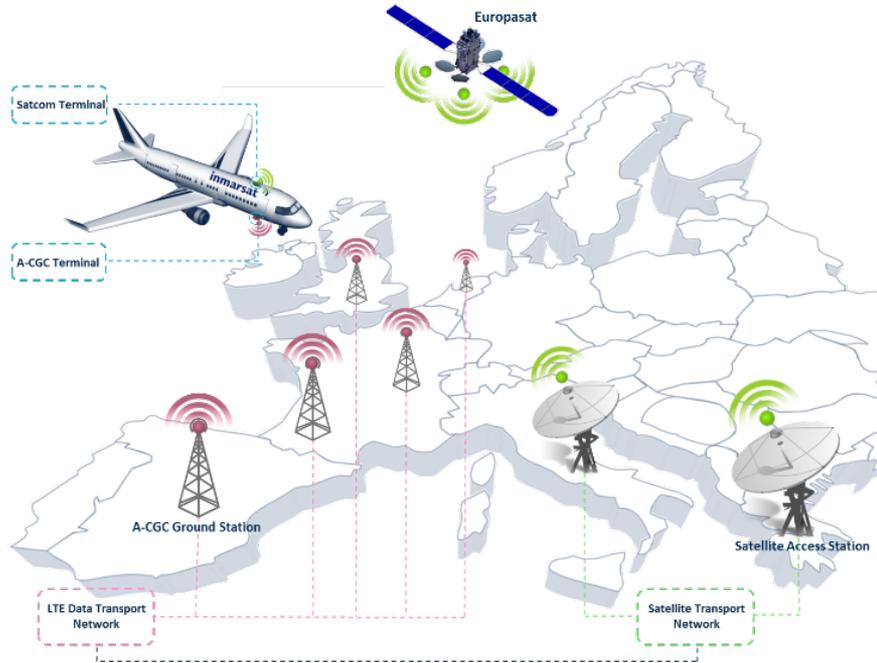
## Key Inmarsat differentiators

- ✓ Hybrid satellite/terrestrial system across Europe, designed and optimised from the ground up for mobility broadband
- ✓ Smaller, lighter and cheaper antennas, quicker to install than satellite broadband
- ✓ Reduced latency vs satellite
- ✓ Unmatchable economics for the dense European air traffic in terms of cost per bit – superior where density justifies
- ✓ Higher capacity (25 Gbps over 1.6 Mkm<sup>2</sup>, twice the density of any announced satellite solution) and faster speeds than any other solutions for IFC in Europe and seven times more spectrum than US ATG solutions (2x15 MHz)
- ✓ Strong partner in Deutsche Telekom that is committed to deliver guaranteed QoS
- ✓ Rapid and cost effective scalability of the system by adding ground towers as demand evolves over time
- ✓ Medium term structural technology & regulatory advantages
- ✓ Ability to combine EAN solutions with other Inmarsat solutions for the aviation market (GX, L-band) as a unique value proposition

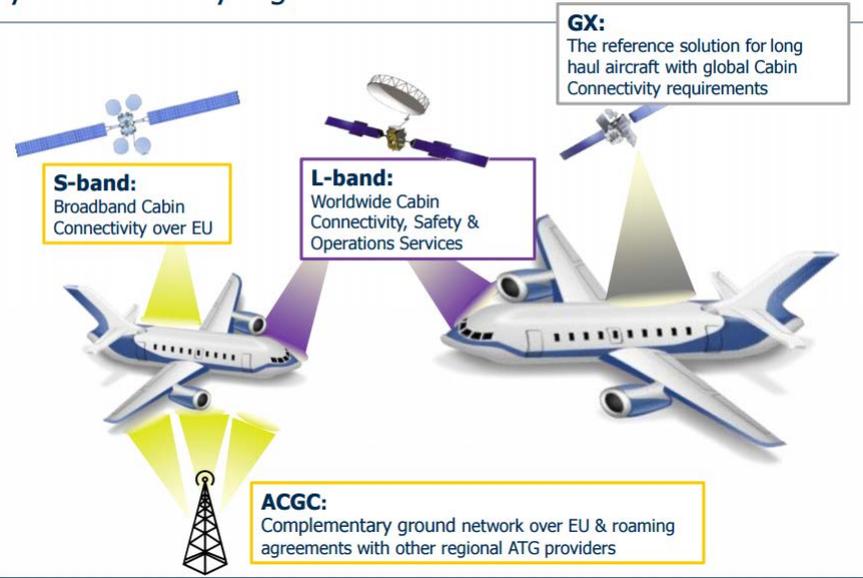
\*Subject to timing of launch vehicle

# European Aviation Network (EAN)

An integrated part of Inmarsat's offering to aviation markets



Inmarsat can deliver a connectivity solution to suit any aircraft in any region



# EAN Network Deployment

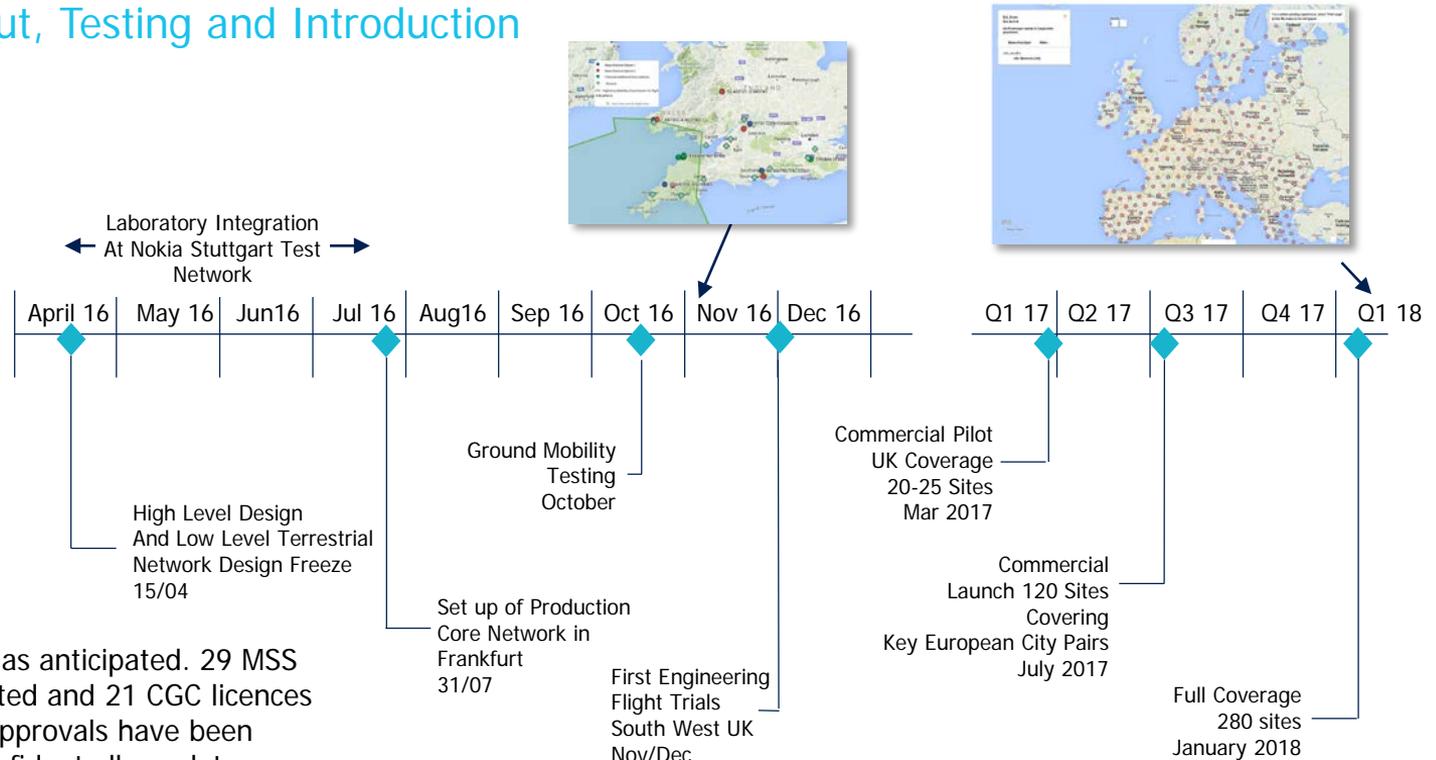
## LTE Network Roll Out, Testing and Introduction

- > Radio Network Planning Underway and tower site selection pending

- > ACGC End-to-End design now completed

- > ACGC Flight Trial planning now in progress

- > Licensing is progressing as anticipated. 29 MSS licences have been granted and 21 CGC licences or in-principle national approvals have been obtained. We remain confident all regulatory approvals will be available to support commercial service introduction in 2017



# L-band

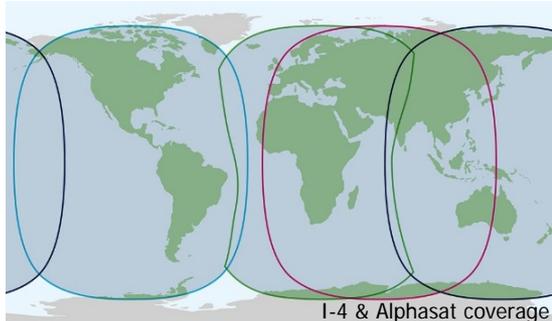
Unique capabilities will maintain leadership for Inmarsat in high volume mobility

**> \$800 million**  
MSS revenue  
in 2015

**8** active L-band  
satellites in orbit

**> 650k** active  
terminals\* on network

**4% CAGR** in  
MSS revenue over last  
4 years



**4<sup>th</sup> generation**  
of satellites (I-4)  
in orbit;

**5<sup>th</sup> generation**  
(I-6) under  
construction

## Key Inmarsat differentiators

- ✓ Highest *always on* data rates available (>700kbps) - incremental improvements over the coming years (>1Mbps)
- ✓ Step change on the I-6s: higher data rates, smaller form factors, cheaper user devices and seamless interoperability with other technologies
- ✓ Unique, bundled, reliable and resilient back-up complement to broadband VSAT
- ✓ Inmarsat provides several safety and regulatory satcoms services including acting as the unique certified provider of maritime safety services (Global Mobile Distress Safety Services: GMDSS)
- ✓ Optimised for very small, lightweight and low cost products: ecosystem expansion leveraging on core modules and chipsets
- ✓ High growth expected in IoT and M2M products such as smart transport/cities/energy
- ✓ Industry leading partner ecosystem/distribution network
- ✓ More/better spectrum assets than other players

# L-band competition

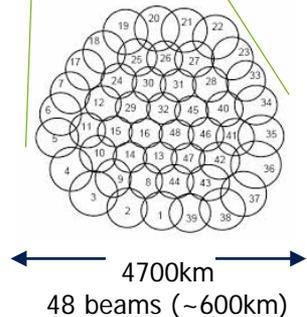
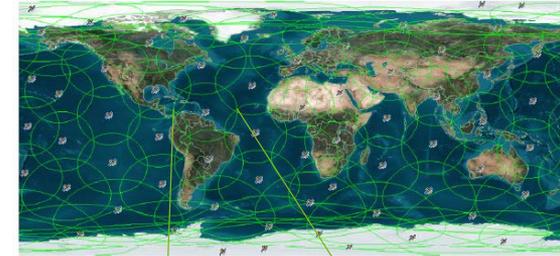
Inmarsat the clear market leader in L-band services

					
<b>2015 Revenue</b>	\$1,274M	\$411M	\$140M	\$90.5M	\$178M
<b>2015 EBITDA</b>	\$726M	\$234M	n.a.	\$5M	\$19M
<b>Coverage</b>	Global	Global (incl. Poles)	Regional (EMEA, ASIA)	Multi-regional (Americas, EMEA, ASIA)	Global
<b>Markets</b>	Maritime, Aviation, Govt., Land mobile, HH, M2M	HH, M2M, Govt., Maritime, Aviation,	HH, Govt., Maritime	HH, M2M	M2M
<b>Data rates (today)</b>	up to >700 kbps	2.4 kbps	up to 492 kbps	up to 64 kbps	4.8 kbps
<b>Data rates (2021)</b>	>2 Mbps	up to 1.4 Mbps	n.a.	up to 256 kbps	>9.6 kbps
<b>Outlook</b>	Two I-6 satellite ordered that will set new L-band standards after 2020	Iridium NEXT to launch over 2016-18 getting closer to Inmarsat's current capabilities; risk of delays and possible service gaps in aging 1st gen. constellation	Plans announced for launching L-band replacement satellites >2020 but no funding and satellite orders made public	Trying to diversify towards terrestrial TLPS service in the US and away from legacy MSS services	Increasing focus on becoming a network agnostic value added service/solutions provider; strategic partnership with Inmarsat

# How Iridium NEXT compares to Inmarsat

## Inmarsat confident of continuing to outperform its main L-band competitor despite improved capabilities

- > Availability not expected before 2018/19
- > Mass, power and no of spacecraft equivalent between original and NEXT
- > Beam size/number, and frequency available equivalent between original and NEXT
- > All air-interface processing done on board: change in channel behavior (higher modulation, wider channels) requires payload software upgrade in orbit, which will only start after full constellation is launched and proven.
- > Fundamental constellation capacity relatively unchanged
- > Even with user module and antenna upgrades it will be difficult to support a substantial number of high data rate (300-700kbps) users in any beam
- > Claimed 1.4Mbps service even more challenging; no terminal plans announced yet

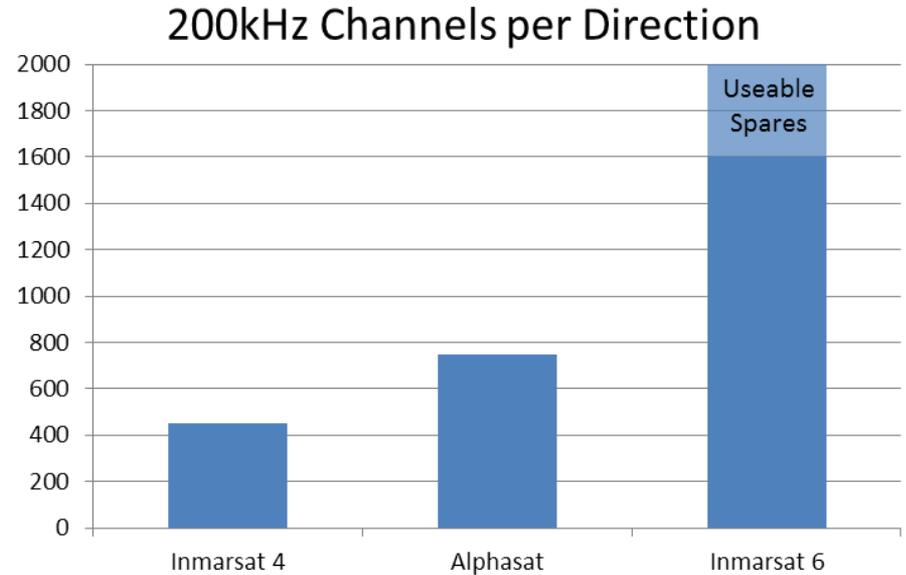


**Inmarsat's L-band roadmap and notably the I-6 system designed based on customer feedback and market requirements. I-6 to significantly outperform any existing and planned L-band system.**

# Inmarsat's next generation L-band

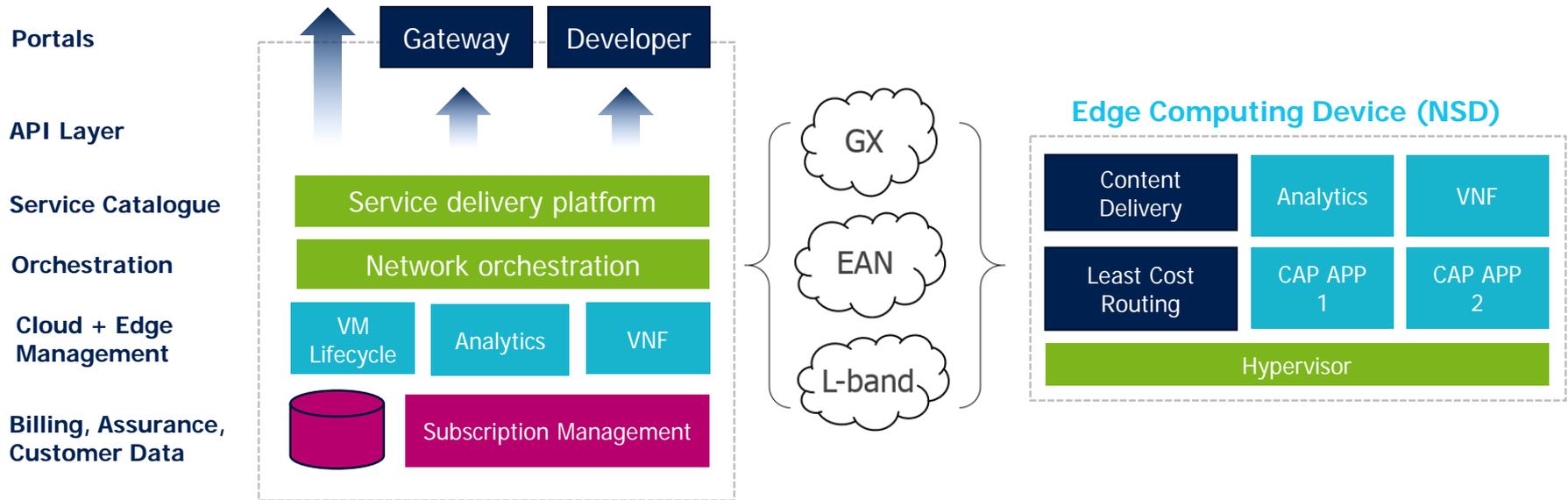
I-6 will once again bring unprecedented capabilities and set the global standard for MSS

- > Maintaining global coverage
- > Dramatic increase in processing capability:
  - > more channels
  - > narrower channels
  - > broadband channels
  - > Multicast capability
- > Guard bands reduced: more useful spectrum
- > 66% more power in each beam
- > First satellite to launch around 2020
- > To include additional Ka-band payload



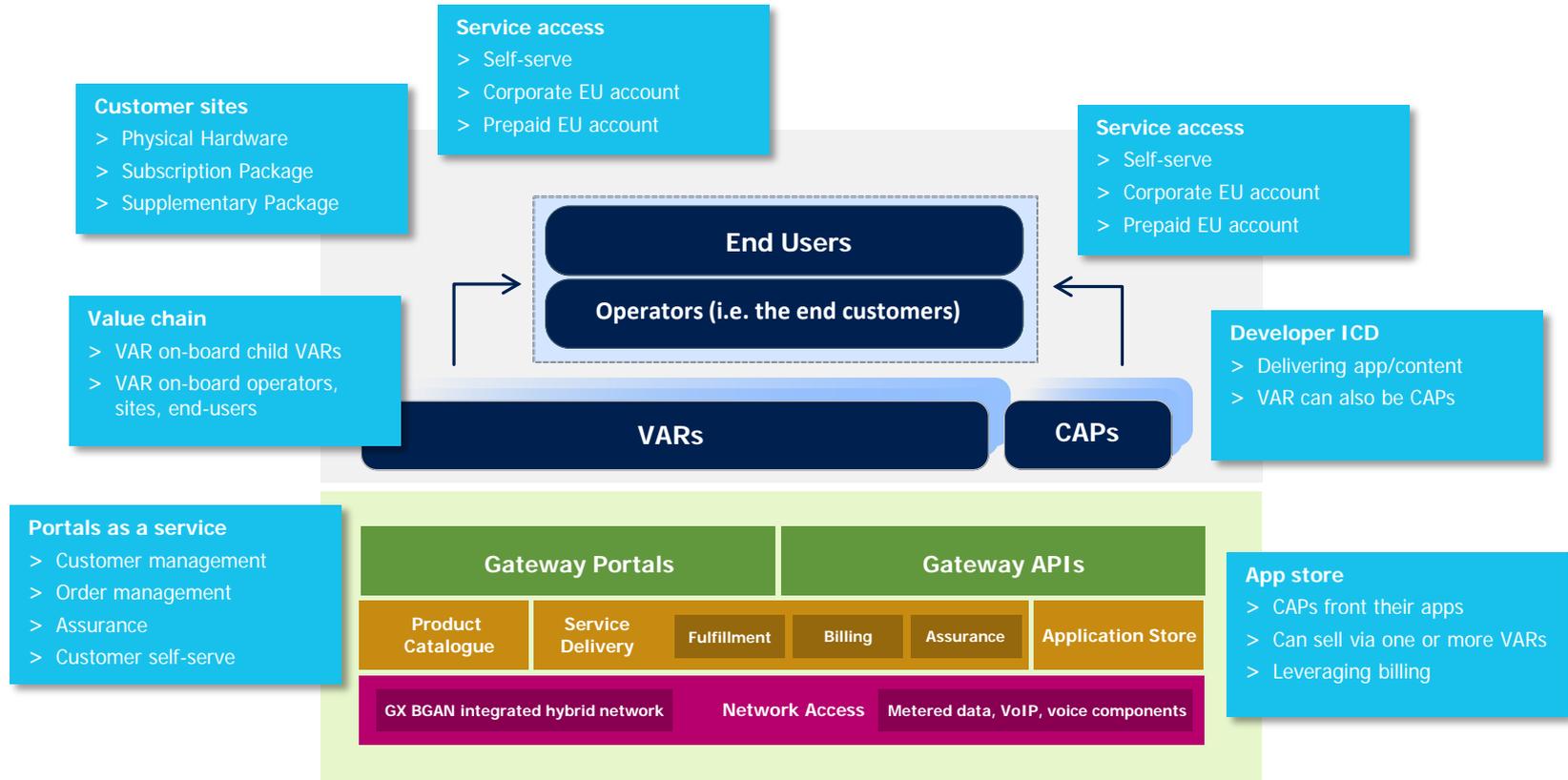
# Inmarsat's solution platform

Differentiation via solutions enablement with the power to create new business



# Inmarsat's solution platform

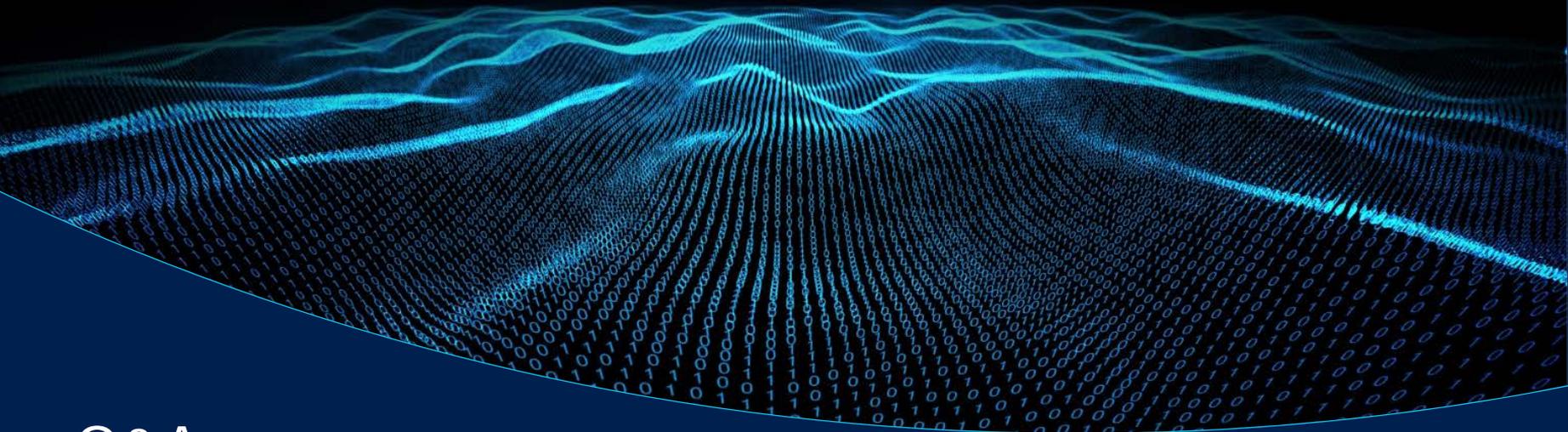
Enablement of a powerful and increasing partner ecosystem



# Conclusion - Why Inmarsat is positioned to win

Unique mix of factors that will sustainably enhance value creation in the future

- ✓ Unique mobile, global, scalable capacity enhanced through continued innovation
- ✓ Broad area coverage for true global mobile (available where people go)
- ✓ End to end offering focussed on seamless Quality of service
- ✓ Targeted capacity and throughput increase roadmap at cost / useful bit that match and beat competition
- ✓ EAN: unmatched throughput, ease of installation, economic solution for dense aviation routes
- ✓ Unique L-band bundled reliable and resilient network for high volume mobility, operational and safety services
- ✓ Service enablement platform available through all networks for third-party customised applications



# Q&A

Demand, supply, technological evolution and how we compete

Capital Markets Day 2016





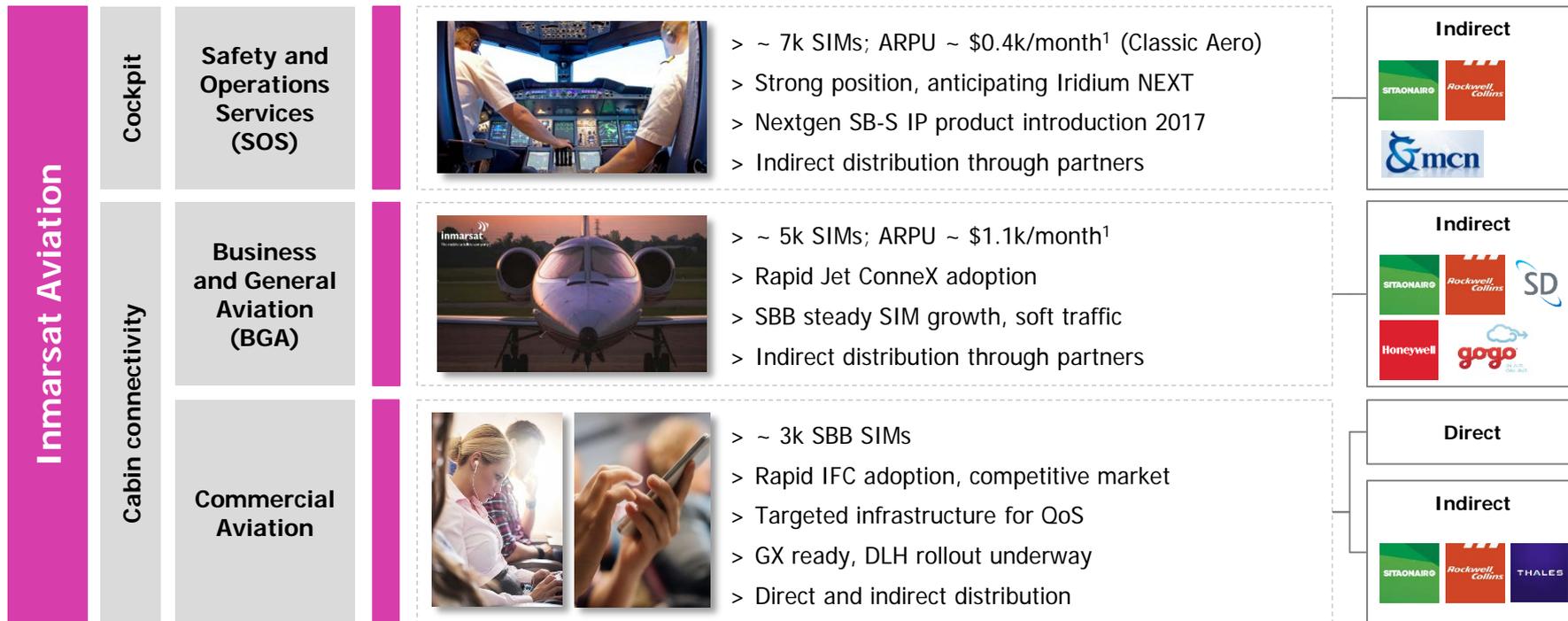
# 04

## Aviation

Leo Mondale, President, Aviation

# Introduction

Portfolio of connectivity services for the cabin and the cockpit. Strong market position in Airline Cockpit and Business Aviation. Rapidly building backlog in Commercial Aviation



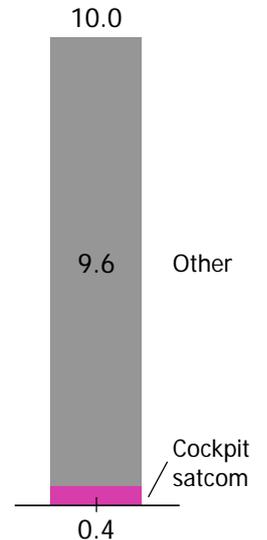
# Safety and operations services

Cockpit satcom is a small part of a much wider \$10b+ avionics, air traffic and operations market. Unlocking the hyped 'Connected Aircraft' market and achieving significant industry savings requires upgrade of secure satcom

- > Cockpit satcom market to grow from \$400m to **\$1b** over next 20 years
- > New generation aircraft generate huge data - **4GB/hour** on A350s
- > Hot market areas include aircraft health monitoring (\$3b) and flight ops/planning (\$2b)
- > Large **policy-driven** international coordination underway to improve safety, air traffic services and operations (NEXTGEN, SESAR, GADSS)
- > Inmarsat **SB-Safety** is the only product to meet **performance** and **security** standards set by the industry



**Satcom & avionics**  
\$ billion, 2014



# Safety and Operations Services

New Inmarsat L-band SB-S product to unlock safe, reliable satcom solutions for the Connected aircraft – introduction 2017

- > SwiftBroadBand-Safety (SB-S) is the **next generation** cockpit satcom, backbone to real time cockpit apps
- > Superior **L-band throughput** with safe/secure cockpit features
- > **Prioritised & secured IP link**
- > **Smooth migration** from existing ACARS equipment
- > **Airlines piloting** the product in 2016/17, excellent initial response
- > **Airbus LCS** adoption
- > Working with partners globally to **expand** availability and use cases



## Global Aero Distress Safety System (GADSS)

Real time information when you need it

## Air traffic flow management

i-4D trajectory based operations / SESAR

## Dynamic Electronic Flight Bag (EFB)

Real time insights, own-aircraft position, asset management

## System wide information

Information when you need it

## Real time weather

Fewer diversions, fuel / route optimisation, reduced turbulence

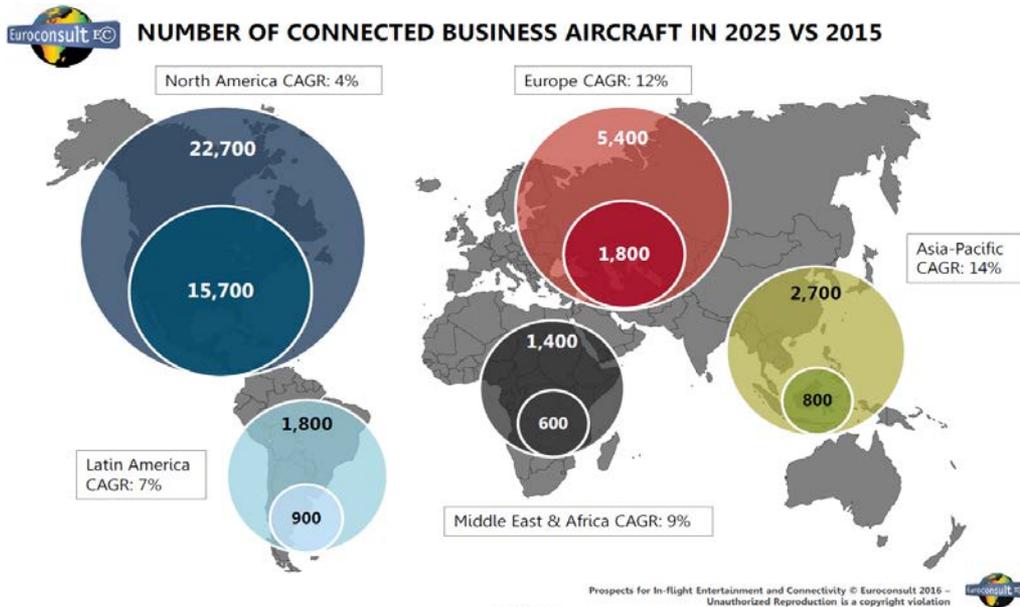
## Engine and airframe monitoring

Predictive maintenance

# Business and General Aviation

Robust BGA market expanding rapidly in North America, Latin America and Greater China driven by strong deliveries. Connected business jets growing by up to 14% CAGR by 2025

## Business and General Aviation market



## Business and General Aviation market

- > Overall volume of business aircraft to increase rapidly over the next 10 years
- > Half in North America and half in the rest of the world, with all regions benefiting
- > Inmarsat SwiftBroadband product for BGA distributed in all regions

# Business and General Aviation

The BGA segment continues to show strong performance with steady SBB aircraft growth. Adoption of Jet Connex (GX for BGA) is already well advanced with OEM and retrofit commitments

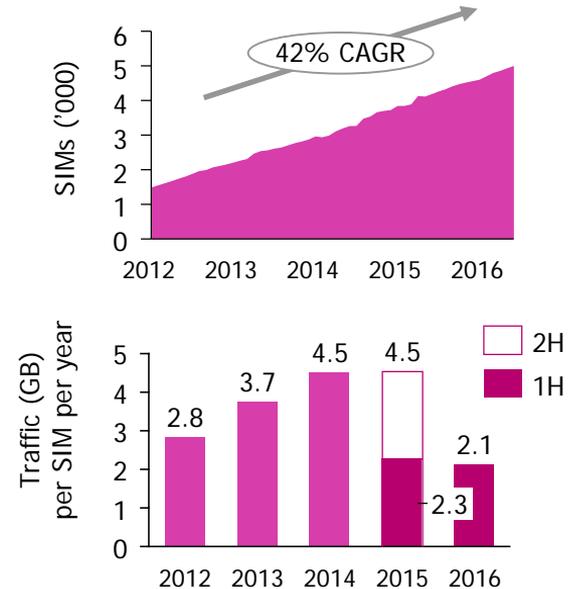
## Launch of Jet Connex (JX)

- > JX brings superior Ka-band HTS coverage and capacity to business aviation
- > 150 aircraft planned for installation by end of 2017
- > Linefit on Bombardier, and advanced discussions with other large OEMs
- > Expected aftermarket certification on all major platforms by end 2017
- > ARPA up to 3 times compared to SBB

## SBB performance

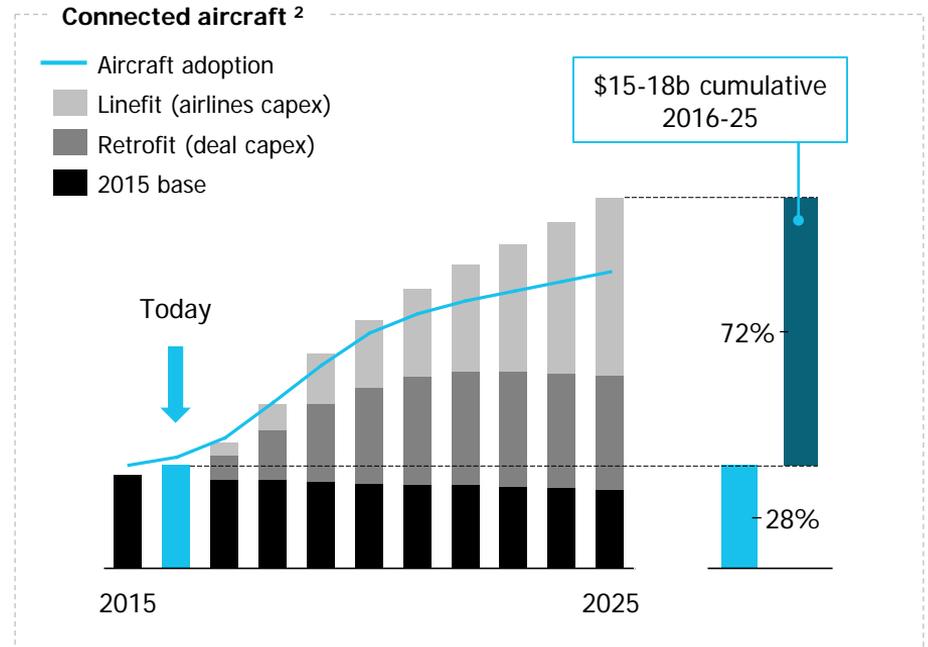
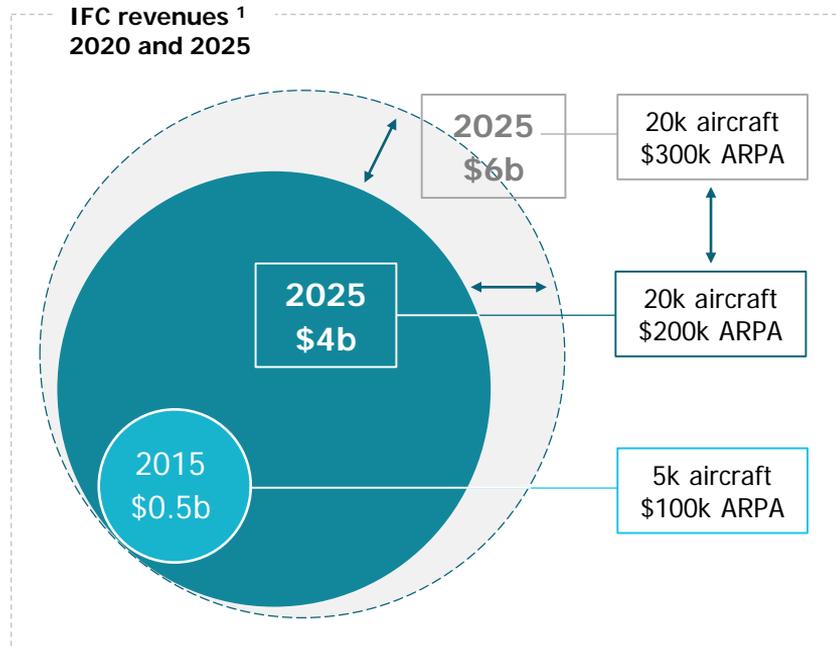
- > SwiftBroadband (SBB) aircraft volumes continue to grow steadily
- > SBB continues accelerating in smaller aircraft, larger aircraft transition to JX, with mix effect on SBB ARPA
- > Softer ARPA and traffic growth in EMEA from economic uncertainty
- > Continuous product improvement with increased channel data rates reaching up to 2.5Mbit/s with higher modulation and channel bonding

## Key indicators



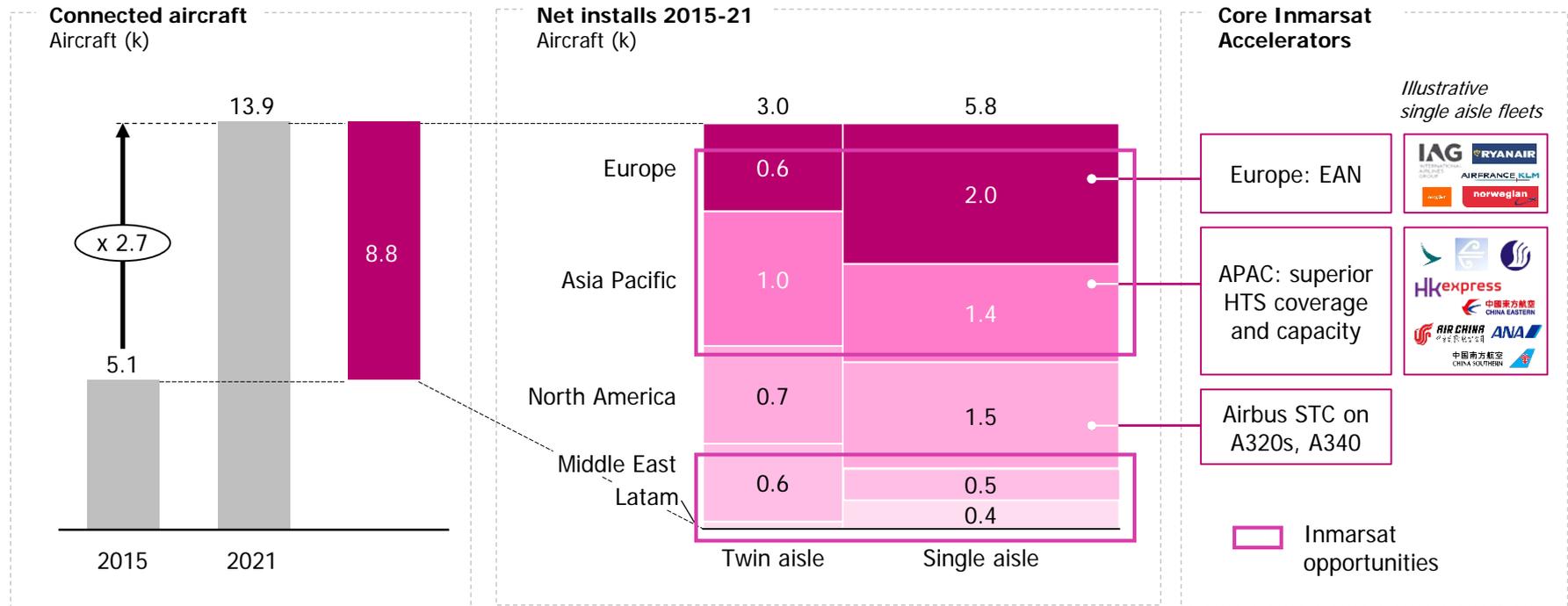
# Commercial Aviation – Cabin connectivity

We are entering a 5-year phase of rapid market scale up from today's early stages, with still over 70% to capture. Retrofit dominates until linefit takes over



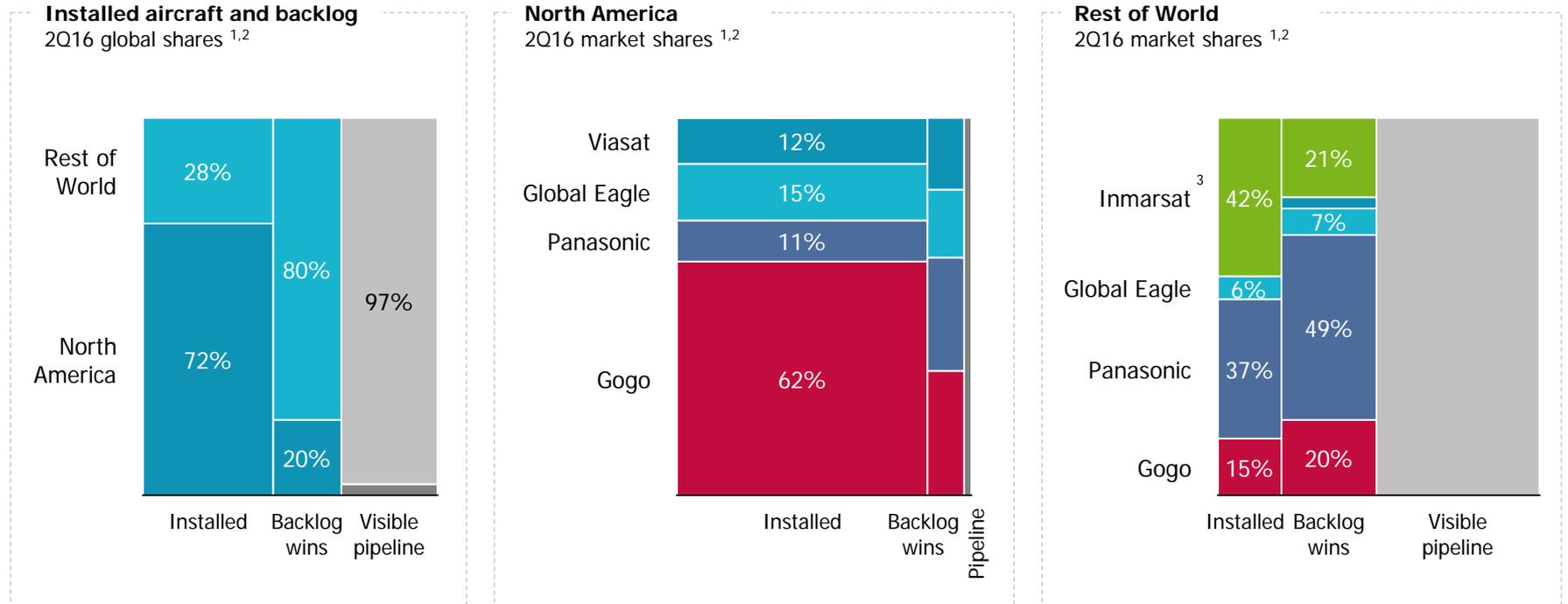
# Expansion segments

Over the next 5 years most of the expansion will come from Narrowbody fleets, in particular in Europe and Asia Pacific where Inmarsat is well positioned



# Competitive landscape

Visibility on short term market outlook is pretty strong given 2 year deal cycles. Demand (backlog) has shifted towards 'RoW' where Inmarsat is one of 3 larger players competing



Notes: 1. Commercial Aviation only; 2. Based on announced deals until 2016; 3. Includes SwiftBroadband  
 Source: Valour 2016, Inmarsat analysis

# Business models (cabin connectivity service provision)

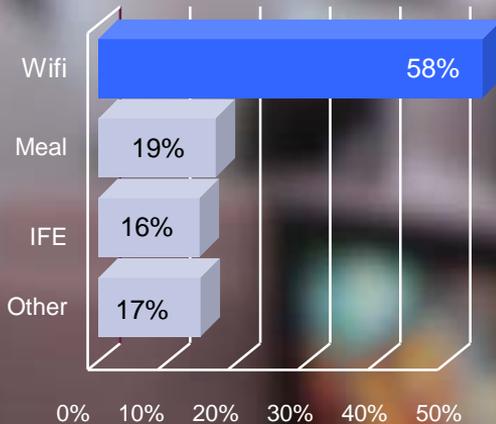
There are two main models - strategy depends on airline requirements and channel partner value adds. Indirect provides Inmarsat with higher cash conversion but limits scale potential

Deal type	Sell to	Capabilities	Benefits	Metrics per aircraft (illustrative)
<b>Indirect</b>	Channel partners	<ul style="list-style-type: none"> <li>&gt; Satellite/EAN connectivity</li> <li>&gt; Service maintain restore, R&amp;D</li> <li>&gt; B2B channel mngt</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Lower effort</li> <li>&gt; Incremental</li> </ul>	<p>A waterfall chart illustrating the metrics per aircraft for the Indirect model. The components are ARPA (positive), opex (negative), margin (positive), capex (negative), and cash (positive). A box labeled 'Airline + VAR share' encompasses the ARPA and opex bars, indicating that the airline's revenue is significantly reduced by operating expenses.</p> <ul style="list-style-type: none"> <li>&gt; Lower ISAT revenue per aircraft</li> <li>&gt; Higher margin percentage</li> </ul>
<b>Direct</b>	Airlines	<ul style="list-style-type: none"> <li>&gt; Satellite/EAN connectivity</li> <li>&gt; B2B IFC solutions</li> <li>&gt; B2B operations</li> <li>&gt; B2B sales/mktg</li> <li>&gt; Installation/terminals</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Acceleration of airlines capture</li> <li>&gt; Increased deal flexibility and structure</li> </ul>	<p>A waterfall chart illustrating the metrics per aircraft for the Direct model. The components are ARPA (positive), opex (negative), margin (positive), capex (negative), and cash (positive). A box labeled 'Airline share' encompasses the ARPA and opex bars, indicating that the airline's revenue is reduced by operating expenses, but the margin is higher than in the indirect model.</p> <ul style="list-style-type: none"> <li>&gt; Higher ISAT revenue per aircraft</li> <li>&gt; Lower margin percentage</li> </ul>

# What do airlines want? They want what their passengers want: Dependable in-flight broadband. ASAP.

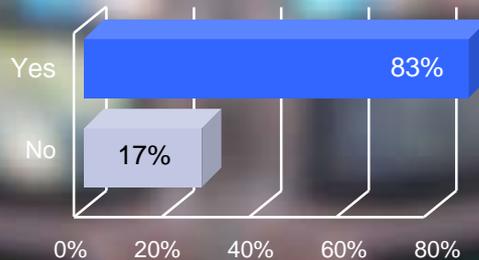
## 1. Wifi before any other service

Q: If you had a choice of only one of these services, which would you choose?



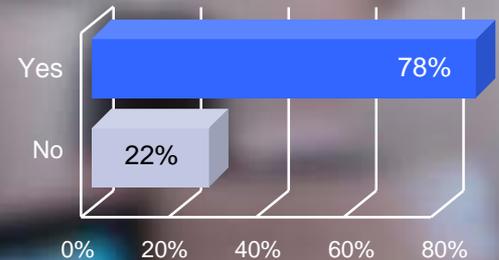
## 2. Wifi now or they will switch

Q: Would switch to an airline that offers wifi on board (everything else equal)?



## 3. Don't want IFE

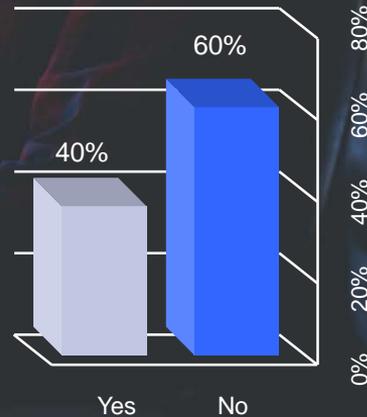
Q: Do you think wifi will replace IFE within the next 5-10 years?



IFE irrelevant on single aisle

Airlines have now realised that after the initial rush to equip their most competitive routes, QoS is what really matters

Q: Would you use a wifi if you know it will be low quality?



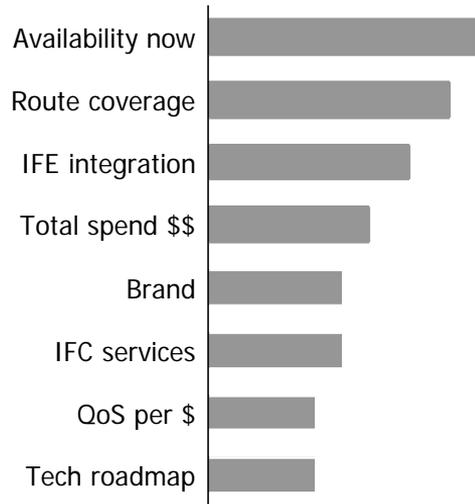
60% of passengers say:  
"I prefer not to use Wifi if I know it's not high quality"

# Airline decision making criteria

Historical deals have focused on getting IFC immediately, for fear of passengers switching airlines. On-going/future deals focus on the capacity roadmap and QoS

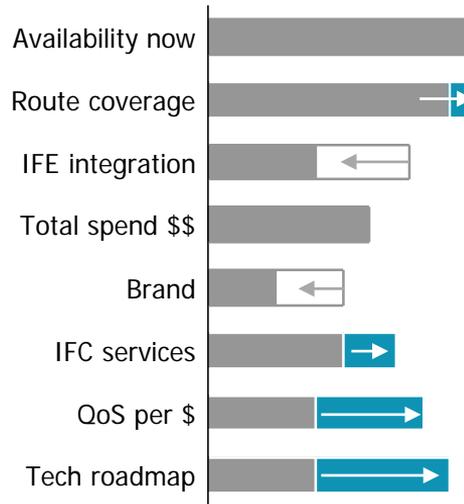
## Airlines happy line 2015

Relative weight of purchase criteria  
(Illustrative)



## Airlines happy line 2016-18

Relative weight of purchase criteria  
(Illustrative)



> Service availability still core

> 100% rather than 'ok' route coverage

> Unbundling of IFE and IFC

> Total spend still core

> Focus on service not brand

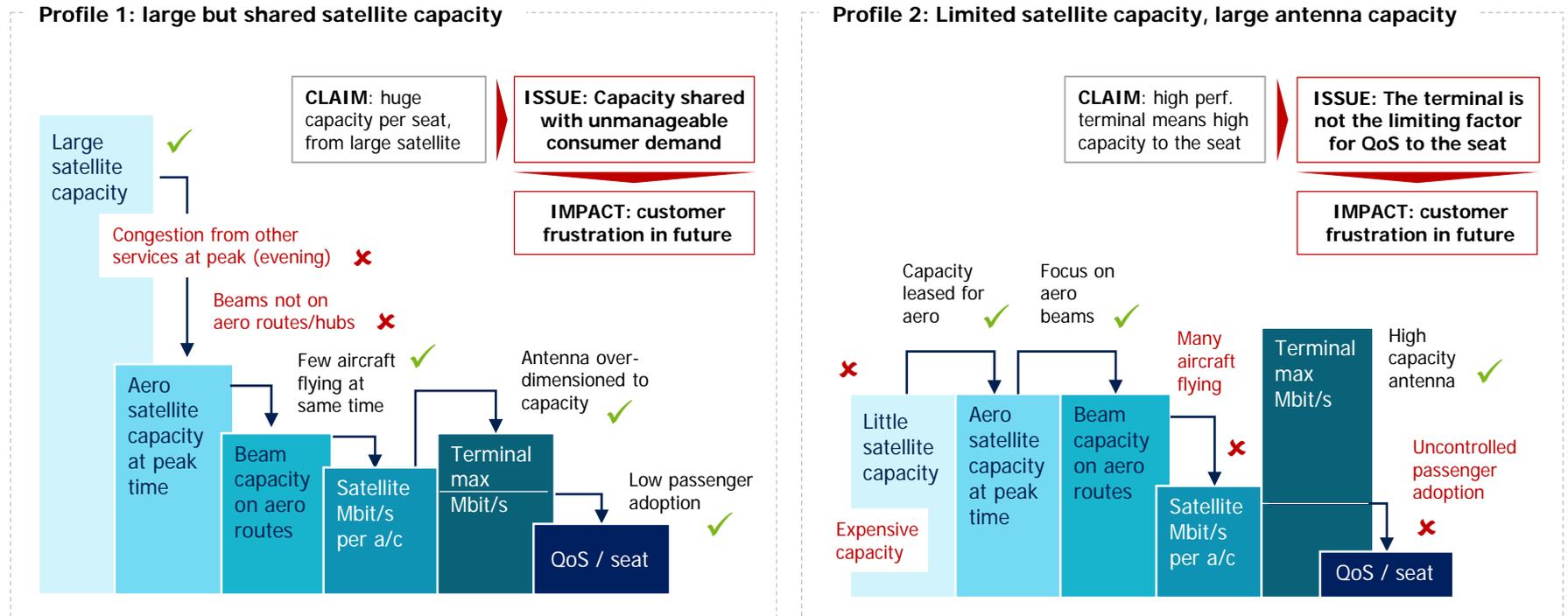
> Total solutions for managed IFC (ISP)

> Max QoS for a given spend

> More probing into future tech infra

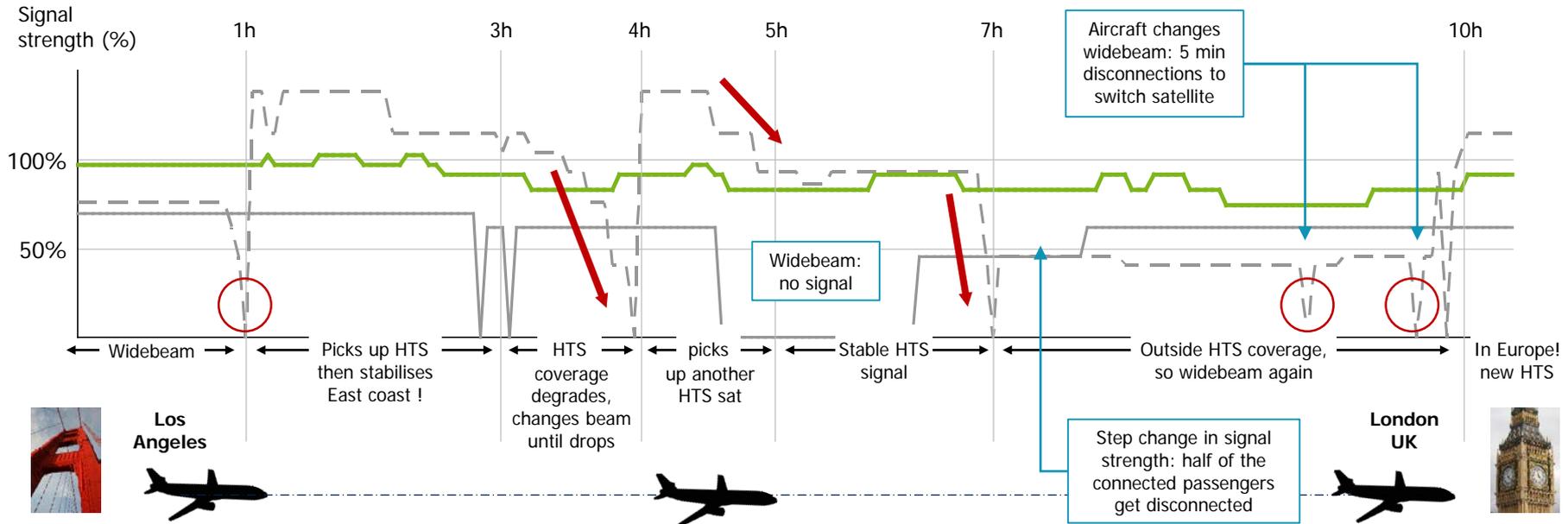
# QoS to the seat

QoS per seat requires the alignment of the full capacity chain. Competition has different approaches to achieving QoS. Airlines are less confused about marketing claims ...



# GX QoS over transatlantic

... Detailed satellite link budget modelling shows GX provides a consistent, seamless connectivity experience, which patchwork HTS / widebeam networks cannot replicate



Source: Inmarsat, simulation based on assumed satellite supply over the route Los Angeles to London using satellite link budgets

--- Competition: HTS    — Competition: widebeam    — GX

**GX:** we're ready. Test flights summer 2016



GX launch customer airline:



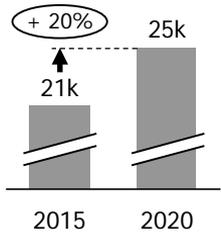
**Lufthansa**

- Inmarsat formally selected by major airlines
- Engaged in final contract negotiation
- Airlines expected to make announcements in coming weeks/months

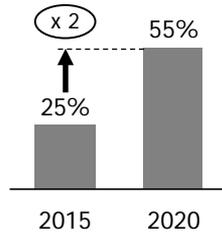
# Welcome to exponential

Strong market drivers lead to exponential traffic growth in the next 5-10 years. Serving airlines at appropriate QoS requires controlled growth and low \$/bit than industry has today

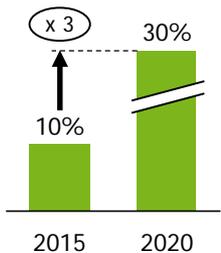
## Total aircraft



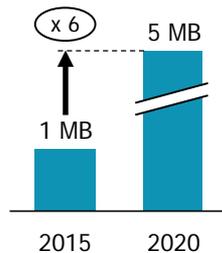
## Share of aircraft connected



## Connected seats per aircraft

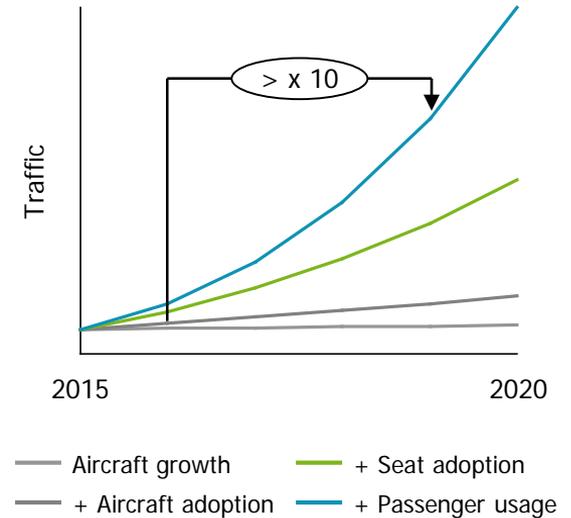


## Mobile data / user pcm (global)



## Traffic profile

Illustrative



# Roadmap: \$ per bit and controlled augmentation

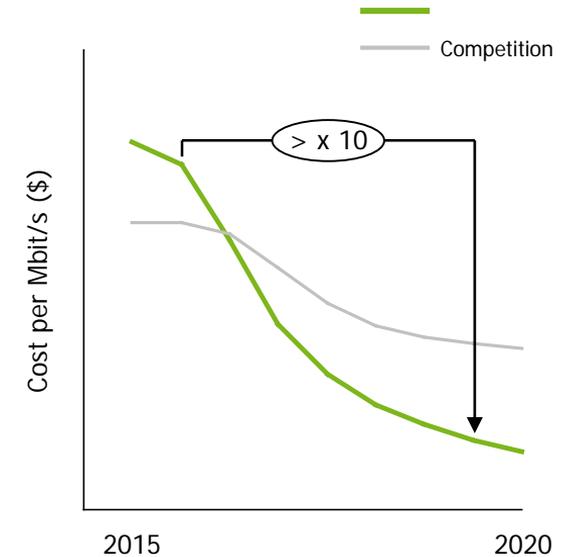
Our roadmap for Aviation includes both satellite and terrestrial infrastructure Having already invested in global coverage, our roadmap can now focus on \$ per bit and controlled augmentation

## Inmarsat roadmap Incremental step by step

Time period	Infrastructure	Satellites	More capacity → More targeted → Lower \$ per bit		
			Available capacity	Coverage	\$ per bit
2015 2016	GX I-5 Global HTS Satellite Beams	x 3, owned	n.a.	global	n.a.
	GX High Capacity Payloads (HCP)	x 6, owned	↑	steerable	↓↓
	GX I-5 F4 overlay	x 1, owned	↑	APAC	↓
2017 2018	European Aviation Network (EAN)	x 1, shared	↑↑↑	Europe	↓↓
2019 2021	GX I-6 HCP payloads	x 2, owned	↑↑	regional	↓↓
	Future augmentation options	own/shared	↑↑↑	targeted	↓↓↓

under review

## Cost profile – Average \$ per bit Illustrative



# Inmarsat Aviation Terminal Evolution

The GX terminal was designed to deliver I-5 generation system performance. Immediate tech upgrades will focus on critical aero requirements (performance, reliability). A new generation of high performance Ka-band technology will mature from 2019 onwards.

## Evolution of ecosystem

- > Terminals tech interoperability difficult in the medium term
- > Airlines want future proof dual-band antennas but these don't exist
  - KaKu terminals currently suffer from high weight/drag penalty
  - Little appetite from vendors to develop dual-band terminals
  - Ka-band clearly more attractive in the >5 year, >bandwidth scenarios
  - Ka-band flat panel antennas planned availability from 2019 onwards from range of vendors (incl. Kymeta)

## Satellite terminal roadmap



# EAN allows superior economics

The EAN offers a lower cost option for airlines. Network design and generous spectrum allows scalability through targeted addition of sites and sectors per site in high traffic areas

## Low aircraft TCO

compared to satellite

- > Lower system weight and drag minimising fuel costs
- > Reduces aircraft IFC opex by close to half
- > Small system size
- > Can be installed and maintained overnight
- > Immediate availability of spares and supply
- > High service availability (no moving parts to antenna)

## EAN key on-board components

- > Total weight c.16Kg vs. 60Kg for satellite
- > Half the capex compared to satellite



Satellite radome

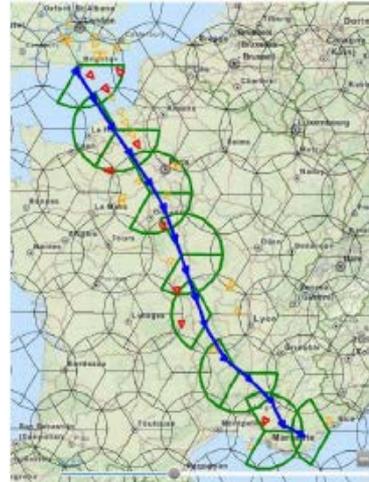


On-board equipment



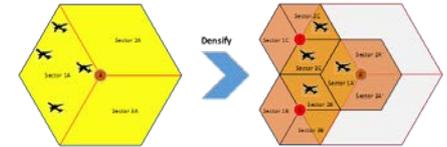
Air to ground antenna

## Contiguous multi-sector coverage

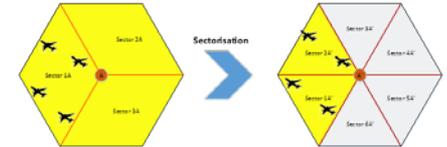


## Flexible capacity expansion

- > More sites = more capacity. Large radius means many options for site identification

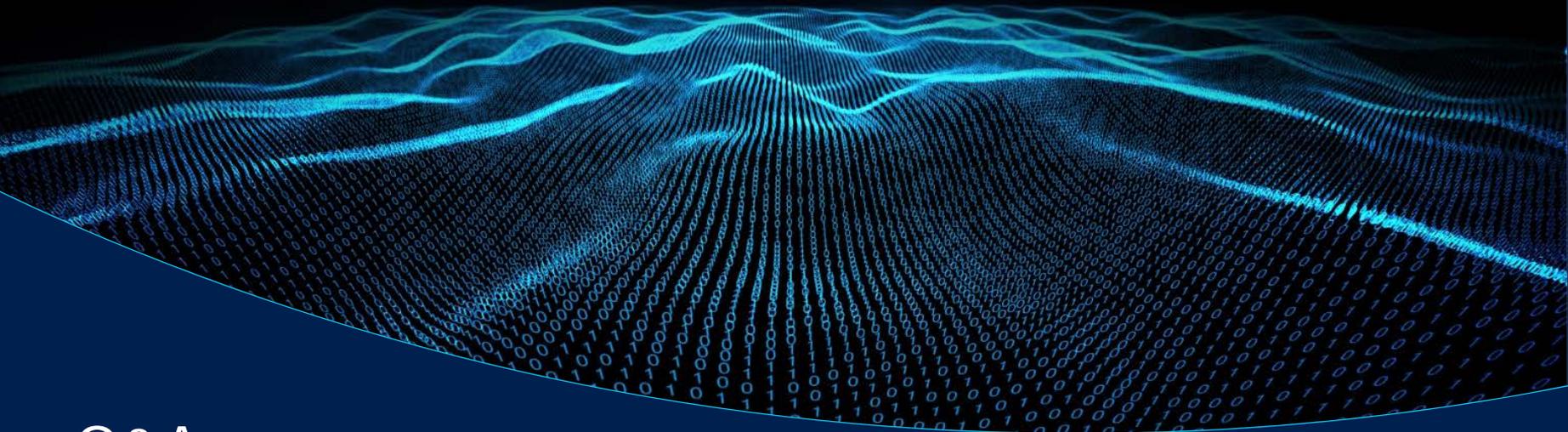


- > More sectors per site = more capacity. Wide spectrum (30MHz) allows re-planning



# Conclusion

- > Strong offering in SOS and BGA with SB-S and JX product launches
- > Commercial GX now operational and gaining market momentum
- > Sustainable differentiators in largest expansion markets
- > Innovative technology and cost optimisation roadmap
- > Led by targeted investment in infrastructure, service delivery, marketing



Q&A

Aviation

Capital Markets Day 2016





# 05

## Maritime

Ronald Spithout, President, Maritime

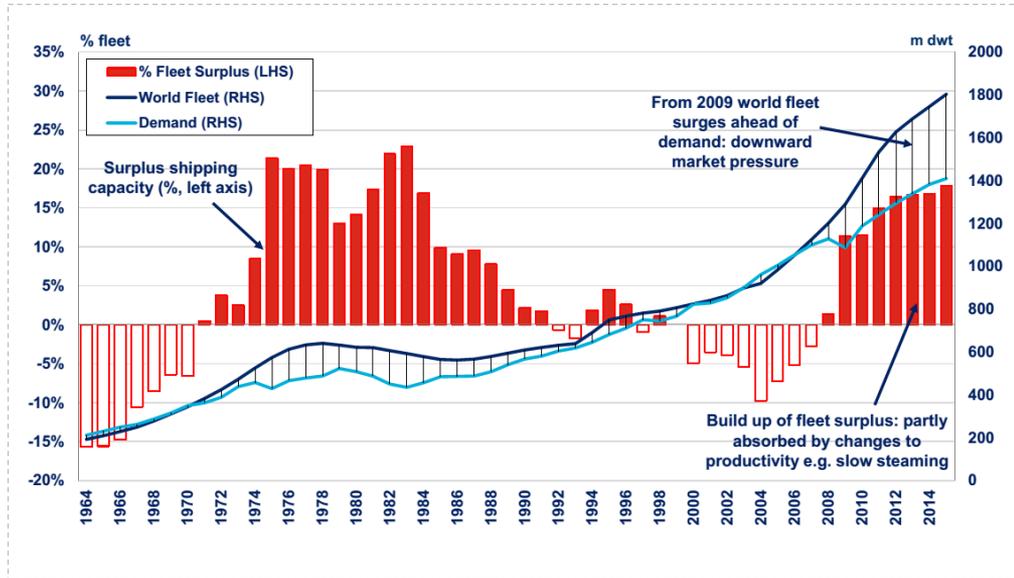


# Addressable market



# Oversupply in commercial maritime puts operational costs under pressure

Depressed market converts communications from cost centre to efficiency driver



- > Continued fleet growth
- > Stressed market conditions
- > Rates depressed in all major sectors

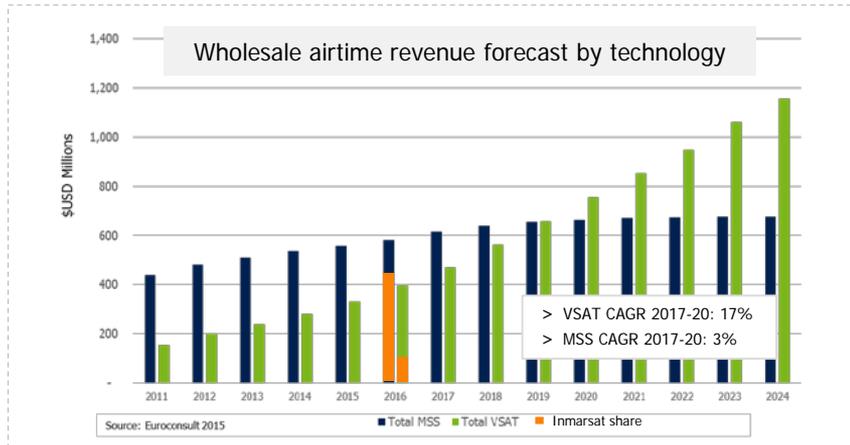
Source: Clarkson's Research



Environmental & technology change, and the search for increased efficiency, drive opportunity and adoption of the smart vessel

# VSAT growth in commercial maritime outstrips L-band

Inmarsat is well positioned to address the higher growth VSAT market in commercial maritime



## Inmarsat key differentiators versus competition

- > The Internet of Things (IoT), cloud based services and the reliance on business applications are dependent on seamless global connectivity
- > Inmarsat Fleet Xpress, designed for mobility, is fully operational
- > FleetBroadband provides a full, and always-on, backup, creating unrivalled availability of service

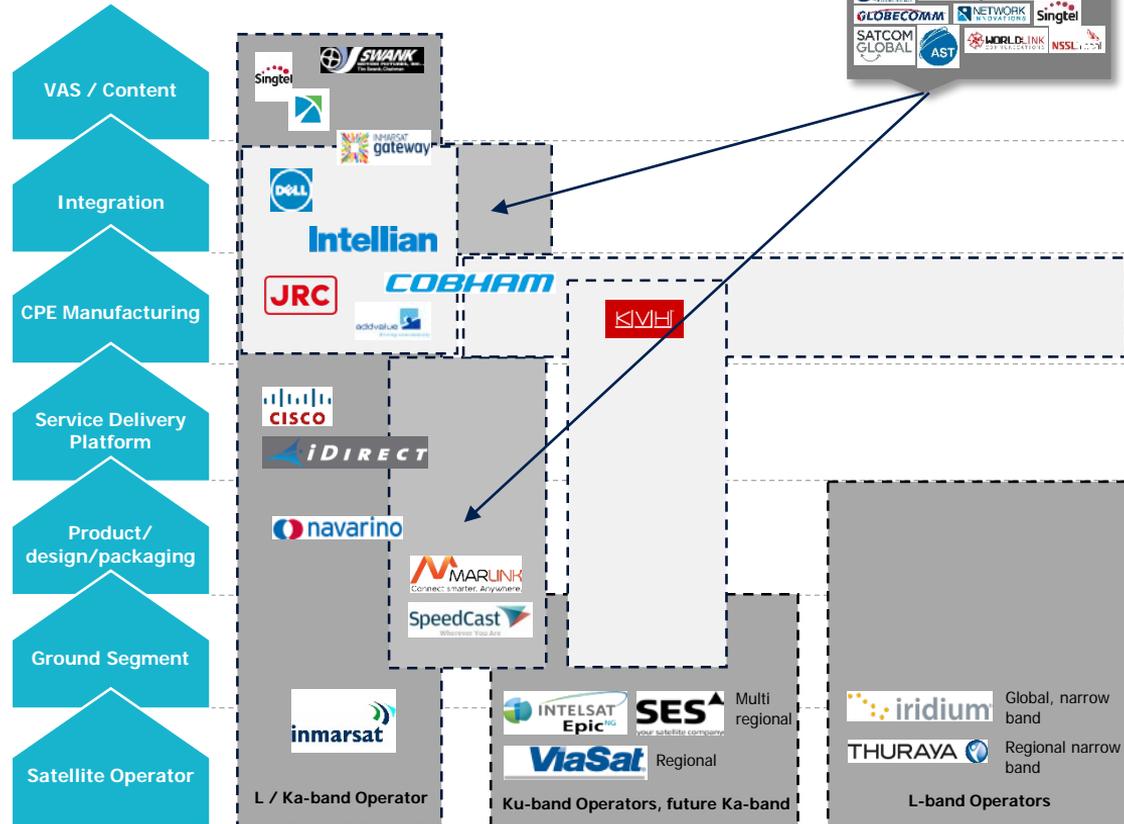
> More and more FSS players looking at mobility satcom market for growth

> Increasing amounts of capacity, notably HTS, partly aimed at maritime markets



# Inmarsat most vertically-integrated maritime market player

## Resilience by vertical integration



## Inmarsat key differentiating attributes

- > Fleet Media, based on content agreement with NT Digital/Swank
- > Cyber security as a service (with Trustwave/SingTel)
- > Safety and GMDSS compliancy
- > Inmarsat Gateway to enable business applications
- > Provisioning and assurance APIs available to FX Partners
- > Wide spread of distribution partners contracted and engineers trained
- > Cobham and Intellian global deployment programmes including rack build, testing and installation
- > Inmarsat BGAN Radio Module and Inmarsat RFIC
- > Inmarsat and VT iDirect form joint R&D partnership to develop next generation services
- > Inmarsat and Cisco alliance to deliver advanced services (video and multimedia content) over Global Xpress
- > Network Services Device (NSD) available for integration in partner smart hardware
- > No integration cost for metered L-band backup as with other Ku-band VSAT providers
- > Inmarsat managed services: No cost for ground segment at distributor level
- > Speedcast, Marlink and Navarino committed over 5,000 vessels
- > Wide spread of distribution partners contracted and trained
- > Resilience of L-band and throughput of Ka-band
- > All Inmarsat networks are designed for global mobility
- > Track record of reliability in serving maritime markets

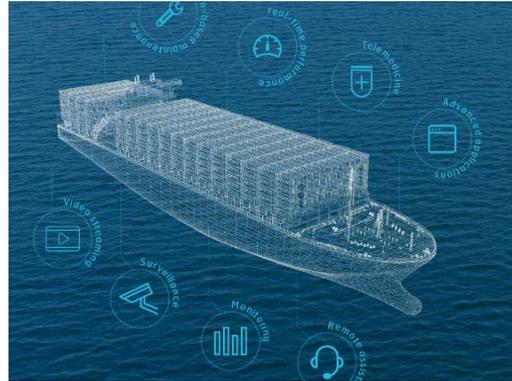
# Inmarsat maritime market strategy summary

Strategy designed to grow ARPU with Fleet Xpress whilst generating volumes on L-band

**Commercial Maritime  
(L-band and Fleet Xpress)**



**Business Applications  
(CAP and Fleet Xpress)**



**Sub-24 metre Market  
(L-band)**

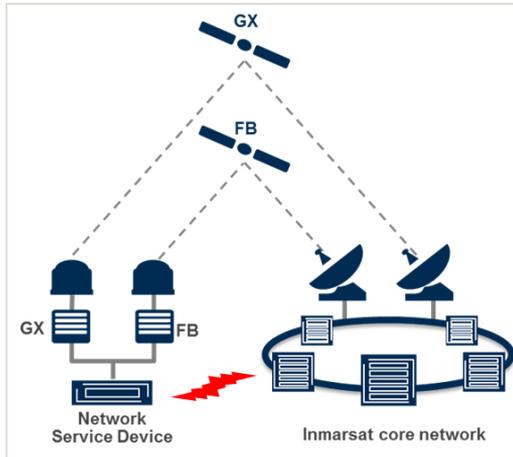


**Value Enhancement**

**Growing L-band**

# Fleet Xpress – a new standard in maritime communications

Application triggered bandwidth removes barriers to entry for business applications



- > A hybrid managed service of GX and FB, with an intelligent on-board Network Services Device (NSD) that links with the Inmarsat Core Network

- > Five powerful sets of benefits above make Fleet Xpress unique in the market
- > FX and CAP are opening and expanding the Inmarsat distribution network in a much broader innovation ecosystem with the potential to fundamentally change the maritime industry

# Uniquely positioned for business applications

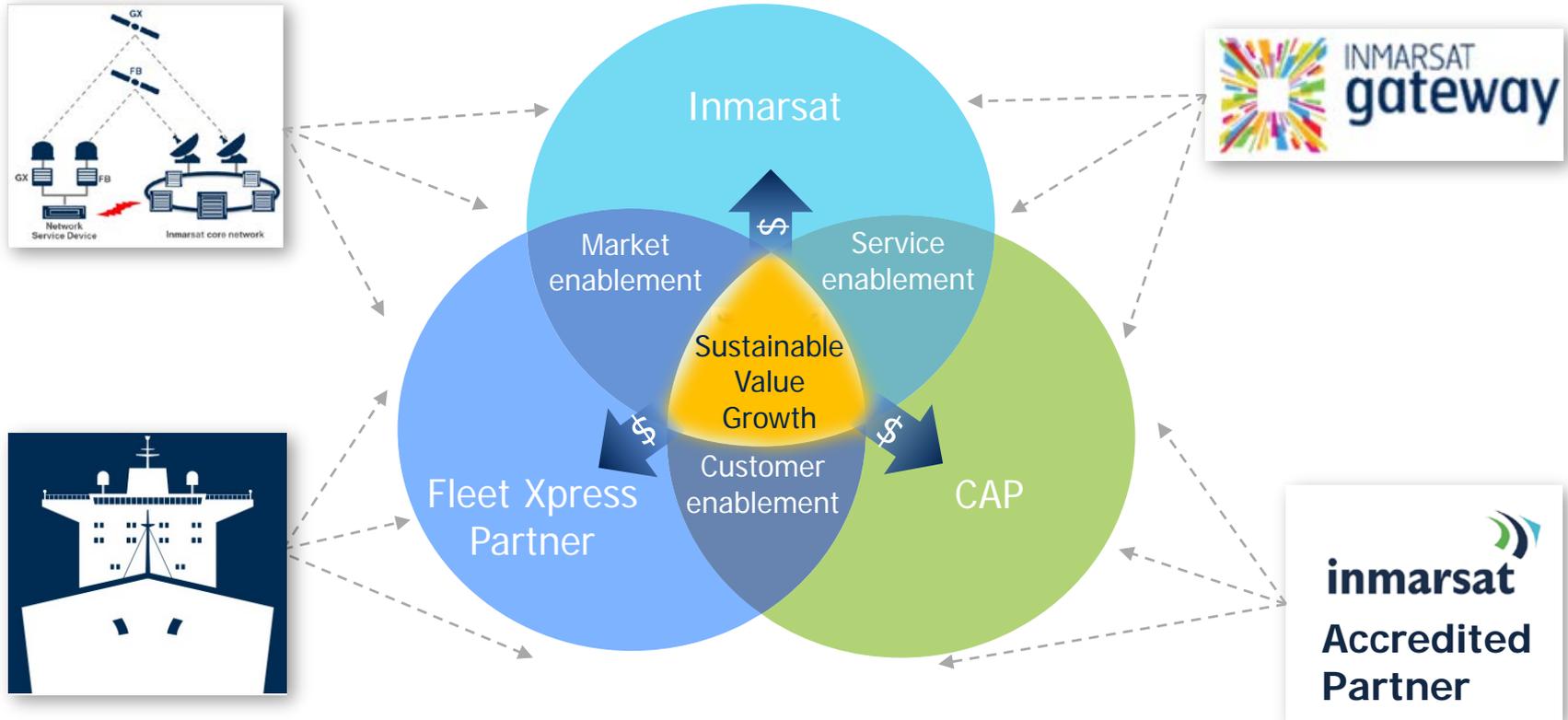
Inmarsat Gateway opens up the market for maritime business applications on board



**The Certified Application Partner (CAP) programme:** a structured programme to facilitate the development, optimisation, delivery & monetisation of business applications as part of a premium service to the global maritime market in which benefits of the Inmarsat Gateway platform economics are shared with the Inmarsat Partner community to further support and stimulate adoption of these services on board vessels

# The Inmarsat Maritime ecosystem vision

Expanding our business model for long term future growth





# What our partners say...

Ready and excited to take Fleet Xpress to market



**Tore Morten Olsen,**  
President, Marlink Maritime

# What our end-users say

Confirming the Fleet Xpress value proposition



**Michael Papaioannou,**  
CEO Helikon Shipping

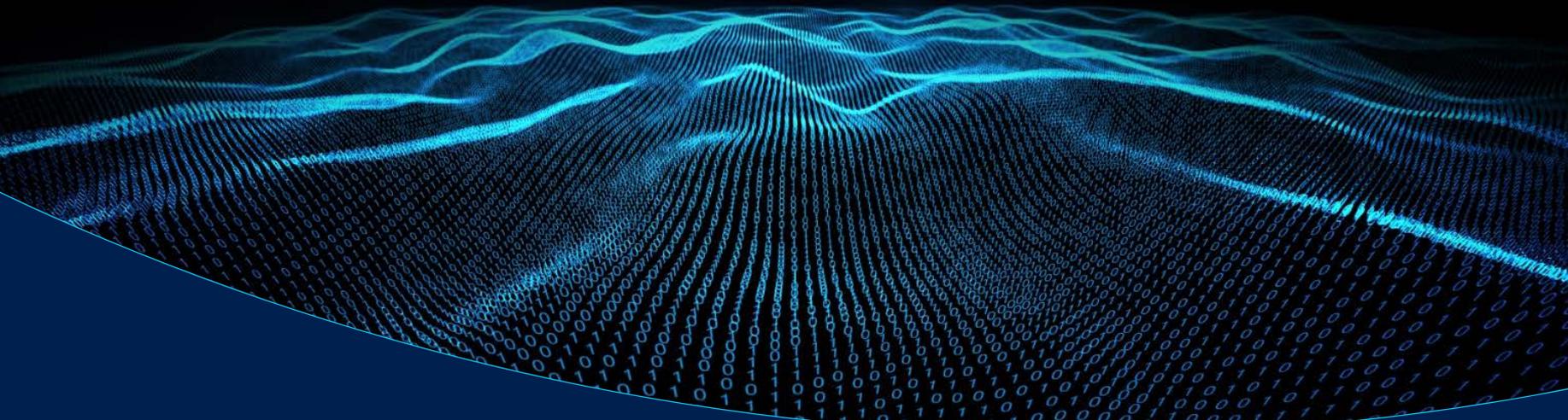
# Conclusion

- > Inmarsat is the market leading, most vertically-integrated maritime market player with seamless global coverage
- > L-band capability well established in commercial shipping, with opportunities for expansion
- > Search for increased fleet efficiency in a challenging market driving adoption of 'smart vessels'
  - > Inmarsat is well positioned to address this growing VSAT market
  - > Fleet Xpress, now fully operational, with guaranteed QoS and unique L-band backup, provides seamless global mobility
  - > Fleet Xpress very well received by the maritime community – 5,500 partner vessels committed
- > Unique Inmarsat Gateway capability provides enhanced customer solution opportunities



**inmarsat**  
**maritime**

Defining Connectivity at Sea



Q&A

Maritime

Capital Markets Day 2016



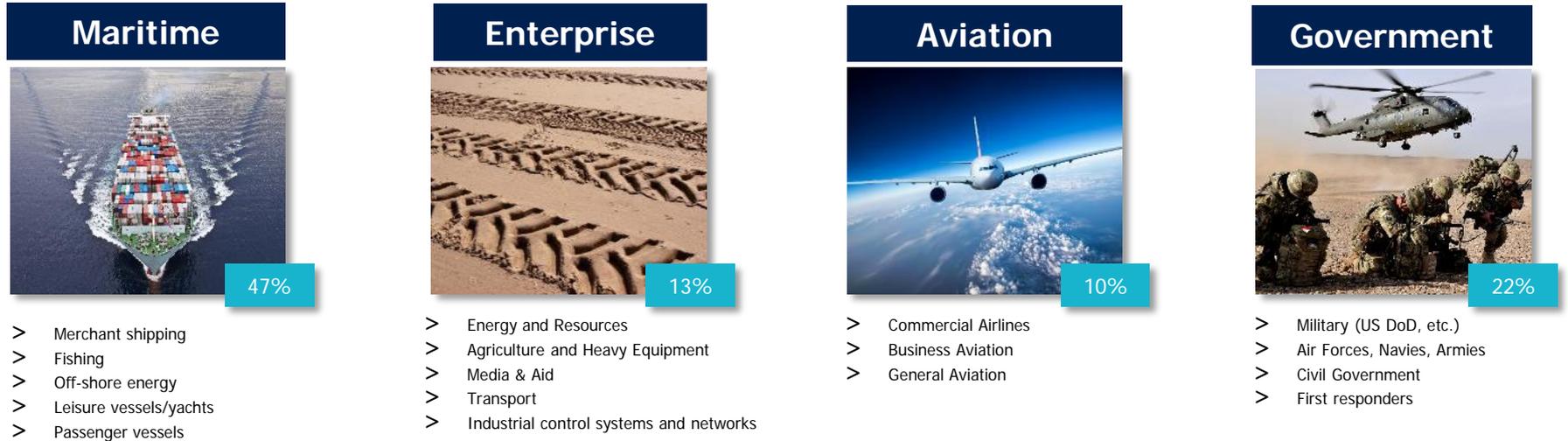
# 06

## Summary

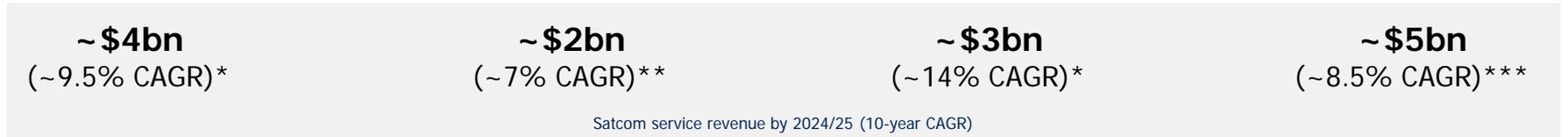
Rupert Pearce, CEO

# Mobile satellite communications poised for growth...

Core business for 37 years



Percentages represent contribution to FY 2015 Group revenues



\* Source: NSR 2016

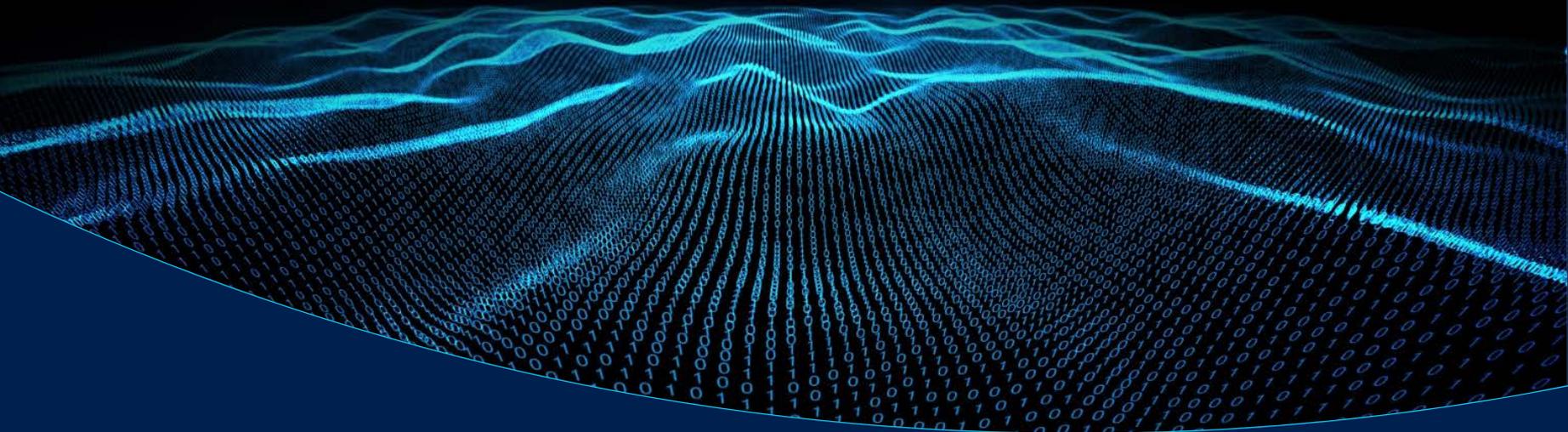
\*\* Source: NSR 2015; refers to NSR segment "Land Mobile & SNG"

\*\*\* Source: NSR 2015; Refers to NSR segment "Government Comms-on-the-move (COTMS)"

# Conclusion - Why Inmarsat is positioned to win

Unique mix factors of that will sustainably enhance value creation in the future

- ✓ Targeting attractive and fast growing markets
- ✓ Best-in class infrastructure networks in place
- ✓ Unique differentiators and core capabilities against all major competitors
- ✓ Ability to scale up and improve on system level with market evolutions in the future
- ✓ Financial strengths and ability to invest in profitable growth
- ✓ New business and revenue opportunities from value added solutions enablement
- ✓ Best-in class partner ecosystem
- ✓ Highly skilled workforce and company culture and values around innovation and performance excellence



# Q&A

Capital Markets Day 2016

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7 October 2016