



Inmarsat's View on the Future of On-Orbit Satellite Services

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15

Satellites in commercial service



6

Launches planned for Global Xpress and ELEREA



31

Satellites Access Stations worldwide



AVIATION

17,000 aircraft connected



ENTERPRISE

800,000 assets connected



MARITIME

160,000 vessels connected



GLOBAL GOVERNMENT

190 departments across over 90 nations



US GOVERNMENT

153,000 terminals installed



99.9%

Network Reliability for ELEREA

158

Customers served in 158 countries

1,800

Staff in 22 countries, across 33 sites

1,368

Trusted partners worldwide

On-Orbit Services : A Predicted Timeline

(an operator's view!)

GEO Spacecraft designed for servicing

Docking, Software, Control, Refuelling

On-Orbit Manufacturing/Recycling

Design & Build

Demo

Comm
Srv

LEO ADR

Design & Build

Demo

Full Commercial Service

GEO Life Extension

Design & Build

Demo

Full Commercial Service

2000

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2015

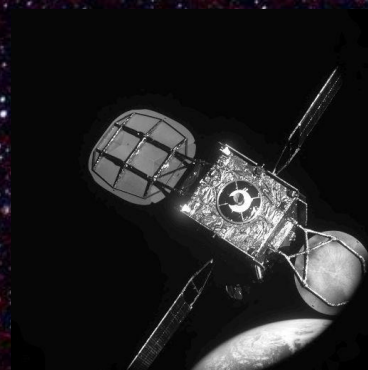
2020

2025

2030

2035

2040



On-Orbit Services : Enablers

(an operator's view!)

Where we are now

Many proposed proprietary systems/technology (cool!), dependency on single suppliers

Operational satellite aren't designed for servicing. Requires significant bespoke engineering from the Primes

Uncertainty on the regulators' and insurers' view of On-Orbit servicing

An unsustainable deployment of satellites/system in space with little oversight

Standards drives demand and hence scale

Operators' requirements

Primes in the value chain

An educated regulator and insurance market

Responsible operators & technically savvy regulators

On-Orbit Servicing!!

Where we want to be

Flourishing On-Orbit servicing market with choice of vendors to de-risk supply and improve competition/reliability/safety

New spacecraft designed for docking, joint stack operations, repair, refuelling

A market with known costs and approval process

Net Zero in Space within a decade without limiting responsible innovation and new services

On-Orbit Services : The GEO Economics

(an operator's view!)

The economics are predominantly coming from life extension services:

The potential benefits:

- Deferment of replacement capex
- Extending service contracts
- Mitigating delivery delays of replacement spacecraft
- Orbital slot maintenance
- Maintaining in-orbit redundancy
- High Xe costs could mean Hydrazine becomes more economical for some missions, easier for refuelling services

What are the issues?

- GEO satellites are typically designed for 15yr (power, radiation dose), life extension comes with some risk of a spacecraft equipment failure which would limit value
- Old payloads have lower economic returns than next generation capabilities
- Lack of heritage, would be helped by 'pay-as-you-go' model to avoid capex at risk
- Launch costs typically aren't mass driven (EOR duration becomes the variable for EP spacecraft) therefore limited economic value to launch half-full tanks/smaller fuel tanks