



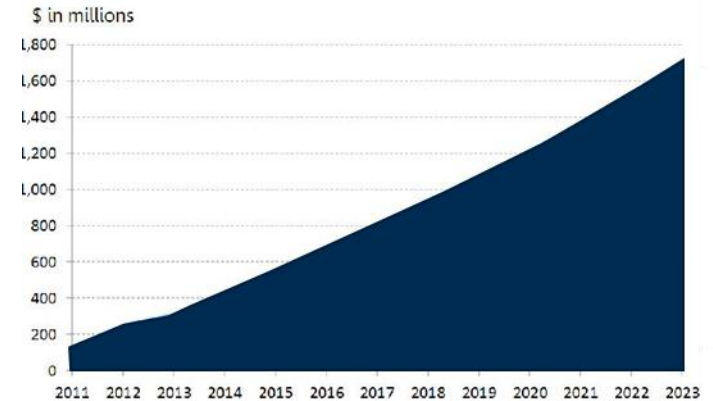
# S-band and ACGC: Powering Aviation Connectivity

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President, Aviation

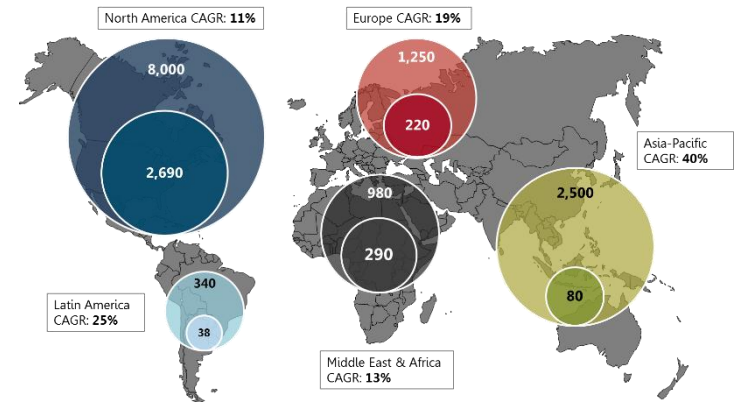
# Worldwide passenger connectivity expected to grow into \$1bn business within the next 5 years

- Connectivity is the fastest growing segment in the “Passenger Experience” marketplace
  - Projected to grow to ~\$1.7bn by 2023 from a base of ~\$0.4bn (retail value)
  - 300% increase in connected aircraft over next 10 years
  - Every region holds opportunity
- Market continues to attract significant resource and investment across the eco-system:
  - AT&T Air-To-Ground (ATG) roll out across the US
  - Multiple HTS and Ku-band systems targeting global market (Viasat, Hughes, Panasonic, Row 44, Gogo)
  - Leading global airlines actively engaged in the space
- Requirements vary significantly by aircraft and by region: require multi-band, multi-technology solution

Addressable aviation connectivity market



NUMBER OF CONNECTED COMMERCIAL AIRCRAFT IN 2023 VS 2013



Source: Prospects for In-Flight Entertainment and Connectivity, Euroconsult 2013



# Strength of passenger demand now proven

## US ATG is setting expectations in Aviation Connectivity

➤ Gogo's rapid growth since the roll out of their ATG network in North America has illustrated significant demand for in-flight connectivity:

- 30% YoY revenue growth in H114
- Passenger take-up rate doubled between 2009 and H1'14 to 6.9%.
- 39% ARPA CAGR between 2009 and 2013
- Other sponsors see adoption and usage in line with consumer/enterprise mobile data markets

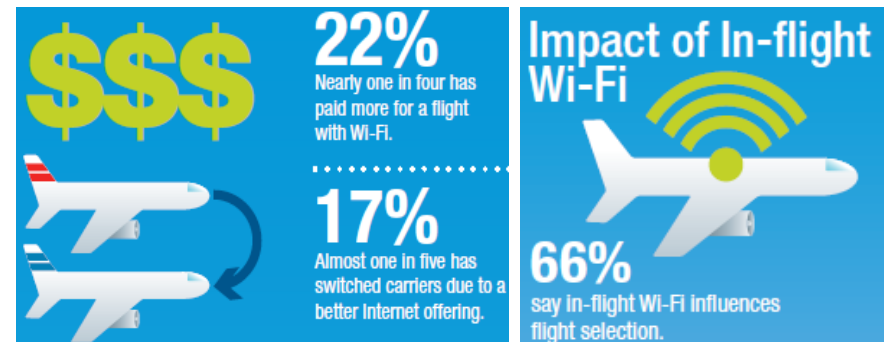
➤ Honeywell market research supports Gogo forecasts:

- Nearly 1 in 4 customers have paid to use Wi-Fi
- 1 in 5 have changed flights to ensure better Wi-Fi
- 66% state that it influences their flight selection

### Strong Commercial Aircraft revenue growth



Source: Gogo Investor Presentation, May 2014



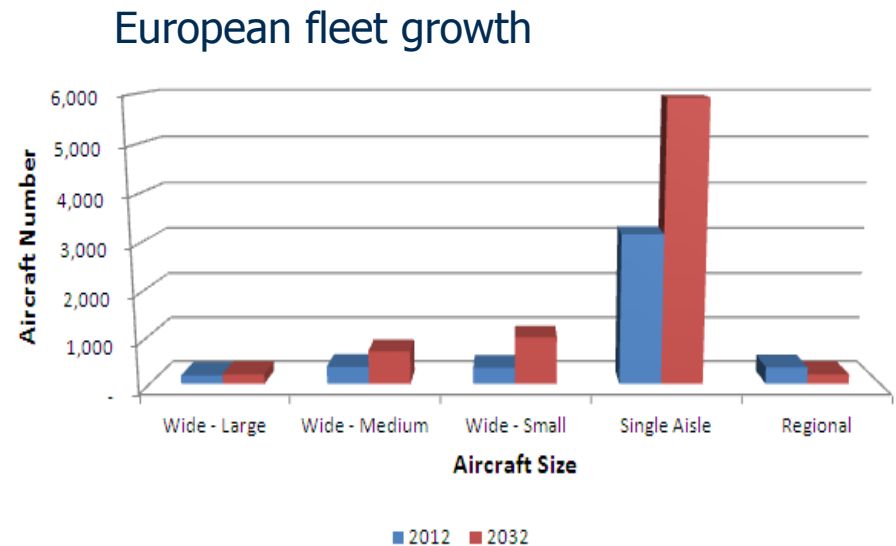
Source: Honeywell's Aerospace Wi-Fi Survey (July 2014)



# Opportunity to replicate US ATG success in European market

## Growth through conversion and expansion of the short-haul fleet

- European aircraft fleet projected to almost double by 2032 with 7,450 new aircraft
  - Single aisle fleet make up larger share of the total, growing to ~ 75% by 2032
  - Single aisle aircraft typically do not have IFE installed, so significant latent demand
  - Passengers now primed and ready for in-flight connectivity
  - Airlines seek lightweight, low cost on-board equipment to cover busy short hops on high density traffic routes requiring high capacity connectivity



Cabin connectivity market in EU could ultimately be larger than the US due to the high number of smaller aircraft flying shorter routes more often



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

## **GX:**

The reference solution for long haul aircraft with global Cabin Connectivity requirements

## **S-band:**

Broadband Cabin Connectivity over EU

## **L-band:**

Worldwide Cabin Connectivity, Safety & Operations Services

## **ACGC:**

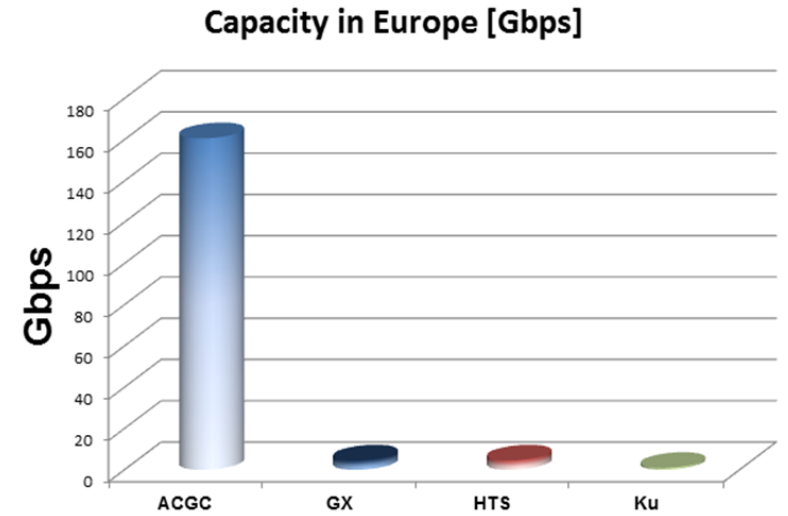
Complementary ground network over EU & roaming agreements with other regional ATG providers





# S-band meets demand over EU's high traffic routes

Complements GX and L-band global solutions



Source: Company estimate

Perfect complement to GX for airlines with mixed fleets or where enhanced capacity is required

Very high capacity over EU for regional cabin connectivity

Superior performance and economics for aircraft operating in high traffic density geographies in Western Europe, especially smaller aircraft.

Portfolio of S-band and GX gives unrivalled capability and capacity in the region



# 4 key deliverables to secure S-band / ACGC opportunity

## 1. Regulatory approval required to confirm use of S-band spectrum for MSS services and aviation complementary ground component

- MSS applications filed in 22 member states – secured in 13
- Engagement with regulatory authorities in all EU member states on proposed ACGC use of spectrum and the associated terms and license fees. First formal ACGC authorization has been granted in a 'big 5' EU market, applications filed in other member states, discussions underway regarding test/demonstration licences key countries.
- On track to substantially retire regulatory risk by mid-2015. Phased build of the network possible as final authorisations are obtained

## 2. Satellite build project

- Contract signed with Thales
- Build progressing and we expect to launch in compliance with the terms of the Spectrum award
- Space X Falcon Heavy launch system under contract



# 4 key deliverables to secure S-band / ACGC opportunity

## 3. Deliver lightweight, low cost Satellite and ACGC OnBoard Equipment (OBE)

- Specification for S-band OBE underway with avionics providers and airlines to ensure the right technical and functional specifications from the outset
- Will work with our partners on a programme to include: design specification; development programme and flight test/certification



## 4. Roll out the satellite and ACGC ground network

- Multiple system, technologies and partners currently under evaluation. Process confirms technological maturity.
- Once chosen we will move through the design & prototype phase, CGC Remote Radio and OBE integration, roll out and then testing and certification





# Programme timeline



## Regulatory



MSS Licences filed and principles agreed for CGC licences with Member States

Significant proportion of CGC licences secured on satisfactory terms

Continued negotiation to achieve full list of MS

## Satellite build

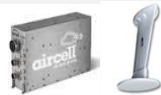


Design Phase

Spacecraft manufacturing, assembly, integration & testing

Launch

## OBE



Supplier / Technology Selection

Design Specification & Implementation

Testing & Certification

Installation of hardware onto aircraft

## Ground network



Supplier / Technology Selection

Development Phase

Phased roll out per customer requirements



# Securing the leadership position

Growing demand across an expanding product and service portfolio complement Inmarsat's leading position in the Aviation connectivity market

- > Inmarsat is the industry standard for satellite-based Safety and Operations Services and for business aviation connectivity
- > Airline in-flight passenger connectivity is expected to represent \$1bn market opportunity within 5 years and is a significant growth market for Inmarsat
- > GX will be a leading satellite-based aviation connectivity solution
- > European S-band / ACGC
  - European capacity and coverage that cannot be matched by any satellite-only solution, first mover advantage
  - ACGC Interoperability, roaming with North American ATG services
  - Integrated service delivery across all Inmarsat platforms - reuse of key assets in ACGC
  - Key steps required to deliver S-band/ACGC solution map well to Inmarsat's core competences and experience

Inmarsat aviation solutions serve all aircraft types in all geographies, driving market share

