

The Market for IFEC and CMS Systems on VVIP & Business Aircraft - 2022 Edition







The Market for IFEC & CMS Systems on VVIP & Business Aircraft - 2022 Edition

Valour Consultancy's report on the market for in-flight connectivity, in-flight entertainment and cabin management systems on business aircraft is the premier source of information on this quickly growing category. Now in its third edition, the report's scope has been expanded to provide a granular view of forthcoming NGSO solutions and their likely impact in different regions and different segments.

With 193 pages of commentary on key trends and more than 250 data tables containing market estimates and forecasts, it is the only report of its kind, and our most comprehensive analysis to date.

Overview

Business aviation has been one of the first industries to recover from the COVID-19 crisis, benefiting hugely from airline capacity reductions and people looking less favourably on travelling through crowded airports and in cramped commercial aircraft cabins,

Furthermore, the number of ultrahigh-net-worth individuals has grown substantially over the course of the last few years with insatiable demand for aircraft causing preowned inventory levels to fall to historic lows during 2022.

As such, many fractional providers have seen record enquiries from new customers, traffic in certain parts of the world is exceeding prepandemic levels and major OEMs are reporting healthy order backlogs.

So, rather than an ongoing inhibitor, COVID-19 has acted as a catalyst of recovery and by extension, increased use of IFEC on business aircraft. This report, therefore, provides companies interested in the market with an indepth review of its present status and likely development in the aftermath of the pandemic.

With new LEO solutions from the likes of SpaceX and OneWeb on the horizon, a key focus on this update is the addition of a new split in the data showing how the number of aircraft with satellite-based IFC breaks down between NGSO and GSO constellations.

We've also made forecasts more granular with the reader able to see how adoption of different IFEC technologies will grow in each aircraft segment for the six regions under analysis.

Data is supported by in-depth commentary on market issues, tech trends and the competitive environment. An overview of the IFEC ecosystem and detailed profiles of key players in the market is additionally provided.

Quantitative and qualitative insight and analysis has been drawn from >40 interviews with key players in the value chain – many of which are established partners who rely on our research on IFEC and cabin technology in the commercial aviation market. This includes aircraft OEMs, aircraft owners/ operators, MROs, IFEC vendors, service providers, equipment manufacturers and satellite operators.











Report Scope

The diagram below offers a visual summary of the quantitative analysis included in this report. Ten year forecasts are provided for all segmentations from 2022 until 2031 with historic data from 2021, the base year, also included.

KEY METRICS

Installed Base | Annual Installations | Total Addressable Market | Penetration | Annual Hardware Revenues | Annual Service Revenues | Average Selling Prices (ASPs) | Average Revenue per Aircraft (ARPA)

These metrics are shown at both a global and regional level then broken down by the segmentations below.

Geographic Region

Africa

Asia-Pacific

Central & South America

Europe

Middle East

North America

Market Segmentations

CONNECTIVITY TYPE

ATG L-band Ku-band Ka-band Hybrid

MARKET SHARES

Network Operators Service Providers IFE/CMS Vendors

SATELLITE ORBIT TYPE

NGSO GSO

FREQUENCY BAND

Narrowband Broadband

FITMENT TYPE

Line Fitment Retrofit

AIRCRAFT TYPE

Bizliner Large Cabin Biz Jet Super Midsize Biz Jet Midsize Biz Jet Small Cabin Biz Jet Very Light Biz Jet Turboprop





FOR MORE INFORMATION PLEASE VISIT VALOURCONSULTANCY.COM





Table of Contents

Executive Summary

Chapter 1 - Introduction, Scope and Methodology

1.1 Introduction

1.2 Scope

1.2.1 Fitment Type Definitions

1.2.2 Aircraft Type Definitions

1.2.2.1 Bizliners

1.2.2.2 Large Cabin Jets

1.2.2.3 Super Midsize Business Jets

1.2.2.4 Midsize Business Jets

1.2.2.5 Small Cabin Business Jets

1.2.2.6 Very Light Business Jets

1.2.2.7 Turboprops

1.2.2.8 Aircraft Exclusions

1.2.3 Frequency Band Definitions

1.2.3.1 ATG Communications

1,2,4 Satellite Orbit Definitions

1.2.5 Geographic Region Definitions

1.2.5.1 Areas of Ambiguity

1.2.6 Product Type Definitions

1.2.6.1 In-Flight Connectivity

1.2.6.2 In-Flight Entertainment

1.2.6.3 Cabin Management Systems

1.2.7 Point of Measurement of Statistics

1.3 Report Content

1.4 Data Collection Methods and Sources

1.5 Exchange Rates

Chapter 2 - Technology Review

2.1 Introduction

2.2 Connectivity Technologies

2.2.1 Air-to-Ground

2.2.1.1 Gogo ATG

2.2.1.2 SmartSky Networks ATG

2.2.1.3 Other ATG Networks

2.2.2 Satellite Communications

2.2.2.1 L-band

2,2,2,2 S-band

2,2,2,3 Ku-band

2.2.2.4 Ka-band

2.2.2.5 Next Generation Satellite Systems

2.2.2.6 Summary of Notable Future Launches

2.2.2.7 ATG and Satellite Coverage Maps 2.3 Developments in Enabling Hardware

2.3.1 Antennas

2.3.1.1 Mechanically Steered Antennas

2.3.1.2 Electronically Steered Phased Arrays

2.3.1.3 Fuselage vs Tail Mount Antennas

2.3.2 Modems

2.3.3 Servers

2.3.4 WAPs

2.3.4.1 802.11ac (Wi-Fi 5)

2.3.4.2 802.11ax (Wi-Fi 6 and Wi-Fi 6E)

2.3.4.3 802.11be (Wi-Fi 7)

2.3.4.4 Li-Fi

2.3.5 Displays

2.3.5.1 Ultra-HD Screens

2.3.6 Audio

2.3.6.1 Bluetooth

2.3.7 Cabling

2.4 Content Trends

2.4.1 Early Window Content

2.4.2 Moving Map

2.5 Cellular Technology

2.5.1 Second Generation (2G)

2.5.1.1 GSM, GPRS, EDGE

2.5.2 Third Generation (3G)

2.5.2.1 W-CDMA, HSDPA, HSUPA, HSPA/+

2.5.2.2 FV-DO

2.5.2.3 2G and 3G Sunset Plans by Country

2.5.3 Fourth Generation (4G)

2.5.3.1 LTE and LTE Advanced

2.5.4 Fifth Generation (5G)

2,5,4,1 5G NR

2.5.4.2 5G-Advanced

2.6 In-Seat Power

2.6.1 Inductive Charging

2.6.2 Design Trends

2.7 Al-Driven Personalisation

2.8 Control Mechanisms

2.8.1 Voice Control

2.8.2 Gesture Control and Eye Tracking 2.8.3 Holographic Controllers

Chapter 3 - Market Statistics & Trends

3.1 Introduction

3.1.1 Market Drivers

3.1.1.1 Growth in Number of UHNWIs

3.1.1.2 Aircraft Production

3.1.1.3 Low Pre-Owned Inventory Levels

3.1.1.4 COVID-19 Outbreak as a Driver

3.1.1.5 Obsolete Hardware and Frustration with Older Systems

3.1.1.6 Growth of the Charter Business Model

3.1.1.7 Proliferation of High-Speed IFC in Commercial Aviation

3.1.1.8 FANS 1/A and ADS-B Mandates

3.1.1.9 Increasing Competition

3.1.1.10 Development of New Business Models

3.1.1.11 Falling Costs

3.1.1.12 Emergence of New Antenna

Technology to Expand the Addressable Market

3.1.1.13 Demand for Dual IFC Systems

3.1.1.14 Different Usage Profiles

3.1.1.15 Merging of IFC and IFE

3.1.1.16 Internet of Aircraft Things

3.1.1.17 Expanding Airport Infrastructure

3.1.2 Market Inhibitors

3.1.2.1 2022/2023 Economic Downturn

3.1.2.2 Susceptibility to Geopolitical Issues

3.1.2.3 Environmental Concerns

3.1.2.4 Age of Fleet

3.1.2.5 Cybersecurity Fears 3.1.2.6 Lack of Interoperability

3.1.2.7 Absence of Truly Global High-Speed IFC

3.1.2.8 Difficulty Providing High Speed Connectivity on Smaller Airframes

3.1.2.9 Cost, Complexity and Confusion

3.1.2.10 Delays to Launch of New Networks 3.1.2.11 Problems with Satellites and Lack of Redundancy

3.1.2.12 Decline of Broadcast TV

3.1.2.13 Growth of Urban Air Mobility 3.1.2.14 ADS-B Mandates as an Inhibitor

3.2 Market Estimates and Forecasts 3.2.1 In-Flight Connectivity Market

3.2.1.1 Top-Level View 3.2.1.2 Broadband versus Narrowband 3.2.1.3 By Frequency Band

3.2.1.4 GSO versus NGSO

3.2.1.5 By Aircraft Type

3.2.1.6 By Geographic Region

3.2.1.7 Service Revenues

3.2.1.8 Hardware Market 3.2.2 IFE/CMS Systems Market

3.2.2.1 Top-Level

3.2.2.2 By Fitment Type

3.2.2.3 By Aircraft Type

3.2.2.4 By Geographic Region

3.2.3 Selection of Tables and Charts

Chapter 4 - Competitive Environment

4.1 Market Shares

4.1.1 In-Flight Connectivity Market

4.1.1.1 Service Providers

4.1.1.2 Network Operators

4.1.2 IFE/CMS Systems Market

4.2 Selected Company Profiles

4.2.1 Aircraft OEMs

4.2.1.1 Airbus Group SE

4.2.1.2 AVIC

4.2.1.3 The Boeing Company

4.2.1.4 Bombardier, Inc.

4.2.1.5 Cirrus Aircraft

4.2.1.6 COMAC 4.2.1.7 Dassault Aviation SA

4.2.1.8 Embraer S.A. 4.2.1.9 Gulfstream Aerospace Corporation

4.2.1.10 Honda Aircraft Company

4.2.1.11 Pilatus Aircraft Ltd.

4.2.1.12 Textron Aviation, Inc.

4.2.1.13 Others 4.2.2 IFE/CMS/IFC Vendors

4.2.2.1 ALTO Aviation

4.2.2.2 ArgonFDS

4.2.2.3 Astronics Corporation

4.2.2.4 Collins Aerospace

4.2.2.5 Gogo Business Aviation, LLC.

4.2.2.6 Heads Up Technologies, Inc.

4.2.2.7 Honeywell Aerospace

4.2.2.8 IDAIR GmbH

4.2.2.9 Lufthansa Technik AG

4.2.2.10 Rosen Aviation, LLC

4.2.2.11 Satcom Direct, Inc.

4.2.2.12 Others

4.2.3 Network Operators

4.2.3.1 Inmarsat Group Holdings Ltd. 4.2.3.2 Intelsat S.A.

4.2.3.3 Iridium Communications, Inc.

4.2.3.4 OneWeb Holdings Ltd. 4.2.3.5 SES S.A.

4.2.3.6 SmartSky Networks, LLC 4.2.3.7 SpaceX

4.2.3.8 Telesat Corporation

4.2.3.9 Viasat, Inc.

4.2.4 Others

4.2.5 Notable MROs & Completion Centres 4.2.6 Notable Fleet Operators

Appendix A - 2G/3G Sunset Plans Appendix B – List of Tables and Charts Appendix C - Abbreviations & Acronyms







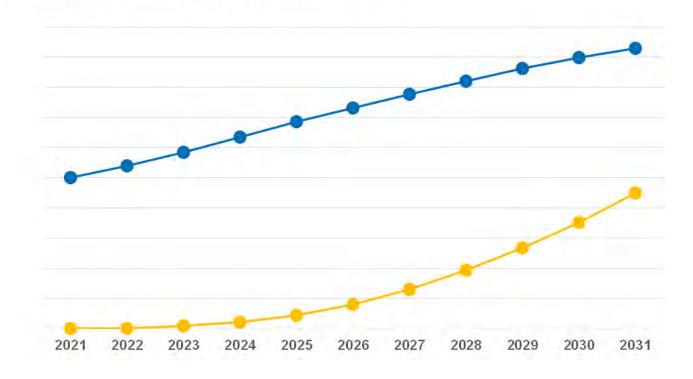




Sample Tables

Sample Table 1												
Global Active In-Flight Connectivity Terminals on Business A Active Terminals	Aircraft by I	Frequency	Band (202:	1 - 2031)								
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	CAG (21 - 3
ATG	100	200	300	400	500	600	700	800	900	1,000	1,100	27.1
L-band	100	200	300	400	500	600	700	800	900	1,000	1,100	27.1
Ku-band	100	200	300	400	500	600	700	800	900	1,000	1,100	27.1
Ka-band	100	200	300	400	500	600	700	800	900	1,000	1,100	27.1
Hybrid	100	200	300	400	500	600	700	800	900	1,000	1,100	27.1
TOTAL	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	5,500	27.1
Broadband	100	200	300	400	500	600	700	800	900	1,000	1,100	27.19
Narrowband	100	200	300	400	500	600	700	800	900	1,000	1,100	27.19
GSO	100	200	300	400	500	600	700	800	900	1,000	1,100	27.19
NGSO (inc. Iridium)	100	200	300	400	500	600	700	800	900	1,000	1,100	27.19
NGSO (exc. Iridium)	100	200	300	400	500	600	700	800	900	1,000	1,100	27.19
Source: Valour Consultancy											Septe	mber 2022

NGSO (exc. Iridium) Sample Chart 1 - GSO and NGSO Satellite Connectivity Terminals on VVIP and Business Aircraft





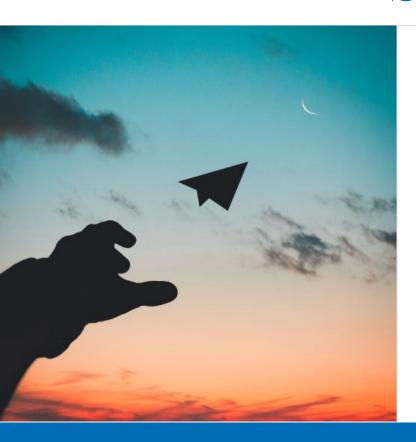


-GSO









Overview

Valour Consultancy conducted more than 40 **interviews** with a variety of companies involved in the cockpit and cabin applications market. This includes:

- Aircraft OEMs
- MROs and Completion Centres
- Connectivity Service Providers
- IFEC/CMS Equipment Manufacturers
- Satellite Operators
- Fleet Operators
- Corporate Flight Departments

Coverage includes...

Accurate data on the current market size for IFC, IFE and CMS systems

Forecasts out to 2031 with robust justifications including the ongoing impact of the COVID-19 pandemic

Focus on annual installations, equipped aircraft, market penetration and associated revenues

> Thorough explanation of key drivers and inhibitors of market growth

Discussion of the technology trends that will shape solutions in the coming years

Market shares and detailed profiles of established companies and notable new entrants active in the market

Analysis of different business models and positioning strategies









Report Access

A variety of license types are available to access the full report. By purchasing *The* Market for IFEC and CMS Systems on VVIP and Business Aircraft - 2022 Edition " you will receive:

- PDF report with 193 pages of qualitative and quantitative analysis
- Excel workbook containing market estimates and forecasts in >250 tables and charts
- Invite to an exclusive **summary webinar** with time set aside for Q&A
- Dedicated **analyst time** from the report author to answer any questions about our findings

LICENSE	CURRENCY	PARTICIPANT PRICE	NON-PARTICIPANT PRICE (EXC. VAT)
Single User (only the licensed individual can use the report)	GBP	Expired	£4,270
Single-Site (anyone at a specific company location can use the report)	GBP	Expired	£5,125
Multi-Site (any company employee in any location can use the report)	GBP	Expired	£5,980

TO PLACE AN ORDER:

Send an email detailing your requirements to Craig Foster via: craig.foster@valourconsultancy.com

MULTI-REPORT DISCOUNTS:

We publish a wide range of intelligence reports relating to IFEC and cabin technology domains. Discounts up to 25% are available on bulk orders.















About Valour Consultancy

Valour Consultancy is a UK-based provider of market intelligence services. Founded in 2012, the company has grown rapidly and is renowned for its comprehensive and high-quality research and consultancy. This growth was officially recognised in 2020 when we were honoured with the prestigious Queen's Award for Enterprise in the category of International Trade.

Since inception, our analysis has primarily centred on the mobility market and several major names in the aviation, maritime and land mobility markets continually rely on our expert insight and analysis. In 2021, we were joined by John Devlin, founder of P.A.ID Strategies, and subsequently expanded our coverage to encompass payments, authentication, identity and the security and connectivity of people, devices, objects and transactions.

Our Values

Valour Consultancy continues to operate in accordance with the three core values it was founded upon -Honesty, Trust and Time. Doing so has enabled us to deliver detailed and meaningful insight and establish long-lasting relationships in the process.

Have a look at the testimonials on our website to discover what clients have to say about working with us.

What we offer

Syndicated research reports

Custom research and consulting

Whitepapers

Survey design and analysis

Databases and tracker products

Market briefings

Public speaking, panel discussions and webinars

Why Choose Valour Consultancy?

- > 60 years combined experience
- Transparent methodology
- Ability to influence report content
- Unrivalled detail and accuracy
- Ongoing access to our consultants

FOR MORE INFORMATION PLEASE VISIT VALOURCONSULTANCY.COM



