



**L3HARRIS**

FAST. FORWARD.

# AIR TRAFFIC MANAGEMENT SYSTEMS AND SERVICES

2023

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# Four mission-aligned segments



**Integrated Mission Systems**


**\$6.6B<sup>1</sup>**

**Jon Rambeau**  
President,  
Integrated Mission  
Systems



IMS is a leading developer and integrator of mission systems in the air, land and sea domains. We provide top tier capabilities in the design, development, integration, production and sustainment of intelligence, surveillance and reconnaissance (ISR), integrated maritime communications systems and electro optical sensors for U.S. and allied military, civil government and commercial customers.

**Headquarters**  
Palm Bay, Florida



**Space & Airborne Systems**


**\$6.4B<sup>1</sup>**

**Ed Zoiss**  
President,  
Space & Airborne  
Systems

SAS is a leading provider of full mission solutions as a prime and subsystem integrator in the space, airborne and cyber domains. We provide top tier capabilities in the design, development, integration, production and sustainment of major weapons systems for national security, civil government, commercial and international customers.

**Headquarters**  
Palm Bay, Florida



**Communication Systems**

**\$4.2B**




**Samir Mehta**  
President,  
Communication  
Systems

CS is focused on enabling warfighters in the multi-domain environment with the resources, capabilities and agility to support today's mission and innovate solutions for the future. We are a leading provider of communications solutions for the U.S. Department of Defense, international customers, federal and state agencies and commercial customers.

**Headquarters**  
Rochester, New York



**Aerojet Rocketdyne**

**\$2.2B**




**Ross Niebergall**  
President,  
Aerojet Rocketdyne

Aerojet Rocketdyne is a world-class developer and manufacturer of advanced propulsion and energetics systems for customers including the U.S. Department of Defense and NASA. We provide a full range of liquid and solid fueled propulsion and power systems for launch vehicles, satellites and other spacecraft; as well as propulsion for strategic and tactical missiles and missile defense systems.

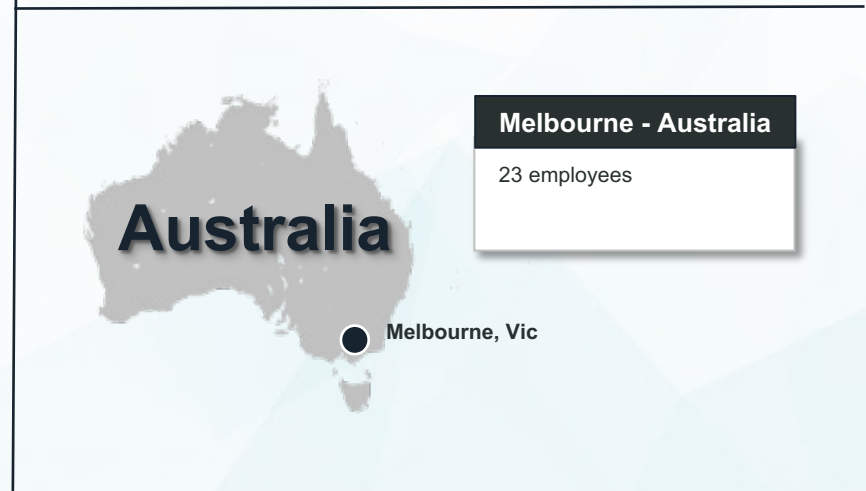
**Headquarters**  
Palm Bay, Florida



<sup>1</sup>2022 revenue and operating income figures have been reclassified to reflect the new segment structure effective for fiscal 2023



# Mission Networks Footprint



**1,200**  
EMPLOYEES



**8**

PRIMARY LOCATIONS WORLDWIDE



**3**

COUNTRIES OF OPERATION

# Mission Networks Business Overview



Mission Networks is a large-scale, platform-agnostic **prime solutions integrator** for **safety-critical** and highly secure network infrastructure and enterprise systems.

## Resilient Networks

**Providing large-scale, multi-component resilient networks**

- Telecommunications
- Multi-sensor networks
- Command and control (C2) systems
- Decision support systems
- Air-to-ground data communications and voice systems
- Fixed wireless and configurable network operations across disparate networks

## Enterprise Data & Information Services

**Delivering enterprise systems for real-time data and information management over hybrid network infrastructure**

- Hybrid cloud architectures for enterprise processing
- Secure data and information management
- Data transformation, automation and dynamic data flows
- Large scale data link
- Cross-domain messaging services

## System-of-systems Network Solutions

**System-of-system solutions for provisioning and control of mission data flows over disparate networks**

- Networked cooperative/non-cooperative surveillance systems
- Multi-sensor network infrastructure
- Cross-domain and integrated networks
- Model-based systems engineering for safety-critical systems
- Turnkey or managed services solutions

**Large-scale, platform-agnostic prime solutions integrator**

- ✓ Proven performance and quals in environments enabling command and control (C2) operations for the safety-critical National Airspace
- ✓ Flexible business models, adapted to customer preferences
- ✓ Able to bridge the gap between commercial practices and government processes
- ✓ Effective program and contractor management processes

# Mission Networks Portfolio



Resilient Networks



Enterprise Data & Information Services



System-of-Systems Solutions

APPLICATIONS

- Commercial technologies (5G/NextG and satellite services) integration with proprietary networks (fixed wireless)
- Expertise and tools for TDM-to-IP migration
- GPS-independent terrestrial timing

PROGRAMS

**FTI, FTI-India, MFN-2, HTEN, VSCS, ABMS-Digital Infrastructure**

CUSTOMERS

**FAA, AAI (India), State of Florida, USAF**

APPLICATIONS

- Messaging services (across security boundaries)
- Hybrid cloud architectures -- on-prem/off-prem, single-cloud (provider agnostic), multi-cloud high resiliency
- Fusion of track and aviation data

PROGRAMS

**SWIM, CSS-Wx, Oasis II, WARP / WMSS III sustainment**

CUSTOMERS

**FAA, Global Air Navigation Service Providers, USAF**

APPLICATIONS

- Cooperative & non-cooperative surveillance networks
- Controller-pilot data comm systems
- Experience applying MBSE to safety-critical systems
- Dynamic reconfiguration of data flows based on real-time mission priorities.
- Securing data in transit and at rest

PROGRAMS

**ADS-B, ENMP, Data Comm**

CUSTOMERS

**FAA, ASA (Australia), US Government**

**Partnering to deliver mission-critical network solutions for more than 30 years**



# Resilient Networks Programs

## FAA Telecommunications Infrastructure (FTI)



High availability network carrying all voice, data and video

- Connects 4,400+ FAA and DoD facilities
- 28,000+ services
- 50,000+ users
- 99.999% network availability

**Services:** Prime- managed infrastructure provider

**Customer:** Federal Aviation Administration

**Period of performance:** 2002 – 2023+

## Futuristic Telecommunications Infrastructure (FTI – India)



Nationwide airport infrastructure telecommunications network managed service.

- 90 sites
- 200 services

**Services:** Prime - managed infrastructure provider

**Customer:** Airports Authority of India

**Period of performance:** 2018 – 2033

## MyFloridaNet-2 (MFN-2)



Private Florida statewide communication infrastructure for government, schools, special districts, and non-profits.

- 4,000+ sites
- Regional metropolitan and wide area networks
- Dedicated 24-hour support

**Services:** Managed network service provider

**Customer:** Florida Department of Management Services

**Period of performance:** 2016 – 2028

## Advanced Battle Management System Digital Infrastructure (ABMS-DI)



Industry consortium member to define open architecture network requirements and develop the digital infrastructure framework to deliver resilient communications, secure processing, and data management, enabling command and control capabilities for ABMS.

**Services:** Consortia member

**Customer:** U.S. Air Force

**Period of performance:** 2022 – 2027

## Voice Switch and Control System (VSCS)



Uninterrupted air-to-ground and ground-to-ground voice communications for air traffic control at 21 Route Traffic Control Centers (ARTCCs).

- 24 years of continuous operations
- 24/7/365 support
- 99.99999% availability

**Services:** Systems integrator and technology solution provider

**Customer:** Federal Aviation Administration

**Period of performance:** 1997 – 2032

# Enterprise Data & Information Solutions Programs



## System Wide Information Management (SWIM)



Enterprise-wide information sharing platform providing a single point of access to facilitate shared aviation data for common situational awareness. SWIM has been operational since 2010.

**Services:** Prime Managed Infrastructure Provider

**Customer:** Federal Aviation Administration

**Period of performance:** 2007 – 2025

## Common Support Services – Weather (CSS-Wx)



NextGen weather data for use within the NAS using standards for easier consumption by aviation systems and users. Enables enterprise-wide data sharing for common operating picture across FAA.

**Services:** Prime System Integrator

**Customer:** Federal Aviation Administration

**Period of IDIQ:** 2015 – 2023

## Weather and Radar Processor (WARP) Maintenance and Sustainment Services (WMSS)



An en route weather system that provides mosaiced Next Generation Weather Radar (NEXRAD) information to air traffic controllers and provides meteorological products to meteorologists and traffic management specialists. Currently performing sustainment support.

**Services:** Prime System Integrator

**Customer:** Federal Aviation Administration

**Period of performance:** 1996 – present

## Operational and Supportability Implementation System (OASIS)



Flight information system providing capabilities for pre-flight weather briefings and flight planning, including in-flight updates.

**Services:** Prime System Integrator

**Customer:** Federal Aviation Administration

**Period of performance:** 2015 – 2025

# System-of-System Solutions Programs



## Automatic Dependent Surveillance – Broadcast (ADS-B)



Air traffic surveillance system that allows pilots and air traffic controllers on the ground to visualize and track aircraft traffic with heightened precision across the National Airspace System.

- SBSS
- Space-based ADS-B
- Processes 1110+ ATC surveillance sensors
- Enables increased air traffic capacity
- 30% reduction in accident rates in Alaska

**Services:** Prime - managed infrastructure services

**Customer:** Federal Aviation Administration

**Period of performance:** 2007 – 2025

## Data Comm Integrated Services



Advancing air traffic control communications with controller pilot data link communications (CPDLC)

- Increases communication efficiency and capacity
- Nationwide VDL Mode 2 Network
- Services at 62 airports and en route nationwide

**Services:** Prime - managed infrastructure provider and system integrator

**Customer:** Federal Aviation Administration

**Period of performance:** 2012 – 2029

## Enterprise Network Modernisation Program (ENMP)



Enterprise network transformation to improve capacity, and security for Australia's national airways system.

- Network infrastructure
- Surveillance system
- Voice radios

**Services:** Prime - managed infrastructure provider and system integrator

**Customer:** Airservices Australia

**Period of performance:** 2021 – 2031



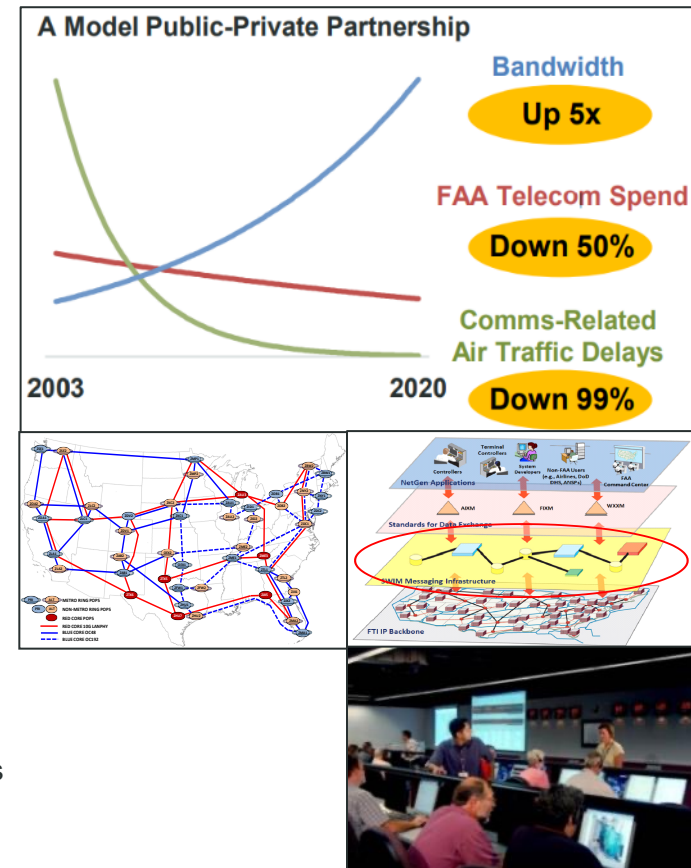
# ANSP Critical Infrastructure as a Managed Service



## Federal Aviation Administration Telecommunications Infrastructure (FTI)

*ANSP: Federal Aviation Administration*

- Nationwide air traffic management telecommunications network providing critical voice, data, and video capability essential for flight operations
- Early successes led to FTI cornerstone win – July 2002
- 99.999% network availability
- Connects 4,400+ FAA and U.S. Department of Defense facilities
- 27,000+ services supporting 50,000+ users
- FTI-SAT Network
  - 50 satellite sites in continental U.S. and Southern Caribbean with east and west hub sites for redundancy
- Microwave and Wireless Network (AeroMACS)
  - Over 220 sites in continental U.S., Alaska, Hawaii, Guam, Puerto Rico and Virgin Islands
- NAS Enterprise Messaging Service (NEMS) and NextGen SWIM
- Dedicated Common Operations Centre Management for all elements
  - All services are supported from a common operations centre with separate backup and emergency sites (NOC/BNOC/ENOC/SOC)
- Operations Network (Voice and Data)
  - Implements the System Wide Information Management (SWIM) element of FAA's NextGen architecture



**Delivering US\$100 million in annual savings to the FAA**



- Awarded in 2007
- Spans 9,443 miles
- Processes 1110+ ATC surveillance sensors located @ 700+ ground stations
- Enabling precise tracking to safely increase airspace capacity
- 30% reduction in accident rates in Alaska
- Includes terrestrial, WAM and Space-based ADS-B

## Space-based ADS-B Surveillance



For Aireon, the provider of space-based ADS-B surveillance L3Harris provided technology and support for:

- space sensors/antennas that enable space-based ADS-B
- ground system to receive and process space-based ADS-B

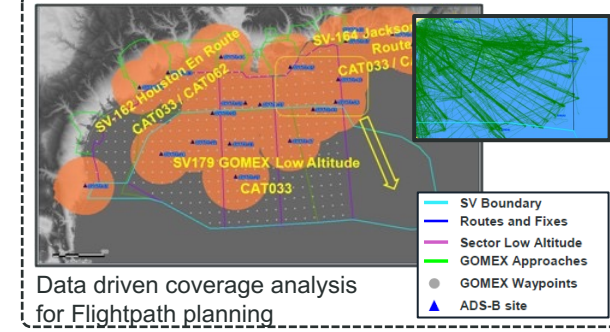
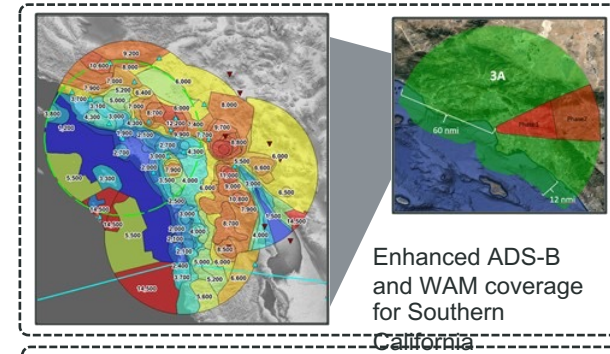
**Services:** Technology Integrator and Service Provider/  
**Customer:** Aireon  
**Period of performance:** 2012 - present

**L3Harris built, owns and operates the largest ATC surveillance network in the world**

# Future proof – Support for changing customer needs



- Service expansion - ADS-B/WAM in Southern California
  - Updates required to address PSR/SSR interference from NFL stadium construction along the LAX approach corridor
  - Required phased implementation of WAM coverage w/i 60nmi of LAX 9 new ground sites and upgrades to 7 ADS-B sites
- Surveillance expertise - GoMex data-driven requirements validation and coverage design
  - Analyze traffic patterns & specify low altitude corridors approach/departure areas
  - to ensure optimal site laydown & affordability GoMex 20 sites, 95% @ 1500 ft North Sea 60 sites, 50% @ 500 ft
- Enhanced route planning and coverage optimization for SFC+500ft
  - Avoids overly dense & RLOS limited initial site laydown
  - Enables “traffic-validated” coverage gaps to be easily addressed with “top down” iterative coverage refinement

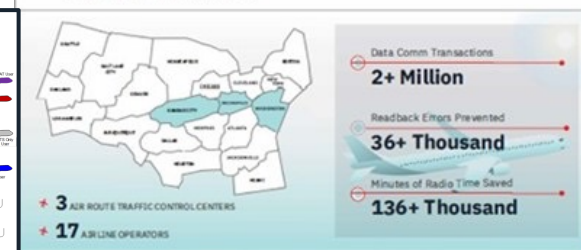
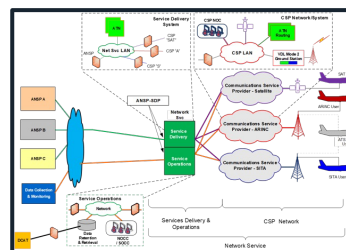
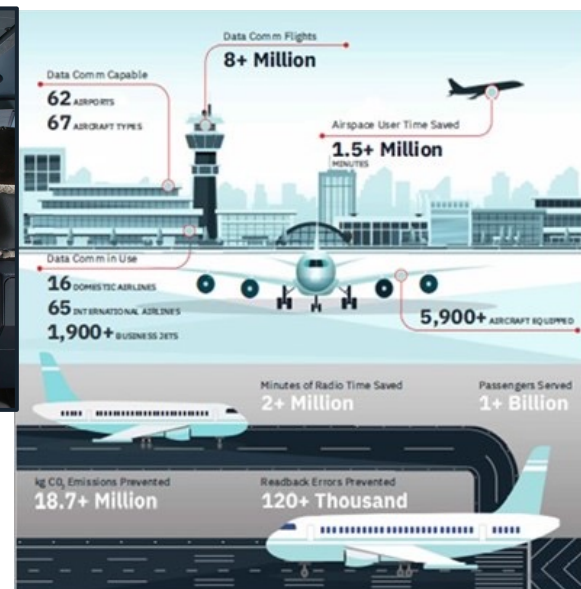




# DATA COMM: 10 Years of Controller Pilot Data Link Communications



- Data Comm Integrated Services
- Revolutionizing air-ground communications in the National Airspace System
- Single entity to manage Collins Aerospace (ARINC) and SITA very important to success of ACDLS
- Provides a data link between ground automation systems and flight deck avionics for air traffic control (ATC) clearances, instructions, traffic flow management, and flight crew requests supplementing existing voice communications
- Controllers can deliver instructions with a push of a button and without the need to utilize voice frequencies
- Enables the transmission of complex instructions that can be quickly and correctly loaded into an aircraft's flight management system, upon acceptance by the pilot
- Enables Trajectory-Based Operations
- Operations Network (data over infrastructure owned and operated by L3Harris)
  - Data traffic critical to flight operations
  - Over 700+ VHF radios (running in data mode)
  - Over 300+ sites connected to core via redundant telco bearers (LTE & terrestrial)
- Dedicated Operations Centre Management
  - All services are supported from a common operations center with separate backup and emergency sites (NOC/BNOC/ENOC/SOC)







# Data Comm: Delivering Benefits









## CPDLC Departure Clearance

### In August 2023, DCL








-  Saved 109,950+ minutes of radio time
-  Saved 81,300+ minutes of airspace user time (in June)
-  Cleared 272,230+ flights
-  Prevented 3,000+ readback errors

### Since 2016, DCL

-  Saved 4.53M+ minutes of radio time
-  Saved 3.31M+ minutes of airspace user time
-  Cleared 16.55M+ flights
-  Prevented 192,260+ readback errors
-  Prevented 45.91M+ Kgs of CO<sub>2</sub> Emissions
-  Served 2.24B+ passengers

## CPDLC Initial En-Route Services

### From March 2019 – August 2023

-  34,868,450 CPDLC transactions
-  5,509,508 CPDLC sessions
-  26 commercial aircraft types supported
-  36 commercial operators supported
-  Over 4,700 aircraft equipped
-  768,623 readback errors mitigated
-  2,904,548 minutes of voice communication time saved



## Futuristic Telecommunications Infrastructure (FTI) India

*ANSP: Airports Authority of India*

- 15-year contract; awarded in 2018
- Provision of over 200 services at 91 sites across India
- Utilises a local Indian distributed field team
- Equipment modernization
- Network operations centres (Main and Backup)
- Security operations centre
- Satellite gateways for remote locations
- Integrates with air traffic systems, surveillance and voice communication systems
- **Benefits**
  - Decreases telecommunications costs over time through streamlined service provider management
  - Increases network security and monitoring
  - Reduces communications related delays at airports
  - Simplifies network service structure through integrated network

CONNECTS INDIAN AIRPORTS AND FACILITIES FOR INCREASED BANDWIDTH AND DECREASED DELAYS



### INNOVATIVE INFRASTRUCTURE:

CONNECTING INDIA'S AIR TRAFFIC NETWORK

L3Harris will provide the telecommunications infrastructure for the Airports Authority of India.

INDIA EXPECTS

**10%**

AIR TRAFFIC  
GROWTH ANNUALLY



L3HARRIS WILL UPGRADE

**91**

SITES FOR  
AIR TRAFFIC OPERATIONS



SERVICING

**2.9M**

MILES OF  
AIRSPACE



A STATE-OF-THE-ART COMMUNICATIONS NETWORK THAT PROVIDES:

- Safer, more reliable air traffic operations
- Fewer airport communications delays
- Increased network security and monitoring

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**Thank you!**