ATO Cyber Day

Enterprise Control Centers
Enterprise Data Services

Date: October 20, 2020

Federal Aviation Administration

Enterprise Control Centers

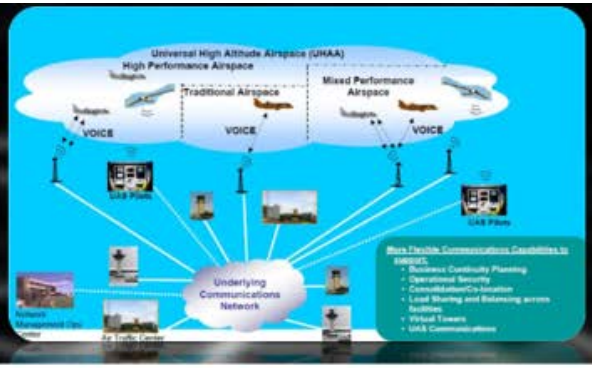
- **Provide vigilant operational and cybersecurity management of NAS services.**

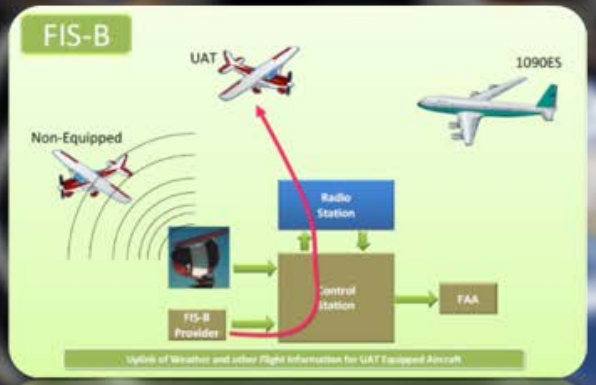
- **SWIM Enterprise Control Center (SECC)**
- **Navigation and Surveillance Enterprise Control Center (NECC)**
- **Voice and Data Enterprise Control Center (VECC)**

Enterprise Control Centers

SWIM Enterprise Control Center (SECC)

The SWIM Enterprise Control Center (SECC) provides oversight of NextGen SWIM services such as STDDS and SFDPS.





Navigation and Surveillance Enterprise Control Center (NECC)

The Navigation and Surveillance Enterprise Control Center (NECC) provides oversight of NextGen navigation and/or surveillance services such as ADS-B and WAAS.

Voice and Data Enterprise Control Center (VECC)

The Voice and Data Enterprise Control Center (VECC) provides oversight of NextGen voice and data services such as Data Comm and NVS.

Enterprise Control Centers

- **Each ECC is an independent control center.**

- **The ECC's are Tier 1 help desks and are responsible for monitoring, troubleshooting, coordinating, and reporting scheduled and unscheduled interruptions associated with enterprise-related systems.**

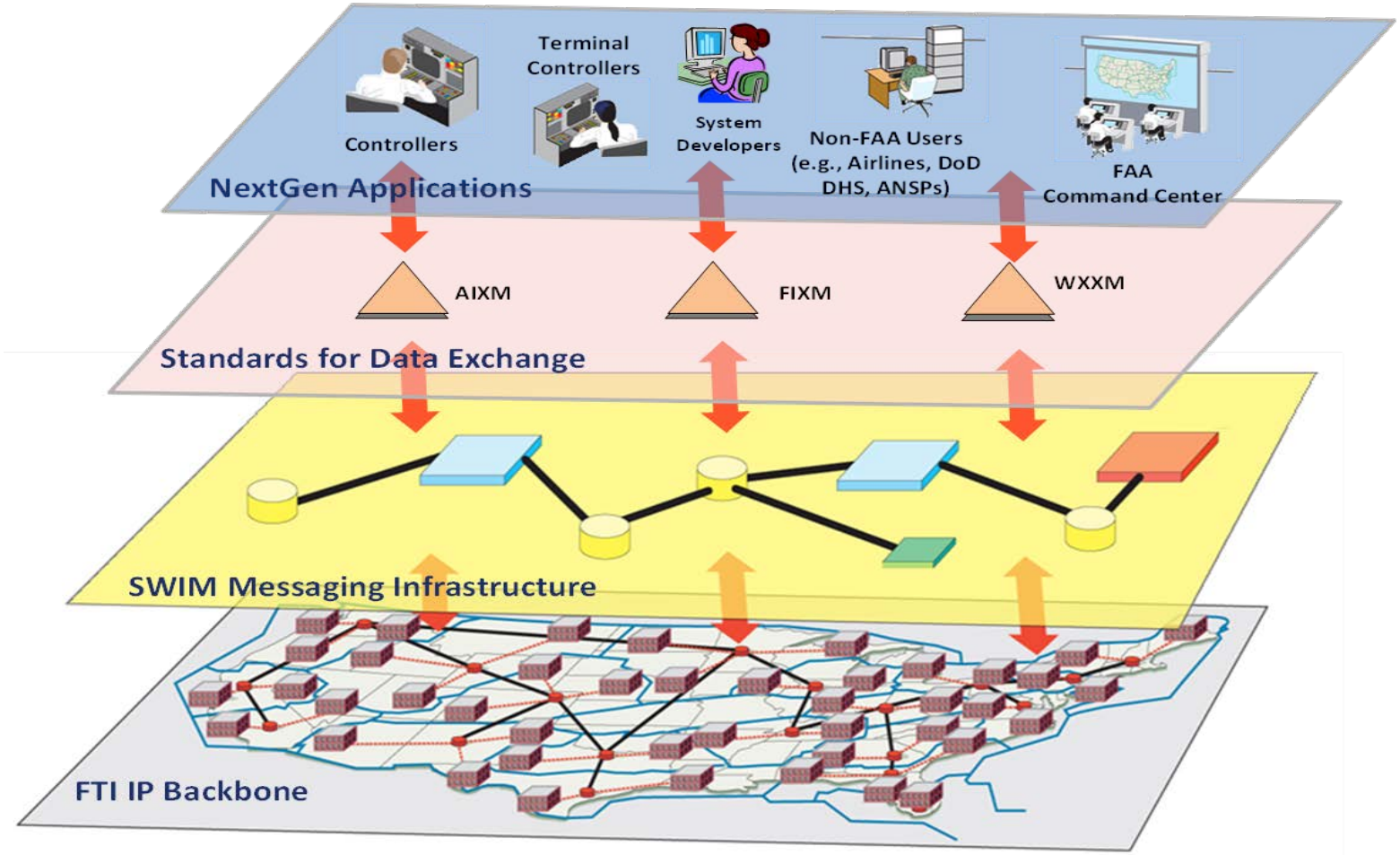
Enterprise Control Centers

Purpose/Responsibilities

- **Oversight of SOA (Service Oriented Architecture) services used by internal and external users. Provide NAS management for enterprise services at the national level within their scope of responsibility.**
- **Primary interface to vendor help desk/SOC.**
- **Serve as single point of contact for internal and external customers.**
- **Create RMLS Event Manager logs.**
- **Performs monitoring of equipment and services**
- **Perform coordination with internal stakeholders and notification to external users of enterprise level service events.**
- **Coordinate with OCC/SOC on District owned equipment as it affects enterprise services.**

SWIM Enterprise Control Center (SECC)

What is SWIM?



SWIM Terminal Data Distribution System (STDDS)

- **STDDS accepts, derives and conditions information from the Terminal NAS systems and converts it into easily accessible information, which is published via NESG and NEMS to NAS and non-NAS subscribers.**

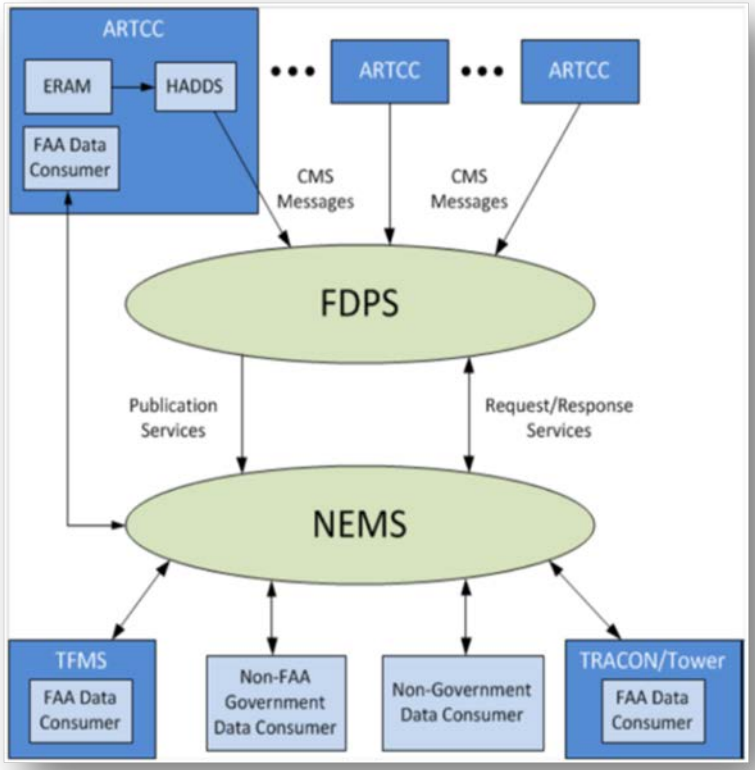
- **STDDS publishes the following:**
  - **ASDE-X - Airport Surface Detection Equipment – Model X**
  - **ASSC - Airport Surface Surveillance Capability**
  - **STARS - Standard Terminal Automation Replacement System**
  - **EFSTS - Electronic Flight Strip Transfer System**
  - **RVR - Runway Visual Range**
  - **TDLS - Tower Data Link Services**

SWIM Flight Data Publication Service (SFDPS)

- The SWIM Flight Data Publication Service (SFDPS) provides En Route flight data to National Airspace System (NAS) consumers. SFDPS allows consumers to receive real-time data for analytics, business processes, research, and other activities.

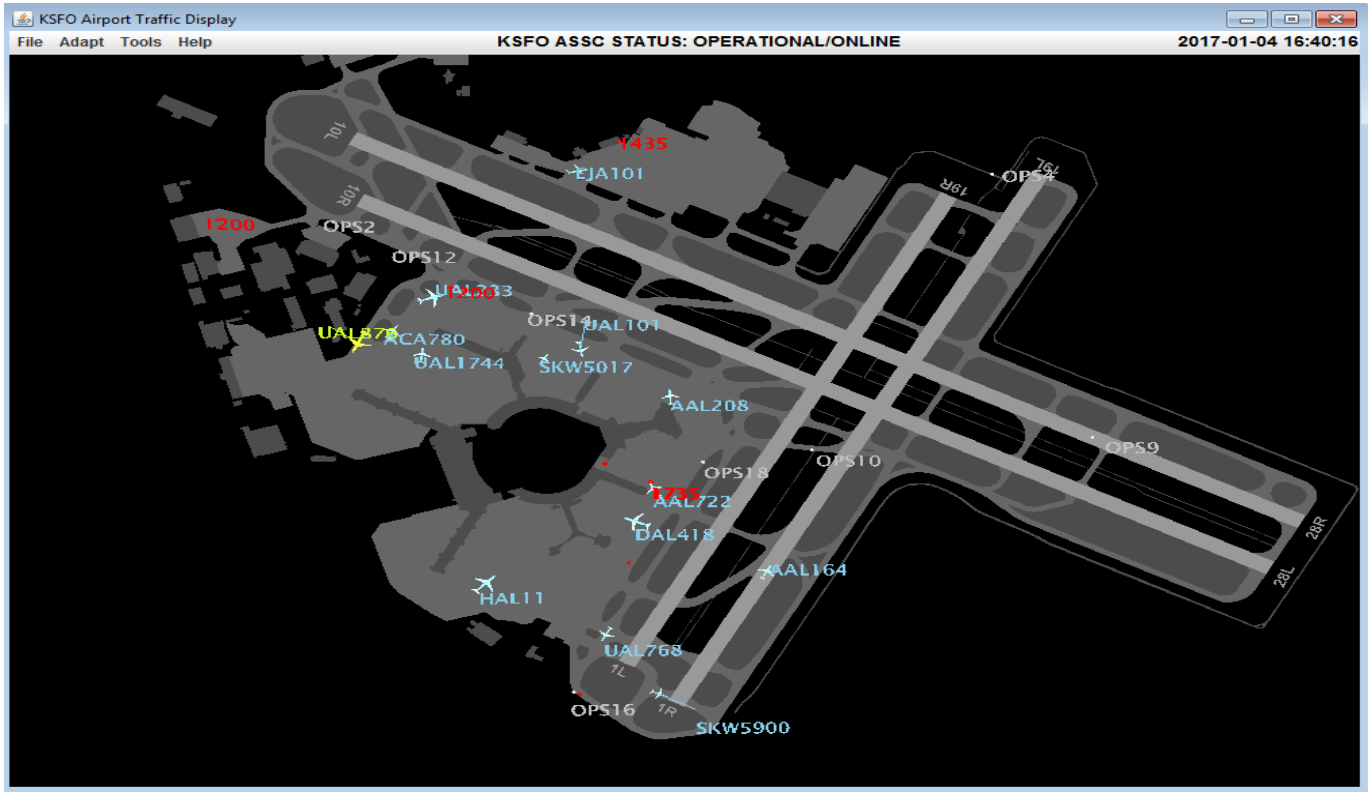
- SFDPS provides consumers with access to National Airspace System (NAS) En oute information by providing the following services:
- En Route Flight Data Publication & Query
- En Route Airspace Data Publication & Query
- En Route General Message Publication & Query
- En Route Operational Data Publication & Query

- SFDPS provides additional functionality including transformation of data into Flight Information Exchange Model (FIXM) and Aeronautical Information Exchange Model (AIXM), flight-matching across centers, and Globally Unique Flight Identifier (GUFI) generation.



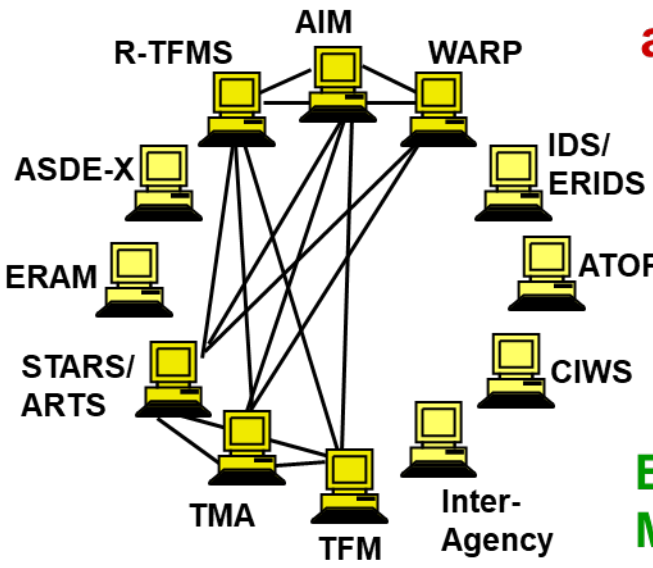
SWIM Visualization Tool (SVT)

- **The SVT provides displays of traffic on the surface at major US airports to TRACON and ARTCC facilities.**



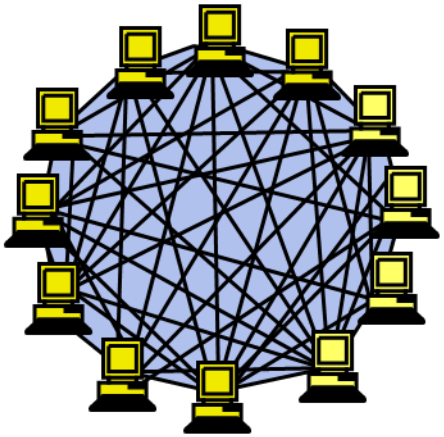
The Old Way vs The New Way

NAS System Interfaces in the Legacy Environment



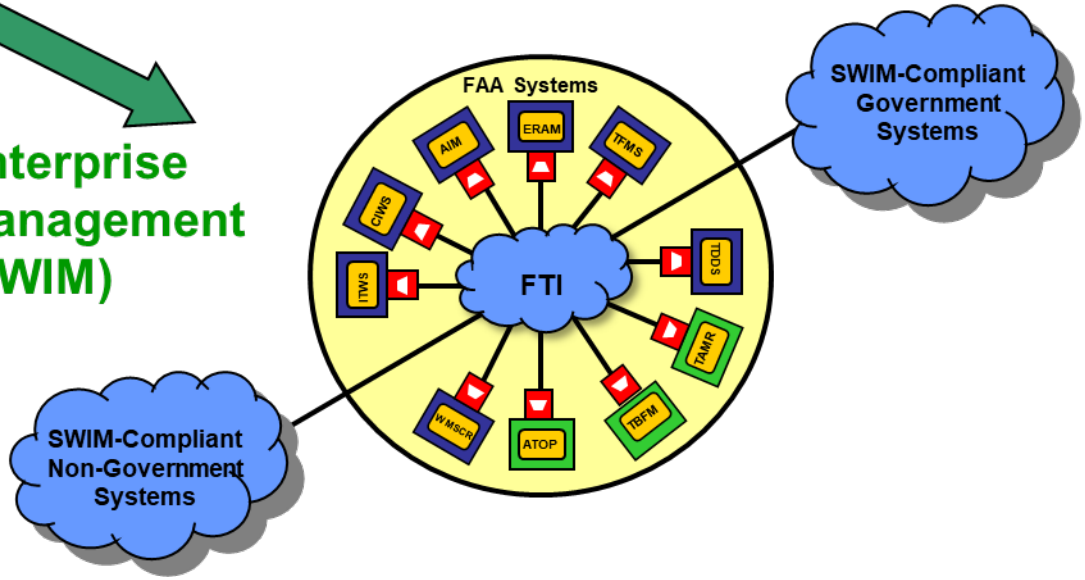
- Existing point-to-point hardwired NAS
- Unique interfaces, custom designs

Business as Usual



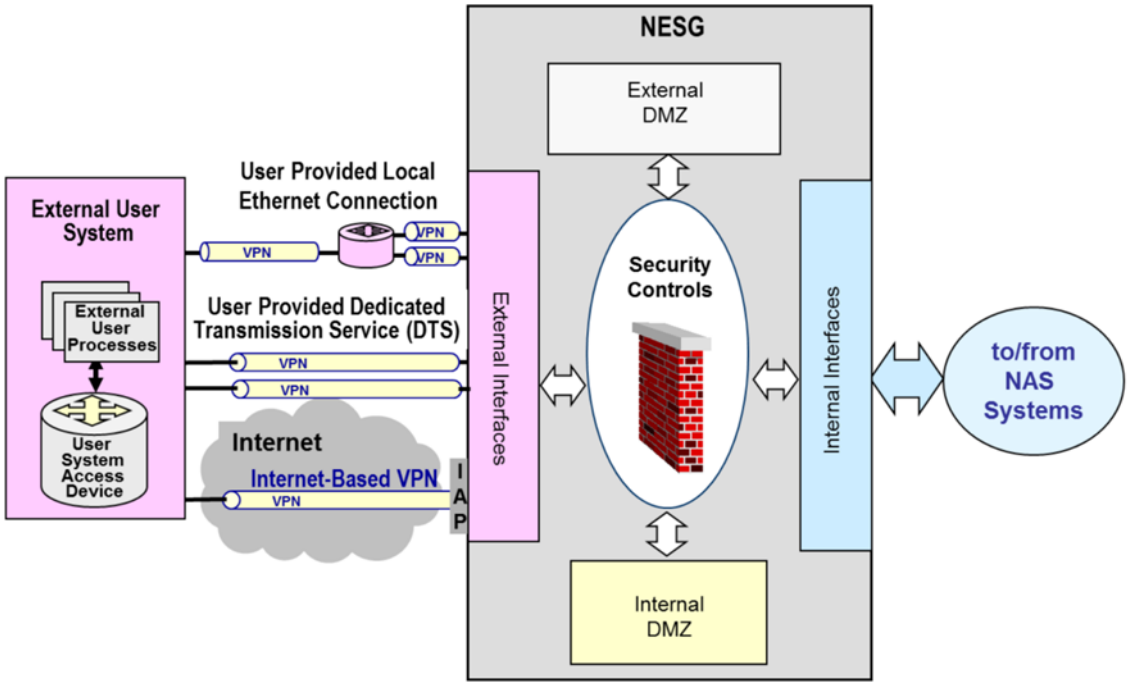
- More point-to-point unique interfaces
- Costly development, test, maintenance, CM
- New decisions linked to old data constructs
- Cumbersome data access outside the NAS

Enterprise Management (SWIM)

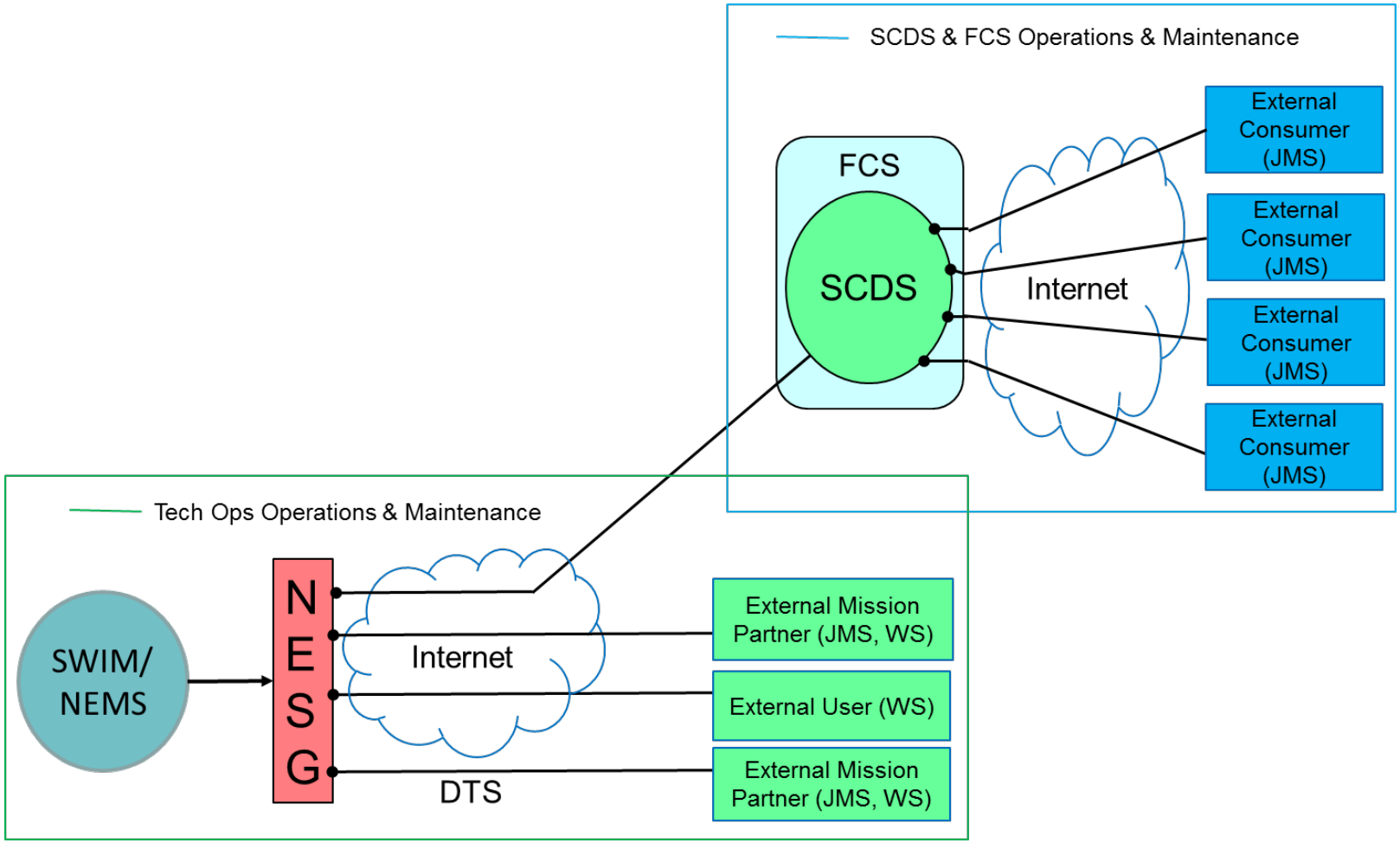


NAS Enterprise Security Gateway (NESG)

- NAS Enterprise Security Gateway (NESG) provides a framework for supporting mandated security controls between NAS and non-NAS entities. It provides a standardized scheme for connecting and managing connections to external users, based on a layered security approach, to allow customers to send and receive data from NAS systems through NEMS.

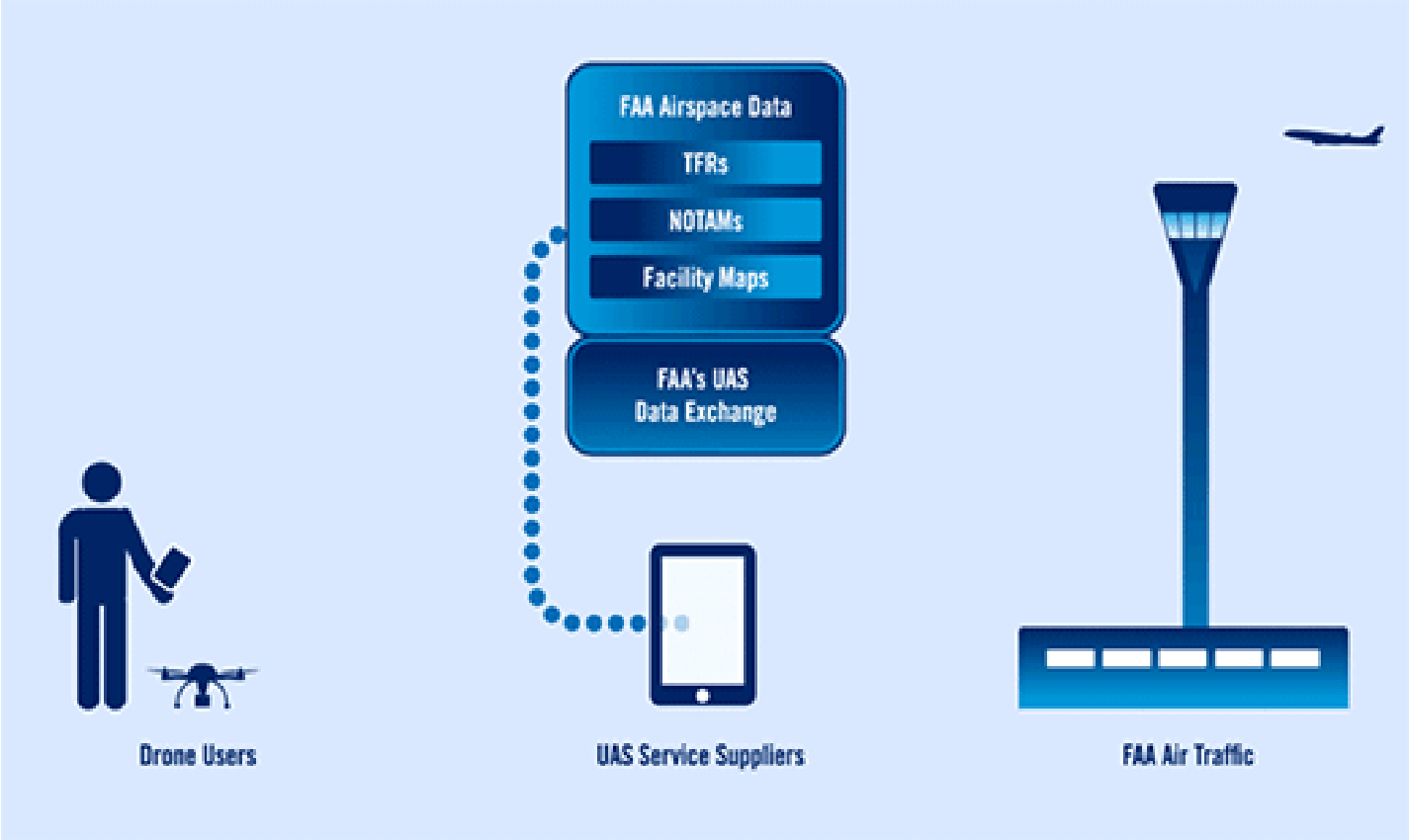


SWIM Cloud Distribution Service (SCDS)



Low Altitude Authorization and Notification Capability (LAANC)

- Allows for potential UAS flights within controlled airspace upon authorization and for situational awareness to other aviation entities such as commercial airlines and air traffic control towers.



Navigation and Surveillance Enterprise Control Center (NECC)

Automatic Dependent Surveillance–Broadcast (ADS–B)

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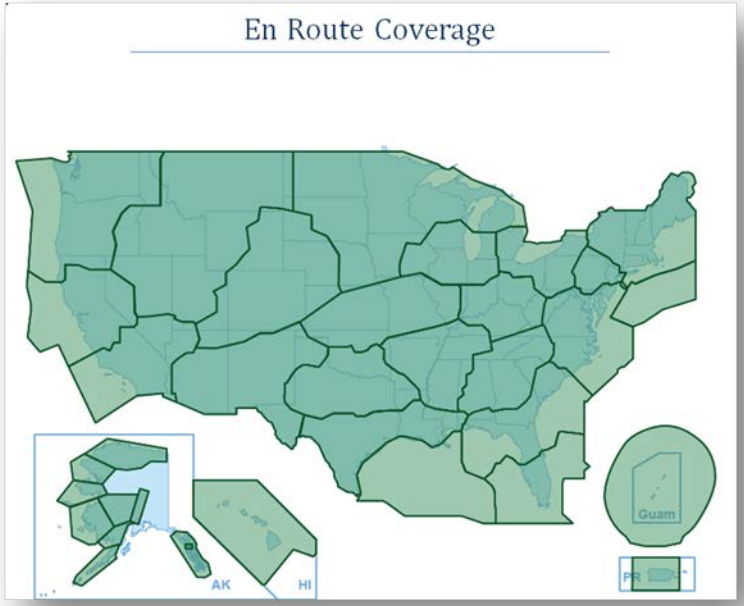
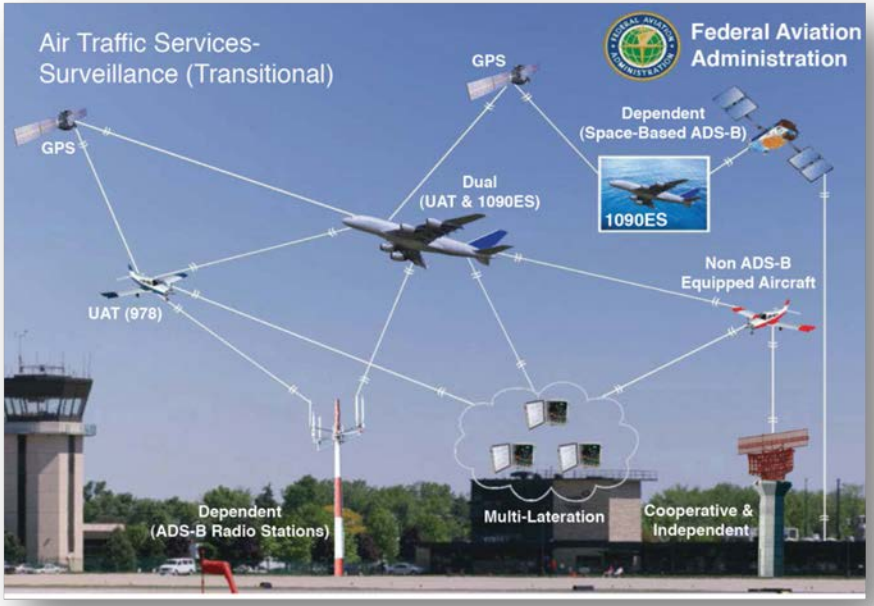
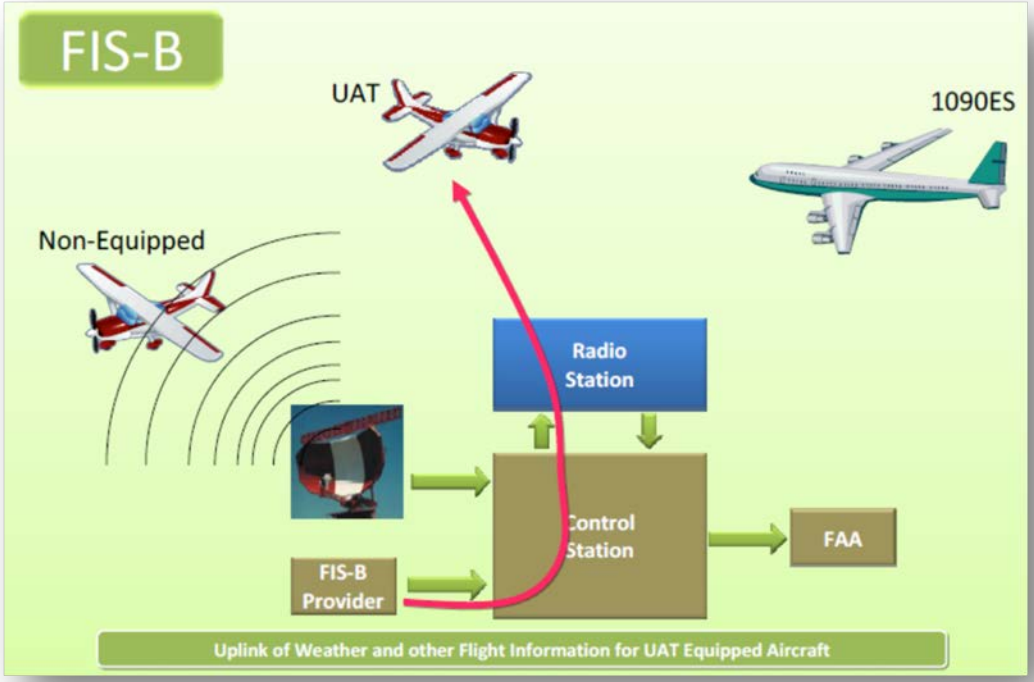
- Automatic Dependent Surveillance–Broadcast (ADS–B) is a surveillance technology deployed throughout the NAS. The ADS–B system is composed of aircraft avionics and a ground infrastructure. Onboard avionics determine the position of the aircraft by using the GNSS and transmit its position along with additional information about the aircraft to ground stations for use by ATC and other ADS–B services.





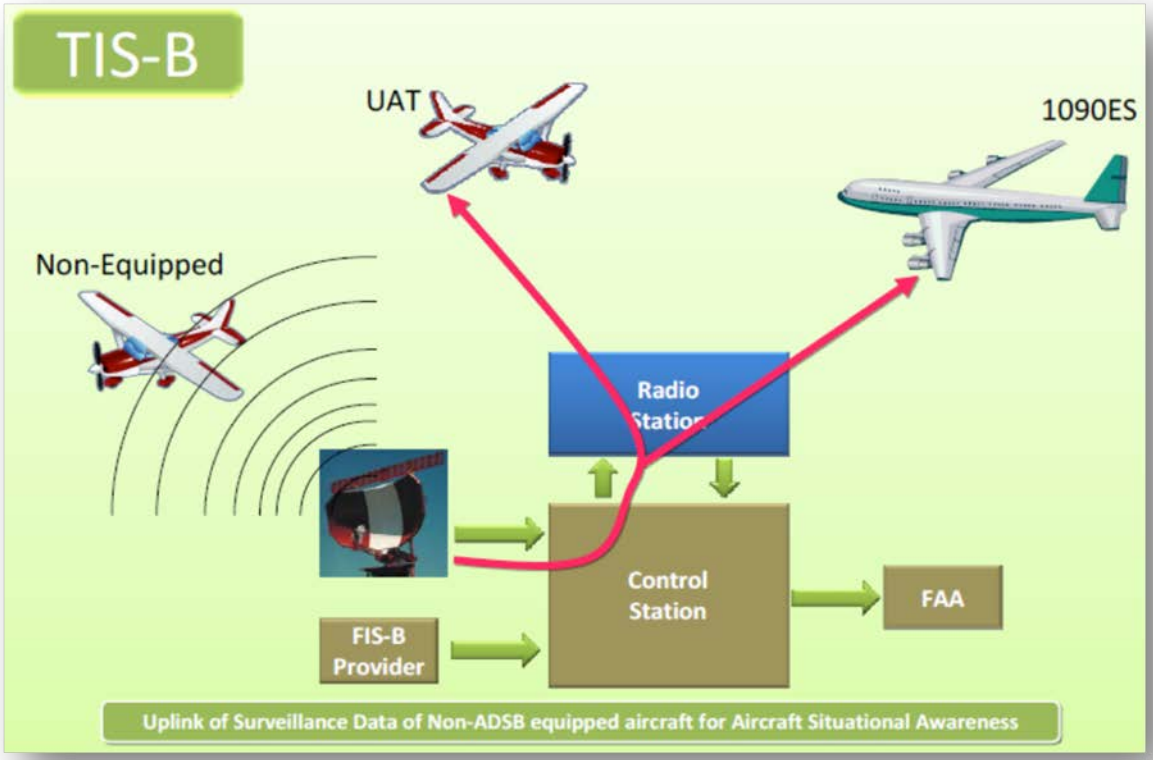
Flight Information Service– Broadcast (FIS-B)

- FIS–B is a ground broadcast service provided through the ADS–B Services network over the 978 MHz UAT data link. The FAA FIS–B system provides pilots and flight crews of properly equipped aircraft with a cockpit display of certain aviation weather and aeronautical information. FIS–B reception is line–of–sight within the service volume of the ground infrastructure.



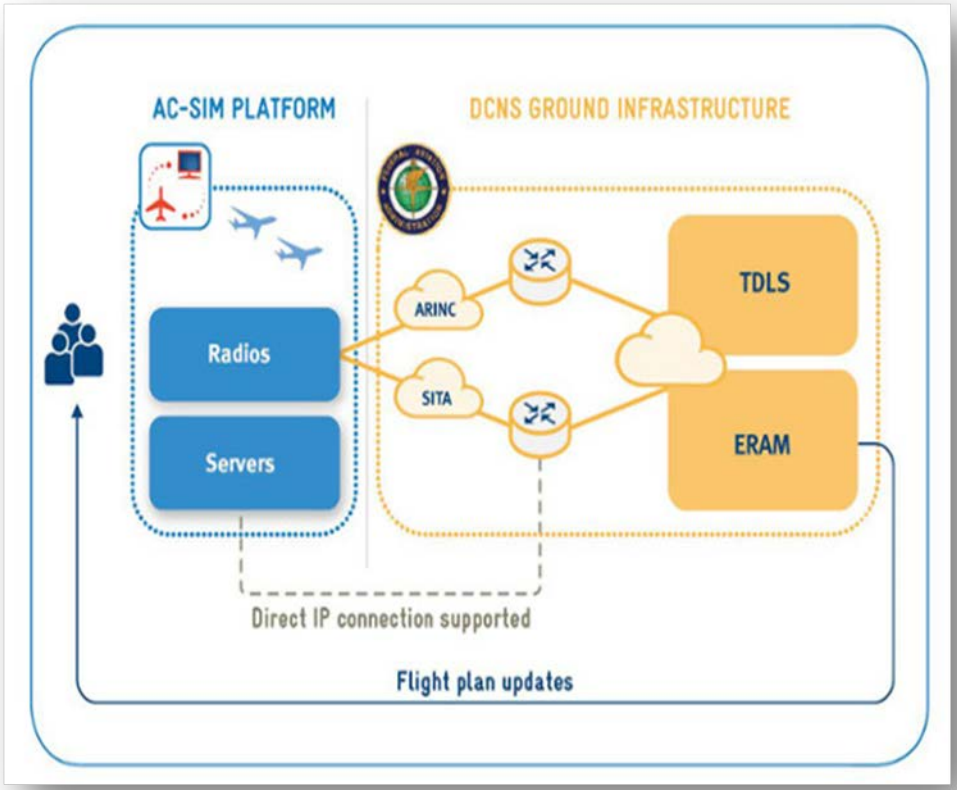
Traffic Information Service– Broadcast (TIS-B)

- TIS–B is intended to provide ADS–B equipped aircraft with a more complete traffic picture in situations where not all nearby aircraft are equipped with ADS–B Out. This advisory–only application is intended to enhance a pilot's visual acquisition of other traffic.

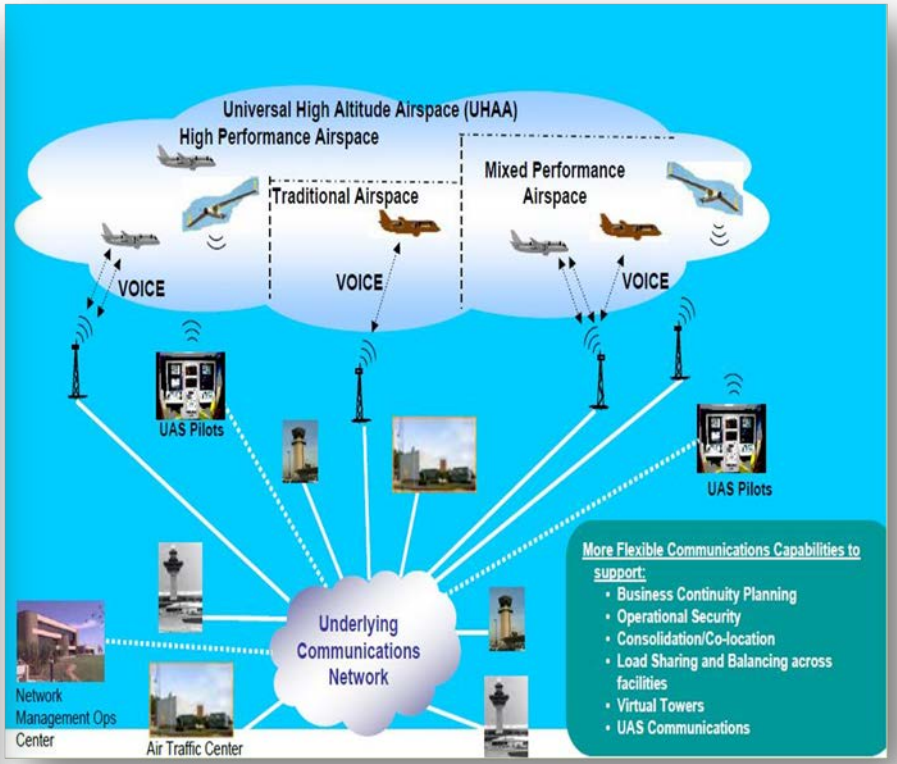


Voice and Data Enterprise Control Center (VECC)

Data Comm Network Service (DCNS)



NAS Voice Switch (NVS)

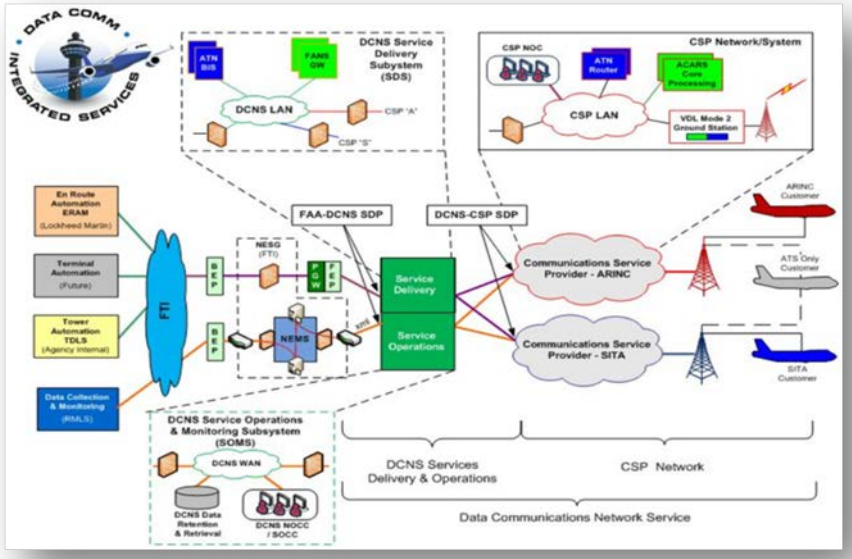


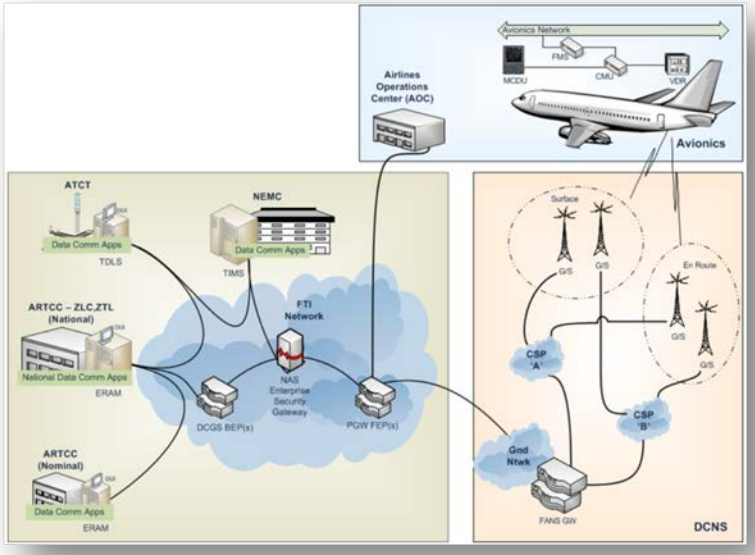
Controller Pilot Data Link Communications (CPDLC)

- Voice communication frequencies between pilots and air traffic control are becoming increasingly congested and will not be able to accommodate the projected increase in air traffic demand. Controller Pilot Data Link Communications (CPDLC) Departure Clearance Services (CPDLC-DCL) will be introduced at local Tower Data Link Service (TDLS) equipped facilities to provide the delivery of departure clearances and revised departure clearances.

Data Communications Network Services (DCNS)

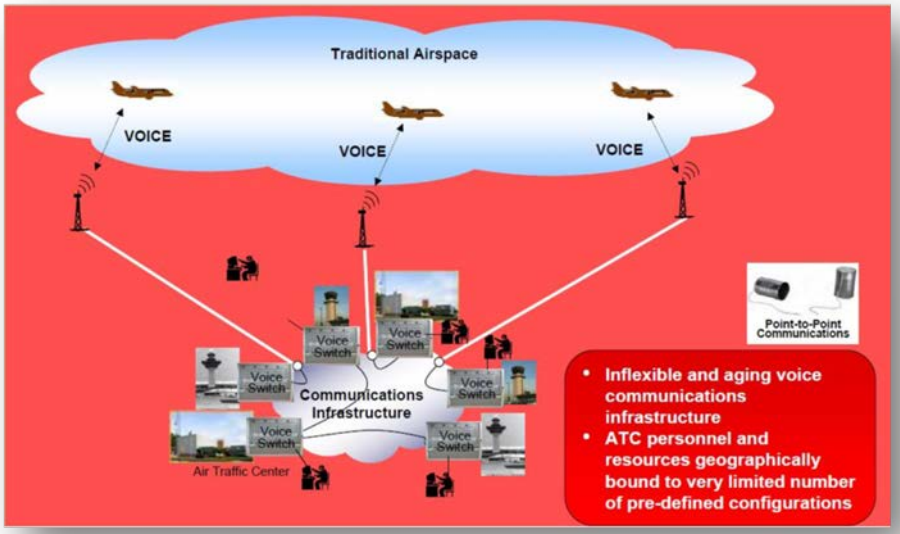
- Data Communications Network services (DCNS) provides a digital link between ground automation and flight deck avionics for safety-of-flight air traffic control clearances, instructions, traffic flow management, flight crew requests and reports.
- CPDLC has been deployed to over 65 Terminal air traffic control towers.
- CPDLC is currently between deployed to all 20 En Route air traffic control centers with two already in use at Kansas City and Indianapolis Centers.
- CPDLC, once fully deployed, will help to contribute to a reduction in flight delays, more efficient routes for aircraft resulting in increased operational efficiency, and enhanced safety while reducing operational costs for airspace users.

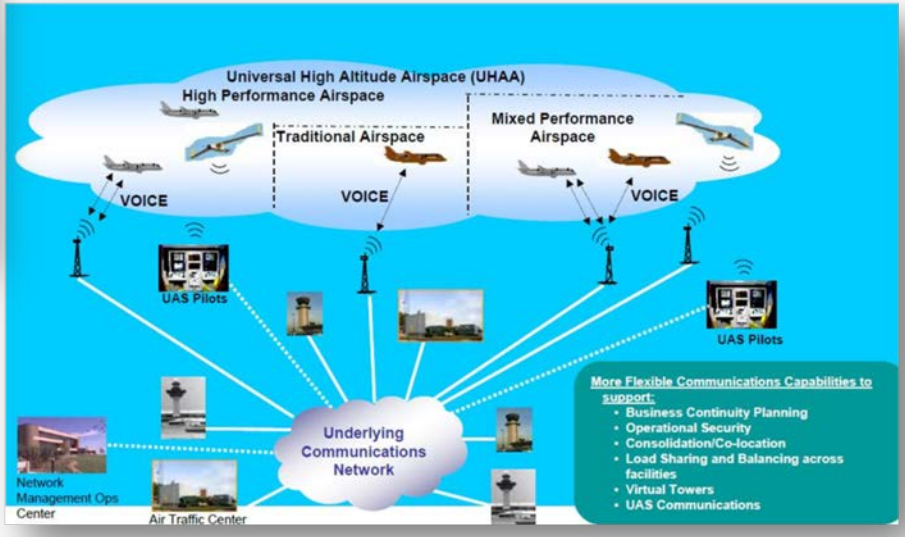




Voice over Internet Protocol Communication Enterprise (VoICE) Communication System (VCS)

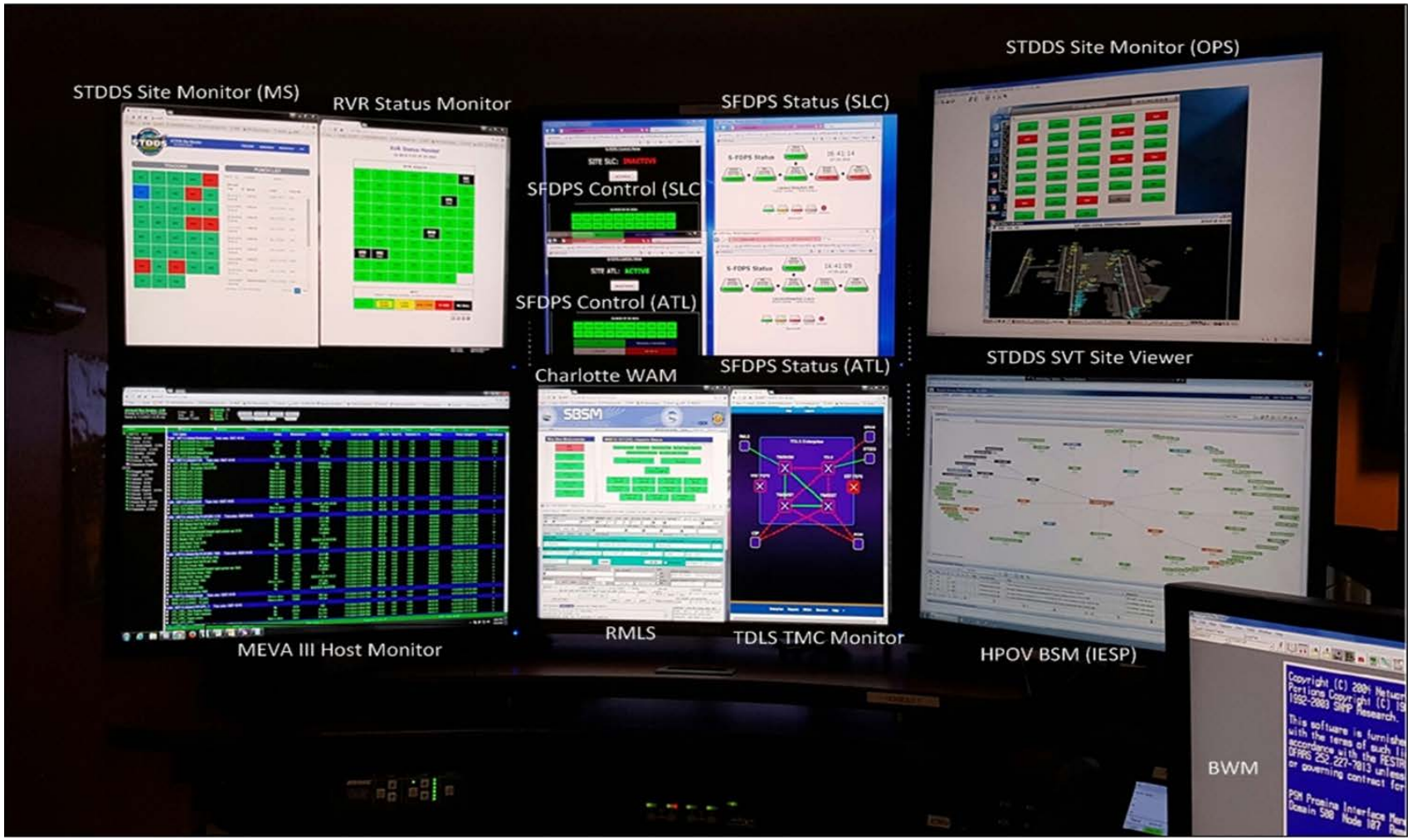
- Voice over Internet Protocol Communication Enterprise (VoICE) Communication System (VCS) is the key voice communication component for NextGen. It replaces 17 different voice switching systems at En Route, Terminal, and support facilities with a single air/ground and ground/ground network-capable switches to enable flexible voice communications.





Enterprise Data Services

EDS Workstation



NCO and ECC/EDS Flow